UNIVERSITY OF GHANA, LEGON

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DISASTER AND POSTTRAUMATIC ADAPTATION: RISK AND PROTECTIVE FACTORS

BY

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DECLARATION

I declare that this is an original research conducted by me and has never been submitted to any other institution for any award. All sources cited in this research are duly acknowledged.

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DEDICATION

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ABSTRACT

This research investigated the role of risk and protective factors in how disaster victims adapt to the impacts of the adversity. This adaptation was examined at two levels: posttraumatic distress (PTD) and posttraumatic growth (PTG). Four risk factors and five protective factors were examined. The concurrent nexted mixed methods approach with 336 sample from the population of 3rd June 2015 flood/fire disaster victims in Accra was used; 13 of which participated in both quantitative and qualitative studies.

The quantitative study used standardised measures of PTG, PTSD, and general distress (using the global severity index of the symptoms checklist) as outcome variables, social support, religiosity, resilience, belief in just world, and self-efficacy (protective factors) as moderating variables, and neuroticism, assumptive world, previous traumatic history and independent self-construal (risk factors) as predictors. Five hypotheses were tested using hierarchical multiple regression and Pearson correlations. The results indicate that risk factors namely neuroticism, and previous traumatic history significantly predict PTD (general psychological distress and PTSD). It was also found that protective factors namely social support, belief in just world, resilience, and religiosity significantly predict PTG. Again, it was found that protective factors significantly moderate the relationship between risk factors and psychological distress. Finally, the quantitative study also found that social support, self-efficacy, belief in just world, resilience and religiosity are negatively and significantly correlated with PTD (psychological distress and PTSD), and there is rather a significant positive correlation between PTG and PTD.

The qualitative study used the phenomenological approach with thematic analysis to answered three research questions. It was found that victims perceive the causes of the disaster to include engineering failures and anti-environmental behaviours. Their experiences include loss and biographical disruption such as disfigurement, death and loss of property, and psychological impacts such as anxiety, and mood problems. Participants'

adjustment experiences involve societal and family level interventions, spiritual support and post disaster vulnerability.

It was concluded that indeed disaster victims suffer distress with risk factors exacerbating it. However, victims also experience growth following the disaster and this is facilitated by protective factors. The implications of the findings regarding clinical practice, policy, disaster management, research and theory are discussed.

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LIST OF ABREVIATIONS

ADHD – Attention Deficit Hyperactivity Disorder

AMA - Accra Metropolitan Assembly

APA - American Psychological Association

ATM – Automated Teller Machine

BA – Brong Ahafo Region

CR- Central Region

CSM - Cerebro-spinal Meningitis

DSM- Diagnostic Statistical Manual

EM-DAT - Emergency Events Database

EPT – Emotional Processing Theory

GA – Greater Accra

GDP – Gross Domestic Product

HSCT - Hematopoietic Stem Cell Transplant

KMO - Kaiser-Meyer-Olkin

MSPSS - Multidimensional Scale of Perceived Social Support

NADMO – National Disaster Management Organisation

NR - Northern Region

OV – Organismic Valuing

PCA- Principal Component Analysis

PCL-C - PTSD Checklist-Civilian

PLWH – People Living With HIV

PTA – Parents Teachers Association

PTD – Post Traumatic Distress

PTG – Post Traumatic Growth

PTGI - Posttraumatic Growth Inventory

PTSD – Post Traumatic Stress Disorder

PTSS - Posttraumatic Stress Symptoms

SCL-90-R - The Symptoms Checklist-90-Revised

SPSS - Statistical Package for the Social Sciences

UER – Upper East Region

UWR – Upper West Region

VR – Volta Region

WAS - The World Assumptions Scale

WHO – World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The short to long term consequences of disaster are usually dire and these have been documented copiously in the literature (see for example, Shultz, Neria, Allen, & Espinel, 2013; Walker-springett, Butler, & Adger, 2017). These consequences are physical (Paidakaki, 2012) or psychological (Hussain, Weisaeth, & Heir, 2011). According to the DSM 5, individuals who survive disasters may experience symptoms such as flashbacks, nightmares, hypervigilance, sleep and memory problems among others (American Psychiatric Association, 2013b). Of particular interest are the long-term consequences because these may be debilitating and normally disrupt affected individuals' occupational and social lives.

Disasters may have both negative and positive outcomes. Researches however, focus largely on the negative outcomes. The implication is that there is little focus on positive outcomes of disaster and there is equally little focus on personal and environmental factors that mitigate negative consequences or factors that promote positive outcomes of disaster. For example, a disaster victim may not develop depression but could rather develop a deeper sense and appreciation for life (Klasen et al., 2017). This is because several factors influence psychological outcomes of disasters in victims (Park, 2010). For example, Garcia, Cova, Rincon, and Vazquez (2015) maintained that when people brood over their adversities, they tend to develop negative emotions and negative outcomes compared to those who use deliberate active coping leading to posttraumatic growth. Again, while some personality factors such as neuroticism are found to influence the negative impacts of disasters (Barlow et al., 2015), mental toughness promotes positive outcomes among victims (Hardy, Bell, &

Beattie, 2014). In this study, the primary objective is to examine some of the unexplored medium to long term consequences of disaster, focusing on risk and protective factors.

1.1.1 Nature and Types of Disasters

Disaster is a traumatic event many people experience in their life time (Bonanno & Mancini, 2015). It is any event that occurs unexpectedly, causes social disruption and threat to human life/survival (Lindell, 2013). According to the World Health Organisation (WHO, 2000), disasters disrupt the normal conditions of existence and cause a level of suffering that exceeds the capacity of adjustment of the affected community. Disasters are broadly categorized under natural and man-made. There have been several disaster occurrences in Ghana, both natural and man-made, chief among which is flooding (Asumadu-Sarkodie, Owusu, & Rufangura, 2015) as shown in the Table 1 below. The reasons for these are not farfetched. Typically, people build in water ways blocking free flow storm waters. There is also the problem of inadequate drainage in some communities particularly overcrowded inner cities. Finally, people deposit garbage into the already narrow drainage systems further clogging the drains causing flooding when it rains. In 2015, the deadliest of these flood disasters occurred in Ghana with a fire explosion at a fuel filling station in Accra, claiming over 150 lives (Asumadu-Sarkodie et al., 2015). Similarly, other disasters in Ghana claimed several lives and destroyed properties.

Table 1.1:
Some Disasters Recorded in Ghana over the Years

Date	Disaster	Area affected	Impact
June, 2018	Flood	Accra, Kumasi	3 deaths, thousands displaced in Kumasi
July, 2017	Flood	Tamale	3 deaths, destruction of farm lands, several people displaced
October, 2017	Gas explosion	Accra (Atomic Junction)	7 deaths, Several people burnt, properties damages
May, 2017	Gas explosion	Takoradi	Over 100 people suffer burns, properties damaged
December, 2016	Gas explosion	La, Accra	5 deaths, scores injured, properties damaged
June, 2015	Flood/fire	Accra (Circle)	Over 150 deaths, several people disfigured, thousands displaced, properties damaged
2014	Cholera	GR and other four regions	243 deaths, 28,975 cases
November, 2012	Melcom Building collapse	Accra	14 deaths
2011	Flood	Accra	43,087 affect, 15 deaths
2007	Flood	UER, UWR, NR	307,127 affected, 41 deaths
1997	Flood	UER, UWR, NR, BA, VR	Over 300,000 affected
1997	CSM	UER, UWR, NR	1,356 deaths
1997	Cholera	GA, CR	117 deaths

CSM: Cerebro-spinal Meningitis, UER: Upper East Region, UWR: Upper West Region, NR: Northern Region, BA: Brong Ahafo Region, VR: Volta Region, GA: Greater Accra Region, CR: Central Region.

The nature of disaster determines the impact it presents. The nature of the disaster may include the severity, duration and the location. Severe forms of disasters have wider physical effects. They affect public health infrastructure, threaten access to health care services and displace populations. Also, disasters that occur in densely populated locations such as regional capitals including Accra, Kumasi, and Takoradi tend to affect many lives. This results in more deaths and more survivors who may have to deal with the after effects. Therefore, with the psychological impacts of disasters, the figures represented in the table above shows that over the years several Ghanaians were psychologically traumatised as a result of disaster experiences.

1.1.2 Disaster and Posttraumatic Distress

Disaster victims experience two kinds of effects: they experience distress (Carroll, Morbey, Balogh, & Araoz, 2009; Jones, Ribbe, Cunningham, Weddle, & Langley, 2002) or they experience growth (Klasen et al., 2017; Nuttman-shwartz, Dekel, & Tuval-mashiach, 2011). Sometimes, victims may experience distress then growth (Maitlis, 2012).

Apart from the conspicuous physical effects such as death, disease outbreaks, and injuries (Haqqi, 2006), disasters lead to significant psychological distresses including depression, anxiety disorders (e.g. posttraumatic stress disorder), cognitive dysfunctions and hypersensitivity (Böttche, Kuwert, & Knaevelsrud, 2012; Breslau, 2002; Mason, Andrews, & Upton, 2010a; Tunstall, Tapsell, Green, Floyd, & George, 2006).

According to Haqqi (2006), occurrence of disasters is accompanied by states of disbelief, disorganisation, agitation, cognitive dysfunction that may include but not limited to memory difficulties, planning and concentration (Haqqi, 2006; Tian, Wong, Li, & Jiang, 2014). Victims also experience irritability or anger, and anxiety (Panyayong & Pengjantr, 2014; Tapsell, 2000), apprehension (Ohl & Tapsell, 2000), depression (Haqqi, 2006; Panyayong & Pengjantr, 2014), helplessness, and guilt (especially survivor guilt) (Erikson, 1976; Lifton & Olson, 1976). There are behavioural effects such as hypervigilance, hyperactivity, social withdrawal, self-blame (Haqqi, 2006) and loss of appetite. Some also experience sleep disturbances, loss of interest in activities and substance abuse (Panyayong & Pengjantr, 2014).

The presentation of posttraumatic reactions varies across culture, age and gender. It has been reported that among the general populations of Europe, Asia and Africa, the prevalence of posttraumatic stress disorder is about 0.5 to 1% (American Psychiatric Association, 2013). In Turkey, Dogan (2011) found among adolescent disaster survivors that over 70% experience severe levels of various posttraumatic impacts. Victims may experience acute

effects spanning immediately after the disaster to a few days or weeks. Others may experience delay onset of effects several months to years after the disaster (American Psychiatric Association, 2013).

Children suffer significant physical effects of disasters both on a short-term and long-term basis. For example, when a flood disaster occurs, they suffer from more infections because they breath larger volume of air. They also require more fluid/water and so become dehydrated during disasters. School facilities are often destroyed through disasters thereby disrupting children's academic activities. Children process emotional trauma differently and slower leading to further and/or delayed mental health complications (Kousky, 2016; Peek, 2008).

It is possible the posttraumatic distresses may be further aggravated by the physical and economic challenges that the disaster creates for the victims (Ademola, Adebukola, Adeola, Cajetan, & Christiana, 2016; Paidakaki, 2012). In addition to these challenges, some other factors pose as risks that can contribute to an increase in the posttraumatic distress suffered by individuals (Masten & Reed, 2002). Some of these risk factors are discussed below.

1.1.3 Risk Factors for Posttraumatic Distress

Research suggests that history of previous traumatic experiences is associated with the experience of PTD (Stevanovic, Franciskovic, & Vermetten, 2016). Previous traumas tend to make an individual's resilience resources weak ahead of any future disasters (Janoff-Bulman, 1992). This also makes the individual vulnerable to negative health impacts in future life (Mock & Arai, 2011). In a similar vein, childhood traumatic experiences increase the chances of behaviour problems in one's adult life by making the individual internalize (shown in anxiety and depression) and externalise (as in aggression and acting out) behaviours (Gilbert et al., 2009). It is also established that early childhood traumatic

experiences are associated with adult psychiatry disorders and psychological distresses (Greenfield, 2010; Pine & Cohen, 2002).

Personality, in particular Neuroticism, is reported to have implications for the development of PTD and other ill mental health disorders. For example, people who score high on neuroticism have higher tendencies for posttraumatic distress (Sveen, Arnberg, Arinell, & Bergh, 2016). People with neuroticism have the predisposition to experience negative emotions, such as worry, anxiety, depression, irritability, and vulnerability to psychiatric disorders (Eysenck & Eysenck, 1964; Yanhui, Wang, Jiang, & Mo, 2016). Thus, when they are further exposed to traumatic events, they tend to experience a heightened level of these emotions. There is also an indication that PTD is associated with other personality traits such as negative emotionality, trait hostility and trait anxiety (Jakši, Brajkovi, Ivezi, Topi, & Jakovljevi, 2012; Yanhui et al., 2016).

Exposure to disasters often requires that victims resort to support from unaffected communities. This becomes effective in more collectivistic cultures (Wlodarczyk et al., 2016). However, independent or individualistic societies or persons risk experiencing distressing post disaster effects since either they may not ask for support or unaffected communities may not be willing to support. Self-construal is primarily how people view themselves in relation to other people at the societal level (Hazel & Shinobu, 1991; Voyer & Franks, 2014). It is categorized into independent and interdependent. Independent self-construal is when individuals see themselves as distinct from others in their community. Interdependent self-construal on the other hand is when the individual sees themselves as connected to others in their society (Giacomin & Jordan, 2017). People with independent self-construal tend to receive less support during challenging moments. Such people may not readily endorse communal coping activities thereby putting them under pressure when their personal coping strategies are stretched to the limit (Wlodarczyk et al., 2016).

Identified risk factors tend to exacerbate the severity of PTD (Sandica & Pop, 2016; Young, 2017) with increasing number of risk factors relating to higher severity of PTD (Briere, Elisha, & Deitrich, 2016; van Loo et al., 2016).

Individual socio-demographic factors such as age, gender and economic status may also predispose them to higher levels of distress following disasters (Sareen, 2014; Young, 2017). These are often considered pre-disaster risk factors. There are however other factors that may present during and after the disaster that will contribute significantly to the onset or severity of PTD (Young, 2017). This may include losses during the disaster, injuries, and poor social support

There is the need to identify as many risk factors as possible in order to understand why and how PTD develops and is maintained after a traumatic experience. However, many other victims of disasters may also stay stronger after the adversity and rather develop posttraumatic growth (PTG) (Dekel, Solomon, & Ein-Dor, 2012; Klasen et al. (2017).

1.1.4 Disaster and Posttraumatic Growth (PTG)

Inasmuch as disasters largely imply negative outcomes, they sometimes reveal potential, new beginning and growth (Ramos & Leal, 2013). PTG is conceptualized as a multidimensional outcome of one's ability to become open to new possibilities, appreciation of life in a better way, experiencing enhanced personal strength and spiritual development and able to relate better to others (Tedeschi & Calhoun, 2004). It is an individual's ability to bounce back better than before, feeling a strong sense of renewed characteristics and strength to face future adversities (Dekel et al., 2012).

Joseph and Linley (2005) opined that people perceive their survival from a disaster as an opportunity to grow. This growth is facilitated by factors that decrease the chances of the negative effects whilst strengthening the chances of the positive effects or outcomes and

they are known as protective factors (Masten & Reed, 2002). However, PTG may not necessarily replace distresses, or does not prevent distresses (Maitlis, 2012). It is rather a matter of dealing with the distresses and experiencing the sense of personal growth from the pains of the adversity.

It has been indicated that the positive aspect of disaster studies has receive limited but growing attention (Redekop & Clark, 2016; Tedeschi & Calhoun, 2004). This study concurrently considers the factors associated the development of PTG and those that influence PTD among disaster victims. Some of the factors associated with PTG to consider in the current study are social support, intervention, religiosity, belief in just world and self-efficacy.

1.1.5 Protective Factors promoting Post traumatic Growth

There are both external and personal factors that promote growth among survivors of disasters. Some of the external factors include social support, professional interventions, and religiosity. There are also personal factors like an individual's belief in just world, resilience and self-efficacy.

Social support is a factor that augments the positive effects of disasters (Platt, Keyes, & Koenen, 2014). Generally, it has been a strong factor for good health among many populations (Feeney & Collins, 2015; Kafetsios & Sideridis, 2006; O'Donovan & Hughes, 2008; Uchino, 2009). Social support is the perception of, and the reception of any form of assistance from one's relational networks (Kafetsios & Sideridis, 2006). It comes in the forms of received, perceived and embedded supports (Berkman, Glass, Brissette, & Seeman, 2000).

Berkman and Glass (2000) maintained that social support produces positive stress by catalysing an individual's sense of purpose, belonging, security, or self-worth, leading to

increased motivation for positive self-care (e.g., healthy eating). It promotes and restores health as well as reduces mortality risk (Sarason, Sarason, & Gurung, 2001). It is therefore important to establish how support from others plays out among victims of disasters with regards to its availability and use by victims in augmenting post disaster distress and facilitating post disaster growth.

Similarly, the professional intervention victims receive after a disaster produces posttraumatic growth (Raphael & Wilson, 2000). This is due to the support and skills a therapist or counsellor introduces to the individual to help deal with the negative impact of the disaster. The therapist helps victims identify adaptive coping strategies, sources of support and better interpretations for the adversity. By utilizing these, victims tend to better manage the impact of the disaster, thereby experiencing psychological growth (Linares et al., 2017).

Religiosity also significantly supports victim's growth after the experience of trauma (Chan & Rhodes, 2013). It serves as a source of support for the victim. The individual may fall on the assistance of members of their congregations in addition to the support they enjoy from God (Oren & Possick, 2009). Oren and Possick (2009) posit that religiosity is a significant source of meaning for suffering that helps to lessen the adverse effect of adversity.

A person's belief in a just world is the belief that people get what they deserve (Lerner & Miller, 1978) also produces PTG (Mcparland & Knussen, 2010). When people experience trauma which they consider an injustice to them, those with a strong general belief in just world will be motivated to adopt strategies to maintain this belief by restoring a sense of justice in some way (Dalbert, 2001; Furnham, 2003; Janoff-Bulman & Frieze, 1983; Lerner, 1980; Rubin & Peplau, 1975). This will make them give positive interpretations of their misfortune and thus experience less distress (Bulman & Wortman, 1977; Dalbert, 1996,

1997). For example, when an individual experiences flood and interpret it as an unfair treatment by nature to them, then they are more likely to feel distressed.

Self-efficacy is also important in how people perceive and deal with adversities (Zulkosky, 2009). According to Bandura (1982), self-efficacy influences a person's level of motivation, thought and actions. Zulkosky (2009) explains that people with high self-efficacy are able to deal with difficulties compared to low self-efficacy which leads to depression and related distresses. This means that self-efficacy has a bearing on people's ability to experience positive outcome from disasters. It was found among cancer patients by Lotfi-kashani, Vaziri, Akbari, and Kazemi-zanjani (2014) that self-efficacy contributed strongly to PTG among the patients. Similarly, Li, Cao, Cao, Wang, and Cui (2012) found among children with congenital disease who are undergoing surgery that self-efficacy is a predictor for PTG.

Resilience provides strong growth outcomes in victims of disasters (Meyer et al., 2019). According to the American Psychological Association (APA), (2014), resilience is 'the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress such as family and relationship problems, serious health problems or workplace and financial stressors'. It is shown that people who are naturally resilient are able to better manage stressful situations in general and traumatic events in particular (Tomaszek, Zdankiewicz-ścigała, Kosson, & Kosieradzki, 2018). It helps the individual to function beyond an expected level. Thus, resilience helps people to grow better after traumatic experiences.

Unfortunately, most disaster researches have largely focused on only the negative/distressing aspect of disasters at the expense of the positive effects. In Africa and Ghana for example, there is little attention given to disaster research. Meanwhile, in Ghana flood disaster has become an annual challenge. This leaves many people dead, displaced and traumatized (Dziwornu & Kugbey, 2015). Thus, it is important to examine both the

negative and the positive effects of disasters among victims and the factors (risk and protective) that facilitate these effects.

1.2 Statement of the Problem

Disasters have both short and long-term debilitating outcomes which may be physical and psychological. The effects of disaster can be exacerbated by risk factors including personal or socio-demographic factors such as personality, and previous traumatic experience, and other external factors such as lack of intervention or support. However, research evidence indicates that the effects of disasters on the individual could be mitigated to a large extent by certain personal and external factors. Some personal factors include self-efficacy, belief in just world and resilience. External factors include professional psychological interventions, social support and religiosity. There is the need for scientific research to establish the risk and protective factors for disaster victims and to guide and enhance intervention policies for victims. Regardless of this need, attention has often been focused on the immediate medical or physical effects of disasters with limited psychological research and attention.

Similarly, the physical outcomes are immediate and more obvious, and they often receive immediate and significant resources and attention with little effort on medium to long-term consequences which are usually psychological in nature. Much the same way, there is limited research on the long-term consequences suffered by disaster victims both globally and in Africa including Ghana. There is even less psychological research on the management and coping with the long-term consequences of disaster. Available anecdotal evidence on this subject suggests that there is limited or no database on victims (either dead or alive) in Ghana, neither is there documentation on intervention efforts aimed at mitigating the long-term effects of disaster. This is in spite of growing evidence that survivors of disasters usually live with dire effects that disrupt their lives. This creates a huge research

gab regarding knowledge on the psychological consequences of disaster on victims and how interventions are determined by such knowledge in Africa especially Ghana.

Globally, studies have explained the negative effects of disasters (Shultz, Neria, Allen, & Espinel, 2013; Walker-springett, Butler, & Adger, 2017). However, how victims deal with, manage and/or avoid the challenges after adversity is worth exploring in detail at specific cultural levels. Studies indicate that inasmuch as several people develop PTD after a disaster experience, several others rather grow and get stronger after they experience disasters (e.g. Smith, Joseph, & Nair, 2011; Zamora et al., 2017).

It is important to investigate the factors that promote growth among victims as well as the factors that trigger distress among victims. In the current study, both protective and risk factors are investigated concurrently among victims who have not received any professional psychological interventions. These victims had to struggle on their own to deal with the negative impacts of the disaster. This will help to understand how individuals navigate the psychological, physical and social processes to adjust to the effects of disasters. The current study also employs a mixed methods approach that presents a better opportunity to understand the factors determining PTD and PTG among victims instead of the single method approach in most studies.

1.3 Aims of the Study

The study aimed to explore the factors that trigger the development of PTD and the factors that militate against PTD in order to promote PTG. In this regard, the role of different protective factors against post disaster distresses and how these factors operate in mitigating the development of the distress were examined. This study also aimed to establish the forms and levels of post disaster distresses among the disaster victims. The study also sought to identify the risk factors associated with the development and maintenance of post disaster distress among disaster victims. Finally, the study sought to understand the story of disaster

victims in Ghana. It explained their lived experiences after disaster and how they have managed to deal with the after effects. These aims are summarized as follows:

1. To understand the lived experiences of victims of disasters in Ghana (how they survived, their strengths)
2. To identify risk factors for the development and/or maintenance of posttraumatic distress among disaster victims
3. To identify protective factors for the development of posttraumatic growth
4. To find out the link between posttraumatic distress and posttraumatic growth among disaster victims

1.4 Rationale for the Study

Insofar as research into disaster needs a drastic effort within the African context, there is the need to drive this move towards the positive angle. There is the need to explore the strength and/or resources capable of protecting victims of disasters in order to create a viable support for them after adversities. Indeed, studies globally have sought answers to the question of what negative effects disasters cause. However, the manner in which people deal with, manage and/or avoid these negative challenges after adversity is a matter worth exploring in detail at specific cultural levels.

It is imperative to develop understanding of the capabilities of people and their quest to develop from challenges. Thus, in disaster research, there is the need for a positive attention rather than negative views only. This study therefore seeks to explore the factors that help victims to better manage or deal with the negative effects of disasters thereby resulting in posttraumatic growth, in addition to understanding the challenges and the risks for such challenges among victims within an African context.

1.5 Significance of the study

Apart from natural disasters, there are other adversities that many people suffer with huge potential for psychological damage. There are several of such vulnerable groups in society who could barely understand what they are going through. Therefore, it is important to capitalize on some core promotive/protective factors that can help with their situation. This study is a purely positive psychological agenda with the goal of establishing the factors that matter most in the face of an adversity for growth.

The current study will explore the prevalence and extent of psychological distresses among victims of disasters in Ghana. Meanwhile, this exploration will be done against the back drop of which factors could impede the incidence and extent of the distresses. By so doing, the study will establish clear relationship between various protective factors against post disaster effects.

Findings of this study will widen understanding of the experiences of disaster victims. It will provide the grounds for better intervention programmes and support from relevant stakeholders.

1.6 Organization of the Thesis

This thesis is organized under five (5) chapters using a mixed method (specifically the concurrent nested mixed methods) approach. In chapter one, the general background of the study is presented. It also presents the problem statement and objectives of the study. The chapter also presents the relevance of the study. Chapter two of the study presents the theoretical basis of the study and review of related studies. Chapter two also contains the specific hypotheses to be tested by the quantitative component of the study and the research questions to be answered by the qualitative component of the study. It also presents the operational definition of terms. In chapter three, the methodology of the study is reported. This includes the philosophical basis of the study, the study approach and ethical

considerations**.** It also presents the procedures for the quantitative and qualitative data collection and data handling. Chapter four is the results section of the study. It consists of the findings of both the qualitative and qualitative studies. Chapter five presents the discussion of the findings of the study, implications of the findings, limitations of the study, recommendations, and conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Disaster research continues to receive theoretical and empirical interest over the years. This has resulted in a good amount of literature on the subject. There are several theoretical foundations explaining the impact of disaster among victims. This chapter reviews some theories that give meaning to both the salutogenic and pathogenic effects of disasters. The chapter also contains a review of empirical studies on disaster and its impacts across the world.

2.1 Theoretical Framework

This study is guided by two fundamental perspectives on the effects of traumatic events. These are the pathogenic perspective and the salutogenic perspective. The pathogenic perspective identifies that traumatic experiences produce distresses collectively called posttraumatic distress in this study (Dekel et al., 2012). The salutogenic perspective of trauma directs attention to the fact that traumatic events produce positive outcomes and psychological experiences among victims (Dekel et al., 2012). These different views have received empirical research and theoretically supported some of which are discussed below in this chapter.

2.1.1 Posttraumatic Distress Theory

The Theory of Shattered Assumption (Janoff-Bulman, 1992)

The Theory of Shattered Assumption is a social cognitive theory developed by Janoff-Bulman in 1992 which explains the relation between individuals' beliefs about the world and their emotional reaction after the experience of trauma (Edmondson et al., 2011). These beliefs or assumptions afford the individual a sense of control and stability.

There are three basic assumptions underlying the Theory of Shattered Assumption. The first assumption is that, the individual believes that the world is predictable or meaningful. Second, the individual believes the world is just/benevolent. Third, the individual believes the self is worthy. This gives the individual a sense of purpose of the world where things are believed to happen for a deserving reason. This also instils a sense of predictability of the world in the individual. They tend to believe that once one is a good person, s/he is insulated from negative events. A sense of control over the world emerges where one feels all will be well through being cautious, and preventive (Hashim, 2016). The second assumption that the world is benevolent makes an individual believe that the world is full of goodness and people are mostly well-meaning. The individual perceives others to be helpful and less harmful (Janoff-Bulman, 1992). The third assumption of the Theory of Shattered Assumption that the self is worthy accords the individual a good sense of self (i.e. self-worth). When this belief about the self as positive and moral is held and by staying so and responding to the world's goodness and justice, negativity becomes impossibility (Hashim, 2016).

These assumptions of the theory indicate that people perceive the world and people in it around them to be reliable and well-meaning. Thus, as much as an individual behaves rightly, they must not be stricken with adversities. However, these assumptions about the world and the self can be significantly contradicted and challenged by events in the same world around the person. Events such as disasters that are unpredictable often possess the highest potential of thwarting the individual's assumptions (Hashim, 2016). According to the theory, the assumption of living in a world that is supposed to be harmless as far as one behaves appropriately becomes defeated when disasters occur without an individual's fault. This shatters the very core beliefs held about the world, thereby producing a feeling of

helplessness and creating a conflict within one's beliefs and the realities of the world (Edmondson et al., 2011).

According to Janoff-Bulman (1992) and Nygaard and Heir (2012), people with high positive assumptions about the world suffer the greatest distress especially on their first traumatic encounters. They are however said to recover rather quickly. This is because people with previous traumatic encounters experience more post traumatic distress because they might not have recovered fully from the previous effects before a new trauma may occur and not necessarily because of their assumptive world view (Resick, 2001). Thus, a persons with a history of traumatic experiences will recover slower than people of first time traumatic experience.

In effect, according to the Theory of Shattered Assumption, posttraumatic distress (PTD) such as PTSD emanates from the hopelessness felt due to the distortion and shattering of one's original assumptions about the world causing fear, worry, intrusive thoughts and emotional breakdown.

It is however argued that Janoff-Bulman's retrospective self-report data in developing the theory may be problematic and suggested that data could have been a prospective one (Mills, 2010). For this reason Mills (2010) conducted a prospective study and realised that trauma was not related with peoples assumptions about the world in general.

The Emotional Processing Theory (Foa & Kozak, 1986)

Foa and Kozak (1986) developed the Emotional Processing Theory (EPT) in an attempt to unify the explanation and treatment of anxiety and related disorders. However, the theory has been extended to challenges of victims following traumatic experiences.

The main tenet of the theory is that, people develop fear when cognitive networks related to the fear stimulus get activated and when a meaning of danger or threat is assigned to the

stimulus. A prolonged fear produces a pathological cognitive structure or schema that reinforces fear and disruptive behaviours such as avoidance, escape and dissociation. According to the theory, engaging in such behaviours disallows people from a constant contact with the fear stimulus so as to disconfirm the 'danger meaning' they assign to the stimulus. The experience of this fear produces physiological arousal in addition to the disruptive behaviours that represent symptoms of PTD. A wide range of stimulus tends to activate the fear structure. Therefore, people with anxiety problems such as those occurring after traumatic experiences tend to view the world as generally dangerous and themselves as incompetent. The sense of self-incompetence is also promoted when people imagine how they acted during the trauma. These beliefs further strengthen the pathological cognitive structure and exacerbate posttraumatic symptoms such as memory fragmentation and disorganisation.

Like the theory of shattered assumptions, Foa and Kozak (1986) explain that PTD and associated symptoms are significantly influenced by people's pre-existing perception about how safe or unsafe the world is and their personal competency or incompetency. They argue that, trauma violates an individual's perception of the safety of the world and strengthens the belief about self-incompetence.

The theory indicates through the work of Foa and McNally (1996) that through exposure, usually through prolonged exposure therapy a parallel non-pathological network/structure is formed. This becomes strengthened over time at the expense of the pathological one. This suggests that, the pathological structures can be rejuvenated after sometime if an individual reverts to dreading similar fear stimuli. This therefore explains why anxiety problems such as PTSD could be developed long after a traumatic experience.

However, Foa and Cahill (2001) explained that people experience 'natural recovery' where people who experience high levels of PTD symptoms immediately after trauma may show

significant decline in such symptoms over time. According to Foa and Cahill (2001), natural recovery occurs through constant emotional processing of traumatic memories. This may be done through the utilisation of support from others and engagement of thoughts and felling about the trauma. Failure to do so may result in chronic PTD.

2.1.2 Posttraumatic Growth Theory

The Organismic Valuing (OV) Theory of Growth (Joseph & Linley, 2005)

The OV theory is grounded in the original Rogerian concept of organismic valuing process. According to this theory, trauma victims engage in three possible cognitive processes to psychologically resolve their traumatic experience including; 1) they assimilate the new experience and this leads them back to a pre-trauma baseline which disposes them to retraumatisation, 2) they accommodate the new experience negatively, leading to distress, and 3) they accommodate the new experience positively and this results in growth because they have resolved the new experience and have developed a new worldview in light of the current traumatic experience. This means if a disaster does not kill the individual, then it has the tendency to make the individual stronger.

The organismic valuing process is a humanistic perspective about how people view life and what they want from it. It maintains that individuals know what is right for them and that they will work towards their own good in order to progress (Joseph, 2009; Joseph & Linley, 2006). Owning to its background, this concept posits that people are innately disposed to seeking actualization, a position that agrees with Abraham Maslow's idea that confrontation with tragedies elicits the quest to self-actualise (Maslow, 1955). This suggests that people are naturally more likely to look for benefits in any circumstance (Sheldon, Jarndt, & Houser-marko, 2003).

The Organismic Valuing (OV) Theory of Growth is a fall out from several ancient ideologies on how human beings have innately longed for growth and to stay stronger so long as they have life.

According to this theory, when people experience disaster/trauma, they process the trauma related information to either confirm or disconfirm their own views about the world (Joseph, 2009; Wadey, Podlog, Galli, & Mellalieu, 2015). The OV theory indicates that traumatic experiences defeat an individual's perceptions about the world. The individual must therefore either assimilate or accommodate the current information (Wadey et al., 2015). However, the tendency to accommodate or assimilate the current traumatic information depends on the relation between their existing views about the world and the current traumatic information. This creates an assimilation-accommodation task for the victim where information about the trauma might have to be integrated into existing memory (assimilation) or the existing memory adjusted properly to accommodate the new traumatic information (Joseph & Linley, 2006) *(This is depicted in Figure 2.1 below)*. Since growth is principally about forming new views about the world, adjusting one's existing memory or assumptions about the world to accommodate the new traumatic experience/information facilitates growth (Joseph & Linley, 2006).

According to Howells and Fletcher (2015), accommodating the current traumatic information forms the basis for growth because whether positive or negative there is the formation of a new assumption about the world. However, Joseph and Linley (2006) argued that the formation of new positive assumptions indicates a move from a pre-disaster state to a healthy posttraumatic state that promotes growth. The important issue is that the victim's perception or assumption has to change (Janoff-Bulman, 1992). For example, for a victim of a building collapse to develop posttraumatic growth, s/he may have to avoid forcing the incidence into her existing schema of assumptions like 'but the world should be fair, why is

this happening to me', and rather modify her existing schema to accommodate the new event such as beginning to think that the world is not predictable, anything can happen at any time and that there is the need to take precaution and be personally strong.

According to Joseph and Linley (2006), this growth is facilitated by supportive social environment where the individual may obtain basic human need such as autonomy, relatedness and competence. Thus, adversities will create the room for new models about the world and a new sense to exist and pursue actualization (Maslow, 1955). Therefore, growth after trauma as against distress is a matter of utilizing the traumatic event to facilitate a renewed sense of self, duty and worth. The factors available against PTD in one's life must be duly utilized in order to grow. Therefore, these factors are designated as being protective against PTD.

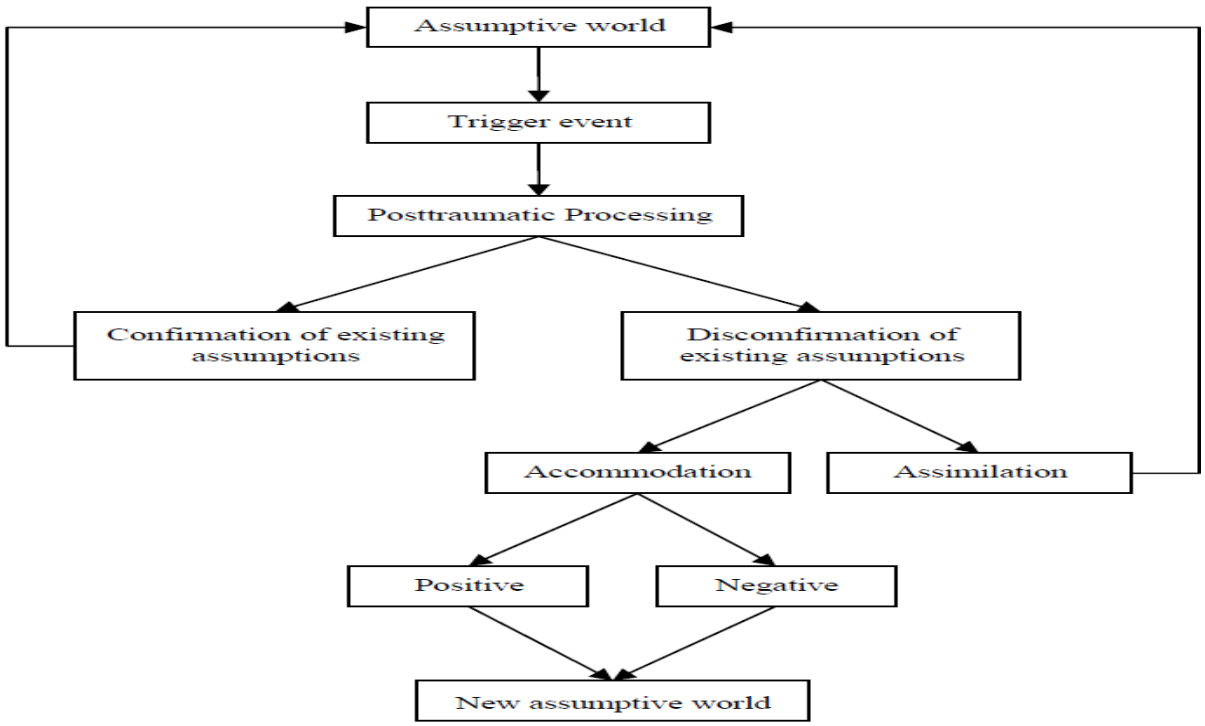

Fig. 2.1:
Organismic valuing theory of growth following adversity. Adapted from Joseph & Linley, 2005

In the figure 2.1 above, an individual's assumptive view (view about the world) is tempered with by a traumatic event. This event is then processed by the individual by either

assimilating or accommodating into the existing schema of views about the world. Assimilation returns the individual to a pre-trauma state whereas accommodation results in a new world view. A positive accommodation leads to posttraumatic growth.

2.2 Review of Related Studies

There are several studies on the nature and the impact of disaster. Some of these studies are reviewed in this section. The literature review is organised to present the impacts of disasters, posttraumatic distress (PTD) and risk factors, posttraumatic growth (PTG) and protective factors and the link between PTD and PTG.

2.2.1 The Negative Impact of Disaster

Disasters have commonly affected lives directly or indirectly in areas where they occur. The number of lives affected by disasters continues to increase year after year (Dolman et al., 2018; United Nations, 2015; Guha-sapir, Vos, & Below, 2011) as the incidence of disasters continue to increase. The United Nations' 2015 disaster analysis indicated that billions of lives are affected in various ways with serious economic impact over the past decade due to disasters. Indeed, all these lives affected suffer the effects of disasters in diverse forms. Communities and economies suffer adversely. Some of these effects are reviewed below.

Physical Impact of Disaster

Several physical, economic and political effects of disasters have been documented. Some of these effects are direct or indirect, immediate or delayed. Whichever way, they present significant impact on the individual and the community at large. Ultimately, the survival of victims in the midst of all these effects of the disaster tends to be grossly affected leading to post disaster distress.

Du, Fitzgerald, Clark, and Hou (2010) recorded some of the physical impacts of flood disasters especially to include injuries, disease epidemics, snake bites, and loss of

infrastructure. In their attempt to investigate the circumstances leading to death during flood disasters, Jonkman and Kelman (2005) reported that about two-third of the deaths are through drowning and these are often men and high risk taking individuals. The Emergency Events Database (EM-DAT) (2015) disaster report shows that floods occur more in Africa and Asia than in other continents and that the global incidence of floods will increase over the years. The report indicated that billions of people are adversely affected by weather-related disasters annually with thousands of lives lost across the world due to floods, storms and related disasters.

According to a study by Paul, Sharif, and Crawford (2018) based on data from 1959 to 2016 in Texas, fatalities recorded from hydrometeorological disasters over the 58year period show a consistent increase in statistics. According to their study, the fatalities are twice as higher among males than in females. They also found that the adult population is the high risk group. Losing loved ones during disasters increases the psychological impacts of survivors (Coker et al., 2006; Dewaraja & Kawamura, 2006). The more disasters occur, the more lives are lost (Coker et al., 2006; Neuner, Schauer, Catani, Ruf, & Elbert, 2007) and survivors will in turn be affected. Thus, many lives have been lost in Ghana and relations of these people and many other who witnessed their death may be grossly bedevilled with mental health complications.

Noe et al. (2016) conducted a descriptive study of the nature of illnesses and injuries the American Red Cross treated after hurricanes Gustav and Ike. They reported in the study that the major reason for treatments was pains. Survivors of disasters may suffer varying forms and degrees of injuries (Lindell & Prater, 2004). In the case of explosions and wildfires, there are usually burns, bruises, deformations and loss of body parts. Floods may also present injuries from bottle and stick pricks, bites and broken bones. These loses have implications for psychological experiences among the victims. Frankenberg et al. (2008)

found that in a tsunami community in Indonesia, victims who experience injuries tend to suffer high levels of psychological disruptions.

Disasters affect human nutrition and growth as well. Among children in rural India, Rodriguez-llanes, Ranjan-dash, Degomme, Mukhopadhyay, and Guha-sapir (2011) found that in an area affected by flood disaster, the children are significantly stunted than their non-flooded area cohorts. The EM-DAT (2015) report corroborates this finding that floods often wash away farms thereby resulting in food shortage and famine.

There has been massive property loss and/or damage due to disasters for decades (Lindell & Prater, 2004). A direct effect of this is the high level of homelessness that follows the incidences of disasters (Paidakaki, 2012). Typically, disasters affect buildings, roads, bridges and commercial centres. This affects livelihoods and people's mental health (Frankenberg et al., 2008).

In the general population, natural disasters have been reported to result in several infectious diseases some of which include malaria, typhoid fever, respiratory infections, viral hepatitis, and meningitis (Kouadio, Aljunid, Kamigaki, Hammad, & Oshitani, 2012). Vachiramon, Busaracome, Chongtrakool, and Puavilai (2016) studied 96 victims of flood in Thailand who presented series of skin infections and found that majority of the victims developed eczema following the disaster. Other victims had itches and skin macerations in their toes colonized with various microorganisms. These physical and usually acute conditions further increase the psychological impacts the victims' experience.

Because disaster affects human lives and tempers significantly with society and national assets, they have been deemed to present economic cost or impacts (Ladds, Keating, Handmer, & Magee, 2017). Ademola, Adebukola, Adeola, Cajetan, and Christiana (2016) found in a study in Nigeria that disasters significantly affect dwelling units, household assets

and children's schooling. Access to utilities such as water and electricity was also heavily challenged. They found that victims spent huge amounts on the average to replace their losses with rural folks and males spending more. They therefore recommended an insurance cover and government support for victims of such disasters. The post disaster expenditure can produce agony and distress as victims may have to recount their losses and replace them.

Economic effects of Disasters

The economic impact of disasters can be at the individual or national levels. The individuals affected might have incurred significant financial, and property losses and may have to spend so much to recover. The lack of personal economic ability could be a source of distress for the victims. At the national level, a lot would be needed to assist individuals, and communities affected by the disaster. When the needed national support is not readily delivered, victims may suffer heightened levels of distress, feeling abandoned, and anxious of the how to face the future.

Klomp (2016) studied how large-scale disaster can affect the economic growth of countries. The study used satellite data due to poor data quality on GDP of most economies that record disasters. It was found that climatic and hydrological disasters reduce the luminosity in emerging/developing economies and geophysical and meteorological disasters negatively affect the intensity of light in industrialized economies. The study revealed that the impact of a disaster depends on the nature (scope and size), the location of the disaster, the financial status and the quality of political institutions of the country involved. Again, Klomp and Valckx (2014) performed a meta-analysis of studies that examined the impact of disasters on economy growth. Following an extensive evaluation they found that there is a negative impact of natural disasters on economic growth and this tended to increase over time. They indicated that, this impact is most significant in developing countries.

Brei, Mohan, and Strobl (2018) studied how disasters especially hurricanes affect the banking sector in the Eastern Caribbean. In their study, they observed that when hurricanes occur, there are less investments and high deposit withdrawals from the banks. According to them, this results in negative funding shock which forces banks to fall on their liquid assets and that prevent funding for post disaster recovery interventions.

Pfurtscheller (2014) analysed both quantitative and qualitative findings on the regional losses due to disasters. They revealed that disasters cause a significant reduction in gross regional products where for example, disruptions in traffic networks result in a decline in regional economies. Generally, there appears to be consensus in the literature regarding how detrimental disasters can be to economies. These effects include human losses which eventually affect manpower, physical infrastructural damages, productivity, and trade. There are also non-market losses such as damage to historic sites, recreation, relevant cultural assets, and others that affect the end user in the economy (Cochrane, 2004).

Political effects of Disasters

Disasters also present serious political effects that can further compound the impact on the individual victim, the country and/or the world at large. In Ghana for example, at the local assembly levels people express disgust for political leaders because they feel that they have not done their work. This affects voting, contribution to development and nationalism.

There is a changing trend in findings regarding the political effects of disasters in recent times. In the past however, disaster analysts/researchers indicated that disaster produce significant political impact by causing instability, distrust and related outcomes. This has be attributed to scarcity of basic resources among affected communities after disasters especially in developing countries (Brancati, 2007). Brancati (2007) studied the impact of earthquakes on intrastate conflict by examining 185 countries between 1975 and 2002 and found that disasters increase the probability of conflicts. This probability was indicated to

be even higher for countries that had pre-existing conflicts, and poor domestic abilities. Omelicheva (2011) also found that disasters pose marginal conflict threats to states but added that where there are pre-existing challenges and crises in a particular country, the impact of disaster politically is easily felt. Thus, disasters may only serve as a catalyst (Raleigh, 2010).

Xu, Wang, Shen, Ouyang, and Tu (2016) noted that apart from the physical and mental health challenges associated with disasters, they trigger social conflicts. Fisher (2010) found in a qualitative study among post-tsunami victims in Sri Lanka that even though there may be an already existing gender-based violence in the society, violence against women was exacerbated by the disaster. Berrebi & Ostwald (2018) also reported that between the periods of 1970 and 2007 across 167 countries, disasters have shown strong link with terrorism and fatalities. They found that there is an immediate increase in transnational terrorism following disasters whereas domestic terrorism incidences take longer to occur because the public may need time to recover and access interventions instituted by government.

In the United States Institute of Peace Special Report by Tipson (2013), it was documented that disasters in different parts of the world generated political unrests and disturbed national peace. It indicated that disasters expose government incompetence and indifferences and social inequalities, thereby generating political oppositions. For example, the report revealed that the current state of Bangladesh came into being as a result of poor Western Pakistan government intervention during a cyclone which hit Eastern Pakistan in 1970. The report also mentioned that there were uprisings in Arab states following droughts in 2010 in Russia. This was buttressed by Johnstone and Mazo (2011) that even though threats of such conflicts were always observed within the Arab states, they became apparent during the time of the droughts. They described disasters as ‘threat multipliers’ where even though they may

not by themselves spark conflict, they fuel it. The conflicts that may emanate as a result of disasters may also further traumatise individuals who may witness them.

It appears that the impact of disasters on political stability often remain subtle. When deeper search and interrogation is conducted, the true state of affair gets revealed. There seems to be some level of connection between some forms of political challenges and disasters in states with frequent disasters across the literature. The instability generated by disasters will further produce disasters especially man-made ones such as riots, conflicts that will leave many people traumatized.

In summary, the literature has ample evidence that disasters do not only affect the individual but families and societies and nations at large. This includes economic impacts such as scarcity of utilities, consumables and poor GDP (Klomp, 2016; Ladds et al., 2017), political impact such as rebellious activities and terrorist intentions (Brancati, 2007) and physical challenges such as destruction of properties, farms and disease epidemics (Du et al., 2010). These evidences in the literature show the breath of disaster impacts, making it imperative for an increased interest in disaster research in order to avert the challenges that follow them among victims and communities at large

2.2.2 Disasters and Posttraumatic Distress

Researchers have broadly pointed out that disaster victims most likely suffer posttraumatic stress disorder (PTSD) (e.g. Chung & Kim, 2010; Dewaraja & Kawamura, 2006; Mason, Andrews, & Upton, 2010; Neuner et al., 2007). According to Haqqi (2006), people who experience disasters exhibit several symptoms including anxiety, restlessness and dizziness. Griensven et al., (2006) studied the prevalence of the symptoms the PTSD, depression and anxiety among tsunami victims in southern Thailand. In their multistage, cluster population-based mental health survey using displaced and non-displaced victims, they found that of the 371 displaced victims, 12% experienced symptoms of PTSD, 37% experienced anxiety

symptoms and 30% reported symptoms of depression. For non-displaced victims, out of the 322 participants used, there were 7%, 30% and 21% for PTSD, anxiety and depression symptoms respectively. This indicates that generally, disaster populations experience more posttraumatic symptoms compared to their non-disaster counterparts. This point was further supported by the a study among victims of the September, 9 attack in New York by Person, Tracy, and Galea (2006) to find the prevalence of depression and related factors six months after the disaster. They found that 9.4% of the 2700 participants show higher probability of major depression. Similarly, Hussain, Weisaeth, and Heir (2011) studied a sample of 2004 tsunami victims from Norway 2.5years after the disaster and found that 28.6% of the victims had developed major depressive disorder among other disorder such as social anxiety disorder, specific phobia, dysthymic disorder, agoraphobia and PTSD.

Suicadality is an impact of disaster that reflects the strong psychological effects disasters produce among survivors (Kolves, Kolves, & De Leo, 2013). Orui and Harada (2014) noted an increase in the suicide rate among females during the first seven months after the 2011 Great East Japan Earthquake. Guo et al. (2017) also found in a cross-sectional survey using 1369 victims that eight years after the Wenchuan earthquake in China, 9.1%, 2.9% and 3.3% of the participants reported suicidal ideation, plan and attempts respectively. This was even strengthened by experiences of PTSD and depressive symptoms.

Jones, Ribbe, Cunningham, Weddle, and Langley (2002) followed up on fire disaster victims six weeks after the disaster in the United States of America (USA). They used standard assessment procedures on victims they classified as high loss and low loss victims across children, adolescents and their children. Their findings indicated that victims in general reported PTSD and there was a strong positive correlation between the levels of PTSD among children and their parents. However, victims with high losses experienced higher levels of PTSD compared to those with low losses.

Fang and Chung (2019) studied the relationship between PTSD and psychiatric co-morbidities among university students in China. It was found in their study that, PTSD is associated with a significantly rise in psychiatric co-morbidities following disasters. This association was found to be mediated by cognitive distortions and alexithymia. Gargano, Li, Millien, Alper, and Brackbill (2019) reported that disaster present long-term psychological effect for victims. In their study, they examined the role of a previous disaster (Hurricane Sandy) in the development of PTSD symptoms among 9/11 disaster. It was found that the previous disaster significantly predicted PTSD in victims of current disaster.

Again, Tapsell (2000) qualitatively studied impact of flood on victims of the 1998 flood disaster in the United Kingdom (UK) two years after the disaster. Prominently, their study found that victim expressed anxiety about future flooding. Victims also reported loss of confidence (distrust) in authorities responsible for handling such events of disaster. From the foregoing, the literature suggest that people who experience trauma either from natural or man-made disasters are predisposed to psychological distresses by virtue of their exposure to the trauma. This fact is not limited to a certain category of victims. Regardless of protective factors, disasters pose posttraumatic challenges for victims.

The above findings concur with Mason, Andrews, and Upton (2010) who assessed flood victims in the UK and found symptoms of PTSD, Depression and anxiety. Their study also reported poor coping strategies among victims who typically used detached, avoidant and rational coping styles.

Neria, Nandi, and Galea (2008) conducted a systematic review of 284 studies published on disaster and PTSD. Their study identified three kinds of disaster namely natural disasters, technological disasters and man-made disasters. They found that PTSD is there is a substantial burden of PTSD among victims of both man-made and natural disasters across the globe since 1980. Similarly, Dogan (2011) found among adolescents 13 months after an

earthquake in Turkey in 1999 that 76% of the victims experienced moderate to severe levels of PTSD symptoms. They also observed that adolescent victims showed an increase in behavior problems.

Also, Wilson-Genderson, Heid, and Pruchno (2018) reported that different types of disasters produce psychological distresses among victims. They however realised that an individual's emotional reactions during the disaster affects the level of distress that is experienced. This means that there are some factors that are risk agents for the development or exacerbation of posttraumatic distresses.

The negative impacts of disaster have been well documented. However, most of these studies reviewed above used quantitative methods only. This means that very detailed information that could be obtained through qualitative approaches is often lost in the study of disaster and impacts they have on victims. There is the need to investigate the adaptation processes among disaster victims using in-depth qualitative interview/approaches in order to establish detailed understanding of the factors. Meanwhile, there are several factors that influence the development and maintenance of the distress levels among the victims. Some of these factors are reviewed below.

2.2.3 Risk Factors for Post Disaster Distress

In a review conducted by Neria et al. (2008), they found that several factors are related to posttraumatic distress among survivors of disasters. They found such factors as lack of social support, severity of loss in the disaster, dear death experiences in the disaster, injuries and witnessing deaths in the disaster. Indeed, as indicated above that that social support significantly predicts PTG, it is understandable that Neria et al. (2008) reported that a lack is social support influences the level of post disaster distress.

One prominent risk factor for PTD is the victim's previous traumatic history (Benjet, Borges, & Medina-mora, 2010; Breslau, 2002). Seng et al. (2013) conducted a prospective study comparing a group of mothers maltreated in childhood with a non-maltreated in childhood group to ascertain their level of PTSD, postpartum depression and wellbeing. They observed that women who were maltreated in their childhood experienced more PTSD, depression and poor wellbeing in their adulthood compared to those who were not maltreated. Studies have suggested that people who experienced trauma in early lifetime become dependent on substances in adult life (Brady & Back, 2012; Schuck & Spatz, 2001; Widom, White, Czaja, & Marmorstein, 2007). Such early lifetime experiences are noted by Enoch (2011) to alter neural networks thereby inducing an enduring psychologically unattractive behaviours. Enoch (2011) reported that the experience of trauma in the early years of life results in drinking problems in adolescence and early adulthood. Again (Kendler et al., 2000) indicated that women who experienced early childhood sexual abuse are at higher risk of developing psychiatric disorders. Their research using 1411 adult female twins therefore found that childhood sexual abuse is associated with several adult psychopathologies including bulimia and alcohol and other drug dependencies (Kendler et al., 2000).

Anda et al. (2006) studied a sample of 17,337 adults who experienced several early lifetime adversities such as witnessing domestic violence, abuse and household dysfunction. They observed that these adults showed increase levels of somatic, affective, aggressive, memory, substance abuse, affective and sexual problems in their lives. Binelli et al. (2012) as well found among a sample of 571 Spanish University students in a cross-sectional study that there is a high positive relationship between family violence experienced in childhood and social anxiety problems in adulthood. However, their study observed no significant relationship between other traumatic childhood experiences such as loss of a close relation,

an emotional, physical or sexual abuse and such social anxiety problems (Binelli et al., 2012). Similarly, it was found among such early trauma victims that they have smaller social networks and poorer close relationships (Ford, Clark, & Stansfeld, 2011). These victims also suffer psychotic disorders and ADHD (Björkenstam, Burström, Vinnerljung, & Kosidou, 2016).

In a 45 year prospective study, Clark, Caldwell, Power, and Stansfeld (2010) established the relationship between the experience of previews early childhood adverse events and psychopathology across the lifespan. They noticed that having adjusted for socioeconomic factors, childhood traumatic experiences associated with psychopathology such as anxiety, mood and affective disorders through adolescence, early and mid-adulthood without attenuation. In this regard, Collishaw et al. (2007) reported in their study that only a few victims of previews traumatic experiences did not show mental health challenges as a result of quality adult love relationship, parental care and personality. Their study actually revealed an increase in psychiatric conditions among adolescents and adults with past traumatic experiences (Collishaw et al., 2007).

Personality factors play an important role in how individuals adjust to adverse experiences. Neuroticism has typically been demonstrated to be impactful in the development of posttraumatic distress among victims of disasters (Breslau & Schultz, 2013; Miller, 2004). According to Ogle, Siegler, Beckham, and Rubin (2017), the mechanism by which neuroticism fosters PTD is that it magnifies the centrality availability and the emotionality of trauma memories. They arrived at this conclusion in their longitudinal study of adults with traumatic histories or varied intensities. They found that individuals with high neuroticism scores about three decades apart in young to middle adulthood reported traumatic memories accompanied by ‘more intense physiological reactions, more frequent

involuntary rehearsal, and greater perceived centrality to identity in older adulthood' (Ogle et al., 2017).

Lundell et al. (2017) observed in a Swedish cohort study of post abortion psychological adjustment that comparatively, women who experience higher levels of PTSD and related symptoms scored higher on personality traits related to neuroticism such as somatic trait anxiety, psychic trait anxiety, stress susceptibility and embitterment. This finding concurs with Jakši et al. (2012) whose systematic review of the literature reveals that PTD is positively associated with neuroticism and related personality traits such as negative emotionality, harm avoidance, novelty-seeking, self-transcendence, trait hostility/anger and trait anxiety.

Sheikhbardsiri et al. (2015) also reported that among emergency medical service personnel who frequently face distressing work experiences, most of them that develop PTSD recorded higher levels of conscientiousness and neuroticism. Breslau and Schultz (2013) concluded from a prospective study on the role of neuroticism in the development of PTSD that indeed neuroticism is a major factor in the development of PTSD as a response to traumatic experiences. This was conducted using a large sample of 1007 participants who were observed at baseline and followed up on after three, five and ten years later. Their study found that about 5% of participants who had relative risks of PTSD after traumatic experiences in the 10year follow up had higher neuroticism baseline scores than the others (Breslau & Schultz, 2013).

Vujicic and Randelovic (2017) examined the predictive role of personality traits in depression, anxiety and stress among secondary school students using the five factor personality traits. They found out that neuroticism was the largest predictor for all of depression, anxiety and stress among the students

There have been several taxonomies of personality traits. However, the Big Five has featured prominently in most trauma studies. Is has also been common to find across the literature that most of the various classifications are related and have produced similar findings. From the foregoing, neuroticism appears to be a stronger predictor of PTD among most traumatised victims.

Cultural factors especially in terms of how relate and see themselves in relation to others matter in post disaster adjustment among victims. The concept of self-construal, composing of interdependence and independence has shown some link with post disaster struggles or adjustment. For example, Mordeno et al. (2016) identified that independent self-construal is highly related with all the domains of PTSD enumerated by the fifth edition of the Diagnostic and Statistical Manual (DSM). It has been argued that when people refuse to express their emotions to their social relations, they tend to experience higher psychological distress (Nimmagadda & Pallassana, 2000). This was clarified by Mordeno et al. (2016) to mean that when traumatic experiences are not properly expressed such as avoiding to seek help or not interacting with other people about the experience meaningfully, it will lead to elated trauma-related intrusive thoughts, avoidance of reminders and high arousal states.

Jobson and Kearney (2006) established that in cultures where people utilise self-centred trauma memories, i.e. focusing on themselves on with regards to the traumatic event, they suffer more posttraumatic challenges compared to those who define their trauma in relation to others around them. This was demonstrated among Australians and Asians who are independent and interdependent respectively (Jobson & Kearney, 2006). Jobson and Kearney (2009) conducted a study to assess the impact of culture on negative cognitive appraisal among victims of traumatic experiences with and without PTSD. Their study revealed that victims with PTSD from independent cultures were generally higher on symptoms such as mental defeat, alienation and change and less control strategies compared

to those without PTSD. However, in interdependent cultures, there were no differences in the same symptoms except for alienation for both those with and those without PTSD. This agrees with their 2008 findings where individuals from independent cultures expressed more trauma-related cognitive challenges than those from interdependent cultures (Jobson & Kearney, 2008).

The expression of depression symptoms has also been associated with cultural factors (Karasz, 2005). Shafi and Shafi (2014) argue that the cultural orientation of an individual reflects in how symptoms are presented and how the individual appreciates the condition. These differences have been noted in how different cultures express their depression and related features in terms of language (Loveys, Torrez, Fine, Moriarty, & Coppersmith, 2018). Similarly, these differences have been shown for other psychological distresses such as anxiety disorders (Hofmann & Hinton, 2014; Lewis-ferna et al., 2011) and suicide (Lester, 2008).

2.2.4 Disaster and Positive Outcome

Even though disasters are most likely to produce distresses, there are some positive outcomes that can result from them. A study by Klasen et al. (2017) provides a significant insight for an understanding into the positive role of disasters. In their study, Klasen et al. (2017) identified among former Ugandan child soldiers that despite their severe exposure to trauma, a good percentage of the victims developed posttraumatic resilience. In this regard, they showed no symptoms of PTSD, depression and related disorders. They were also less prone to domestic violence, guilt and revenge. This former child soldiers were reported to have wanted to support society, work and be responsible.

In the study of people forcibly relocated from their homes in the wake of political activities, Nuttman-shwartz, Dekel, and Tuval-mashiach (2011) found that victims with the adversity who exhibited low PTSD exhibited high PTG. This is a signal that when disaster help build

positive outcomes, the negativity associated with it is low. This emphasizes the need for building on the factors for resilience and/or growth following adversity. For instance, Bell and John (2019) observed that when victims of a tragedy use positive spiritual coping, they gain positive spiritual outcomes and this can build resilience and/or growth.

As part of several findings, Macksoud and Aber (1996) observed in their study of victims of war that children who were separated from their parents and witnessed violence reported a more planful lives. They were also found to live a more prosocial life. Their study pointed these positive outcomes of the tragedy regardless of the fact that some of their participants reported other adverse outcomes of the trauma.

Lev-wiesel, Goldblatt, Eisikovits, and Admi (2009) studied a group of nurses and social workers during the second Lebanon-Israel war in 2006. The study found that nurses showed higher PTG compared to social workers. Interestingly, their study indicated that personal resources which they termed as potency helped reduced vicarious traumatization among the participants whereas peri-traumatic dissociation increases PTG.

Clearly, the literature provides the indication that adversity or traumatic events can lead to growth in some aspects of an individual. This can make the person psychological and socially better or stronger. This is the crux of the positive psychological argument for this current research.

2.2.5 Factors promoting Positive Disaster Outcomes / PTG

Several factors influence how disaster victims rise above the negative impact they suffered. These factors are reviewed under personal/demographic, psychological, and social factors under this section.

Personal/demographic factors affecting PTG

It has also been noted that some demographic factors such as gender (Akbar & Witruk, 2016; Vishnevsky et al., 2010), age (Milam, Ritt-olson, & Unger, 2004; Vloet, Vloet, & Bürger, 2017) and economic abilities (Cormio, Muzzatti, Romito, Mattioli, & Annunziata, 2017; Teodorescu et al., 2012) assist with positive impacts after disaster experiences.

In a meta-analysis of 70 studies by Vishnevsky et al. (2010), they observed that gender has a small to moderate impact on PTG. Particularly, they observed that females reported more PTG than males. This relationship was found to be moderated by age. Helgeson, Reynolds, and Tomich (2006) also conducted a meta-analysis of 87 studies to ascertain among other things the gender differences in PTG among victims of traumatic experiences. They found that there is indeed a difference in PTG among males and females with females reporting higher PTG than males. Similarly, Teixeira, Grac, and Pereira (2013) found in their study on the factors contributing to PTG among cancer patients that there is a significant gender difference among the patients in all aspects of PTG. In this view, the literature points to the fact that as females experience higher levels of PTD after a traumatic experience on one breadth (Birkeland, Blix, Solberg, & Heir, 2017; Macgregor, Clouser, Mayo, & Galarneau, 2017; Olff, 2017; Olff, Langeland, Draijer, & Gersons, 2007), they also may be experiencing a higher level of PTG on the other (Jin, Xu, Liu, & Liu, 2014; Teixeira et al., 2013).

Age is another personal factor that has implication for how people endure the after effects of adversities particularly in terms of PTG among disaster victims (Xu & Liao, 2011). According to Patrick and Henrie (2016), there is however a complexity attached to the attempt to establish how age influences PTG. They point to the fact that as people age, they experience more adversities that affect their entire life and coping methods. For example, Lowe, Manove, and Rhodes (2013) assessed the levels of PTD and PTG among hurricane

victims and observed that older victims experienced higher PTG and higher PTD than their younger counterparts. On the contrary, Patrick and Henrie (2016), found that among trauma victim older adults reported less grief than middle adults, however its impact on the level of PTG was minimal.

However, Milam, Ritt-olson, and Unger (2004) found in a study of PTG among an adolescent population that age significantly affects how victims grow after the experience of a disaster. Similarly, Cormio et al. (2017) studied the association between clinical, demographic variables, social support and PTG among cancer patients in Italy. They found that age as well as other demographic factors like employment, education significantly predicted PTG among the patients.

The findings of Cormio et al. (2017) regarding the impact of employment on PTG creates an impression that socio-economic factors must be important in how disaster victims progress through the hard after-disaster times. Kunst (2017) also found that most victims who experienced higher levels of PTD were those who were without employments.

Psychological factors that Promote PTG

There are also a number of psychological factors that predict PTG following traumatic experience. Some of these factors discussed under this section include self-esteem, self-efficacy, adaptation, resilience and self-control.

Self-efficacy has been identified to facilitate posttraumatic growth (Mazor, Gelkopf, & Roe, 2018). According to Benight and Bandura (2004), self-efficacy is the central factor that determines how people feel they can adapt to their environment and situations. It is the belief in one's ability or power to gain control and achieve results and this occurs through motivational, cognitive and decisional processes (Benight & Bandura, 2004). Nygaard and Heir (2012) posit that self-efficacy is a potent factor for posttraumatic recovery. Thus, it

creates a sense of self-reliance and control. Their work on a sample of 617 Norwegians tsunami victims indicated that at least in the short term, self-efficacy is associated with lower levels of posttraumatic distress (Nygaard & Heir, 2012). This finding correspond with MacEachron and Gustavsson (2012) who also found among war veterans that self-efficacy correlated negatively with their PTD levels.

A study by Cieslak et al. (2009) among HIV patients who survived Hurricane Katrina tested Benight and Bandura's (2004) model that self-efficacy predicts PTG. The results of their study showed that indeed, an individual's self-efficacy positively correlated with their PTG. In a systematic review of the literature on the relationship between self-efficacy and psychological outcomes, Luszczynska, Benight and Cieslak (2009) found out that most studies reveal a significant association between self-efficacy and psychological health where self-efficacy was linked to lower PTSD levels and better somatic health.

It has also been found that resilience, which is one's ability to sustain a traumatic experience without experiencing posttraumatic distress (Bonanno, 2004) promotes growth among traumatic victims. Meanwhile, the theoretical stance on the difference between resilience and PTG has been confusing with some equating the two constructs (Tedeschi, Calhoun, & Cann, 2007). Hobfoll et al. (2007) for instance view PTG to be equal or superior to resilience. But (Westphal & Bonanno, 2007) contend that people are resilient in the face of traumatic events and that aids their growth following the trauma.

There is a strong association between resilience and PTG within the literature. For example, Mahdi, Prihadi and Hashim (2014) observed among a sample of university students in Iraq that resilience has a significant influence on the development of PTG. Waysman, Schwanwald, and Solomon (2001) also found that hardiness among prisoners of war and veterans impacted the long term positive and negative changes following traumatic experiences. Again, Yu et al. (2014) found in their study that certain factors facilitate PTG

and not much is known about them. Among such factors, they examined the relationship between social support, positive coping and resilience and PTG and found that all these factors significantly and positively related with PTG.

Bensimon (2012) found in a study that correlated trait resilience and PTG among individuals with varied traumatic levels. It was found in that study that there is a significantly associated between resilience and PTG. Lee et al. (2016) also found among police officers who experienced traumatic situations that self-resilience help strongly to reduce PTSD symptoms and increased their levels of PTG. Similarly, Austin, Pathak, and Thompson (2017) studied the effect of resilience on PTG among emergency medical service professionals and found that there is a high correlation between their resilience and PTG and a negative relationship between resilience and secondary traumatic stress.

Mindfulness, a factor related to resilience has also been related to PTG among traumatic victims. In a study of depression and PTG among Chinese adolescents who experienced tornado, Xu, Ding, Goh, and An (2018) found that dispositional mindfulness promoted PTG among the victims. They concluded that mindfulness affords an individual the potential to adopt adaptive coping against depression after the experience of traumatic events.

Similarly, Garland (2007) reported that mindfulness bolsters adaptation to negative life experiences through positive reappraisal. This mechanism occurs where the individual adopts adaptive coping strategies by assigning positive meanings to the event and reframing the event as benign and well-meaning. This thus helps facilitate wellbeing. Again, Kearney, Mcdermott, Malte, Martinez, and Simpson (2012) investigated how mindfulness-based intervention can reduce symptoms of depression and PTSG among veterans and found that at six months of intervention, participants showed significant improvement in symptoms.

Some studies however did not find a positive association between resilience and PTG. For example, Levine, Laufer, Stein, Hamama-Raz, and Solomon (2009) found in their study among terror and war victims of Israel that even though the two constructs are salutogenic outcomes of trauma, they are inversely related. Oginska-Bulik and Ogi´nska-Bulik (2016) also recorded in their study among fire-fighters experiencing job-related trauma that resilience is negatively related with PTG. This inconsistency may be accounted for by several factors including characteristics of the disasters studied, differences in cultural orientation and demographic factors. Clearly, the link between PTG and resilience needs more exploration due to the mixed findings and understandings put forth within the literature.

Another psychological factor that promotes PTG among trauma victims is self-esteem. This is the value of the sense of worth one perceives of him/herself (Holland & Andre, 1994). The relationship between the self-esteem and PTG has been confirmed by Taku and Britton's (2017) study among adolescents in the United State of America who experienced some form of stressful life event. They found that self-esteem positively predicted PTG. Zhou, Wu, and Zhen (2017) also found in their study of earthquake adolescent victims that even when victims are well socially supported, it is their self-esteem that helps them to be able to develop PTG.

Bradley, Schwartz, and Kaslow (2005) indicated that self-esteem serves as a resilience factor against the negative outcomes of adversities. In their study among low-income women African decent in America who experienced intimate partner abuse, they found that self-esteem contributes significantly to PTSD symptoms by mediating the link between abuse and PTSD (Bradley et al., 2005). Engelkemeyer and Marwit (2008) corroborated the relationship between PTG and self-esteem in their study finding among grieving parents

that self-esteem is negatively associated with grief intensity and positively related with growth scores.

Some personality factors such as conscientiousness, openness have also been found to determine post disaster growth among victims. For example, Jia, Ying, Zhou, Wu, and Lin (2015) found among 638 survivors of the 2008 Wenchuan earthquake that there is a significant direct effect of extraversion on PTG. Also, Karanci et al. (2012) investigated how personality and posttraumatic stress interacted to affect PTG among accident survivors. They found that PTG was significantly related to conscientiousness, agreeableness, and openness to experience and this relationship was found to be moderated by posttraumatic stress.

Most of the studies examining the role of the psychological factors for post disaster growth established that the factors play positive role in the development of growth following the experience of disasters. There however has not been enough understanding on how these factors also relate to the levels of distress following disaster experience. It becomes necessary to explore and to establish whether these factors could be counted upon for a reduction in the level of distress victims of disasters experience.

Social factors influencing PTG

Social support has a huge potential for recovery from traumatic experiences (Han et al., 2019). According to Rzeszutek (2018), social support positively correlates with PTG. However, this correlation is mediated by positive affect. This is an important observation in that an individual's emotional state may still impact on how support around can help in times of distress. Bhat and Rangaiah (2015) examined the impact of social support and conflict exposure on PTG in Kashmir, a cross-sectional study involving 803 college students. They found that conflict exposure and social support significantly correlated with PTG among respondents. Lee et al. (2015) investigated the role of social support on PTG

among American war using a mixed method approach. Their study found that social support is a high predictor of PTG especially among older veterans and those who obtained the support from their involvement with peers. Again, Prati and Pietrantoni (2009) conducted a meta-analytic review examining how social support and some other variables impact PTG. They found that the literature reported a moderate effect size of social support in PTG.

Many populations experiencing distresses have shown the positive impact of social support. In the HIV/AIDS population for instance, patients have been shown to benefit immensely from social support and this has been recorded to associate significantly with PTG. For example, Rzeszutek, Oniszczenko, and Firla (2017) examined the association between social support and PTG among persons living with HIV (PLWH) in a one year longitudinal study using 73 participants. They recorded among other findings that social support is positively related with PTG among the patients. Similarly, Wei, Li, Tu, Zhao, and Zhao (2016) found among 790 children aged 6 to 17 years who acquired HIV through mother-to-child transmission that social support mediated the impact of enacted stigma on PTG and provided a multiple level protection among the patients.

Among cancer patients, a study conducted by Karanci, and Erkam (2007) using 90 breast cancer patients revealed that social support is related to higher stress related levels among patients. A similar finding was obtained in a study by Yi, Zebrack, Kim, and Cousino (2015) among young cancer patients. They found that children with cancer depicted a level of PTG that is positively correlated with the social support they enjoy. Nenova, Duhamel, Zemon, Rini, and Redd (2011) also found among survivors of hematopoietic stem cell transplant (HSCT) that emotional and instrumental social support are highly associated with the level of PTG of the survivors. Again, Dirik, and Karanci (2008) established among Rheumatoid arthritis patients in Turkey that social support correlates significantly with patients overall

level of PTG and the various domains of PTG such as relationship with others, philosophy of life, and self-perception.

Religion is another social factor that significantly influences PTG among trauma victims. Generally, religion has been observed as a strong coping skill used among victims of disasters (Sipon, Nasrah, Nazli, Abdullah, & Othman, 2014). It serves a significant social purpose where people tend to fall on the religious groups for needed supports in times of distress and also derive meaning for their circumstance (Oren & Possick, 2009). According to Hui and Hui (2009) religiosity promotes several positive aspects of one's psychological life. García, Páez-rovira, Zurtia, Martel, and Reyes (2014) observed among the 2010 Chile earthquake victims that those who use positive religious coping skills have an associated higher levels of PTG, i.e. religiosity was found to impact PTG significantly. In a similar regard, García, Páez, Reyes-reyes, and Álvarez (2017) noted in a longitudinal study that negative religious coping was associated with higher posttraumatic stress levels among a sample of Chilean trauma victims whereas positive religious coping was associated with PTG.

Ha (2015) argues that religion plays an important role in the care and mitigation dynamics of disasters in that it helps to better understand the nature of the disaster. Religious involvement has provided soothing for women who experience domestic abuse; it is associated with reduced level of depression and PTSD (Watlington & Murphy, 2006).

Studies have lend support to a positive relationship between religiosity and PTG especially among people who are traumatised (Shaw, Joseph, & Linley, 2005). For example, in the study by Taku and Cann (2014) examining religiosity, national background and PTG, it was found that religiosity, explained as religious affiliation and strength of religious beliefs strongly predicted PTG among American and Japanese students who had an experience of

highly stressful life events. Similarly, Rezaei, Forouzi, Roudi Rasht Abadi, and Tirgari (2017) also conducted a study among cancer patients in Iran to test the relationship between religiosity and PTG. The results of their study also showed a positive relationship between religiosity and PTG.

Very much related to the support victims receive from family, friends and religious groups, interventions received from professionals play a significant role in fostering PTG (Lechner & Antoni, 2004). There are however varied interventions for traumatic experiences. Each of these interventions may have their strengths and weaknesses. Xu et al. (2016) reported on the efficacy of a Chinese Traditional Cultural positive psychological intervention for PTG among health workers in China. They observed that after the provision of such intervention to participants, they scored significantly higher on PTG compared to their baseline scores.

In a systematic review of literature and meta-analysis, Forneris et al. (2013) found that brief trauma-focused cognitive behavioural therapy effectively helped to reduce PTSD symptoms compared to supportive counselling. Their study also revealed the efficacy of collaborative care for PTSD than a usual care. Meanwhile, Benish, Imel, and Wampold (2008) concluded from their meta-analysis that all psychotherapies for trauma victims especially for PTSD symptoms are equally effective, ruling out any differences in terms of the efficacy and preference. But this conclusion has been critiqued by Ehlers et al. (2010) as not being scientifically rigorous and biased. Ehlers et al. (2010) indicated that several studies stamped the efficacy of trauma-focused therapies over other therapeutic intervention and recommended that as first-line treatment for PTSD.

Kline, Cooper, Rytwinksi, and Feeny (2018) also investigated the long-term efficacy of psychological interventions for post disaster distresses for a minimum of six months through a meta-analysis. Their analysis included 32 PTSD trials that involved 72 treatment

conditions. They observed that all active professional psychological interventions yielded significant long-term efficacy. Similarly, Ehring et al. (2014) conducted a meta-analysis that particularly focused on studies that evaluated the efficacy of psychological interventions for PTSD among adults who suffered childhood sexual abuse. Their work recorded that in general psychological interventions are efficacious for individuals experiencing PTSD due to childhood sexual abuses. They also identified that trauma-focused therapies more efficacious than non-trauma-focused therapies similar to the findings of (Ehlers et al., 2013), whereas individual therapies yielded better results for PTSD than group therapies. This indicates that individual trauma-focused interventions are most ideal for people who suffer traumatic experiences.

However, Brady, Warnock-parkes, Barker, and Ehlers (2015) pointed out that there are patient attributes (Ehlers et al., 2013) or behavioural characteristics that influence the efficacy of posttraumatic interventions. Brady et al. (2015) investigated whether behavioural predictors of that account for poor intervention outcomes show early in therapy sessions. They hypothesised that poor intervention outcomes will be associated with greater patient perseveration, lower expression of thoughts and feelings and weaker therapeutic alliance. They also examined the link between treatment outcome and patient behaviours with therapeutic alliance. This was done by observing and recording 58 patients in therapy sessions. They found that therapeutic outcomes were negatively affected by perseveration and less expression of thoughts and feelings and these were found in the initial sessions of treatment.

Emmerik, Kamphuis, Hulsbosch, and Emmelkamp (2002) also conducted a meta-analysis on the efficacy of single session debriefing after traumatic experiences and found that this form of intervention does not work to improve posttraumatic stress symptoms especially in

the case of critical incident stress debriefing. This means that a 'one-time snap shot' intervention or debriefing may not be ideal for disaster victims (Forneris et al., 2013).

2.2.6 Relationship between Posttraumatic Distress (PTD) and Posttraumatic Growth (PTG)

It may come with some ease to assume that people who suffer higher Posttraumatic Distress (PTD) will show less Posttraumatic Growth (PTG). The evidence in support for this however, is scanty and mixed. An extensive review of studies on the relationship between PTD and PTG by Zoellner and Maercker (2006) reported that indeed both positive and negative relationships are being uncovered by researchers.

Cadell, Regehr, and Hemsworth (2003) explored the factors that promoted the chances of PTG through a structural equation modelling. Among various factors, it was observed that stressors had a significant positive direct effect on PTG. This finding is corroborated by the assertion by Solomon and Dekel (2007) that the higher the posttraumatic distress, the better the PTG.

However, some other studies found negative relationship between PTSD and PTG. For example, Palmer, Graca, and Occhietti (2016) purposed to examine the relationship between posttraumatic growth (PTG) and symptoms of depression based on their observation that previous studies revealed a curvilinear relationship between the two variables. Thus, they sample 269 veterans being treated for PTSD for their study. The study revealed a negative relationship between PTG and depression among the veterans

In some studies, there has been no relationship between PTD and PTG. In a longitudinal study by Koutna, Jelinek, Blatny, and Kepak (2017), the predictors of posttraumatic stress symptoms (PTSS) and posttraumatic growth (PTG) among gender, age, objective factors of the disease and its treatment, family environment factors and negative emotionality were

examined. The study which was conducted among children with cancer revealed that there is no significant relationship between PTSS and PTG.

Sattler et al. (2006) also examined earthquake victims in El Salvador four weeks after the disaster. Among other aims of their study, the authors attempted to establish the link between PTG and depression. Using 253 college students who were victims of the disaster, they found that there is no significant relationship between PTG and depression as well as with acute stress disorder.

These findings present an unclear state within the literature and so need further investigation in order to clarify the linkage. There is thus the need to correlate PTG with various dimensions of posttraumatic distress among victims of trauma in for a better insight into the relationship.

In all, studies on disaster survivors have been predominantly western leaving what happens in Africa behind. In Ghana, disaster studies are limited and there are no studies on PTD and PTG. Cultural difference as far as disaster studies are concerned would require in-depth scientific studies in the Ghanaian context in order to guide policy and intervention.

In the current study, the major goal was to examine the impact of risk and protective factors on PTD and PTG among flood disaster victims. Therefore, the relationships among all the factors were tested using quantitative methods. This provided the opportunity to establish how the risk and protective factors predicted the PTD and PTG among the victims. The study also sought to understand the lived experiences of disaster victims. This was done using the qualitative method through in-depth investigations especially in a setting where not enough has been recorded on the personal experiences of victims. By this method, detailed information was gathered on how victims have survived and what resources they

have personally made use of in their survival. The combined quantitative-qualitative method therefore helped to triangulate findings in order to establish satisfactory evidence.

2.2.7 Summary of Review of Related Studies

Overall, the literature on disaster has demonstrated that disaster outcomes could be negative and positive. Negative impacts include physical, economic and political effects. It was observed in the literature that, the community and national level impacts further exacerbate the negative impacts experienced by individuals. These impacts are at the individual, community and national levels. Factors that influence the negative individual level distress include the experience of traumatic events in the past, neuroticism and independent self-construal. Positive impacts of disasters include the fact that individuals use the disaster experience as avenue to grow and be strengthened. Factors promoting the positive outcomes identified include social support, personal resilience, religiosity, and self-efficacy among others. As to how distress from the experience of disasters relate to growth or the positive outcomes of disaster experience has not been clear from the literature. This therefor needs further exploration.

2.3 Conceptual Framework

Based on the literature review and the variables that emerged, the current study will test the following framework:

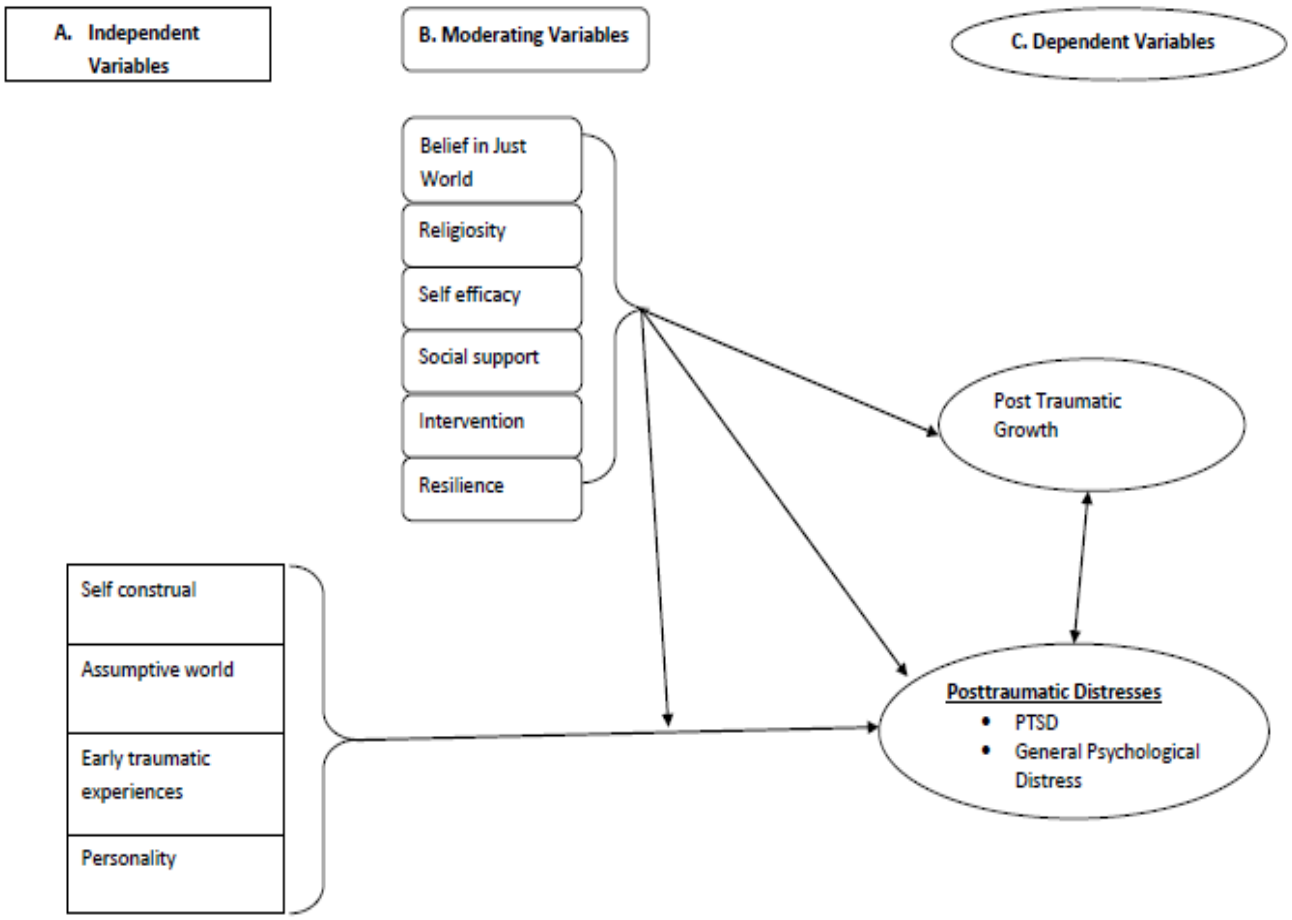

Fig. 2.2:
Conceptual framework

The above model depicts the relationships between the variables under consideration in the current study. Under column A are the predictors. These are risk factors of posttraumatic distress among disaster victims. These include self-construal, assumptive world, early traumatic experiences and personality. These variables have a direct relationship with PTSD and general distress (Outcome variable, under column C). Column B has the moderators. These are the protective factors. These variables moderate the relationship between the predictors and the outcome variables. However, the moderators also predict directly another outcome variable (PTG).

2.4 Statement of Hypotheses for the Quantitative Study

Study one will test the following hypotheses;

1. Risk factors (self-construal, personality, assumptive world, early traumatic experiences) will negatively predict posttraumatic distresses (PTD) among flood disaster victims
2. Protective factors (social support, intervention, belief in just world, religiosity, self-efficacy, resilience) will positively predict posttraumatic growth (PTG) among flood disaster victims
3. Protective factors will moderate the relationship between risk factors and PTD among flood disaster victims
4. Protective factors will have a significant negative relationship with PTD among flood disaster victims
5. There will be a significant relationship between PTG and PTD among flood disaster victims

2.5 Definition of Terms

Posttraumatic Distress: This includes any psychological or emotional challenges an individual experiences as a result of an experience or witness of a traumatic event. This includes PTSD, and general psychological distress measured using the Global Severity Index of the Symptoms checklist.

Posttraumatic Growth: This is the development of mental/psychological strength as a result of an experience or witness of a traumatic event.

Risk Factors: Any factor that has the potential of cause distress after a disaster experience. These include assumptive world, independent self-construal, Neuroticism, and previous traumatic history.

Protective Factor: Any factor that has the tendency to promote wellness and sooth against distress after disaster. These include social support, resilience, self-efficacy, belief in just world, professional intervention, and religiosity.

2.6 Research Questions for the Qualitative Study

In line with the general objective of this study, the following questions will be answered by the qualitative aspect of the study.

General research question

What are the lived experiences of the flood disaster victim?

Specific questions

1. What account of the flood disaster do victims have in terms of what they experienced and how much they recall?
2. What specific psychological effects did victims experience due to the disaster?
3. What personal and collective strategies underscore victims coping abilities over the years?

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the general methodological strategies employed in this study. It encompasses description of the designs used, paradigmatic considerations, description of the setting of the study, the ethical matters considered and the procedure employed in the data collection. The chapter also presents detailed procedures adopted for the quantitative and qualitative approaches used in the study. This includes sample size and sampling methods, instruments, and inclusion and exclusion criteria. In order for coherence and clarity of the presentation, the procedure for the quantitative approach was presented first, followed by the qualitative approach (Creswell & Zhang (2009).

3.1 Research Approach

The study is conducted using Mixed Method approach. This involves the use of both quantitative and qualitative methods in the same study (Halcomb & Hickman, 2015; Schoonenboom & Johnson, 2017). This approach is used to cross-validate and corroborate findings by obtaining an expanded and robust understanding of the study problem (Schoonenboom & Johnson, 2017). Practically, both quantitative and qualitative research designs have their respective disadvantages. However, when the two are used together, they tend to complement each other, thereby reducing errors that come along with each individual approach and facilitating rigor (Halcomb & Hickman, 2015). By this, the study complemented the quantitative findings on the subject matter with the qualitative information for deeper understanding of findings. It provided the opportunity for a rigorous examination of the factors influencing post-disaster adaptation and the lived experiences of disaster victims.

Since not enough has been done among the population of disaster victims in Ghana, the mixed method approach adequately helped to explore the subject matter under study.

3.1 Philosophical Basis of the Research Approach

What disaster victims experience post-disaster (ontology) and how to know what they experience (epistemology) is an important concern in disaster researches. Appropriating knowledge, source of knowledge and method is deemed necessary for valid outcome in scientific research. Traditionally, researchers utilised positivist paradigms; an advocate for a single knowledge or truth about a phenomenon and a quantifiable method of knowing. However, recent critical paradigms encourage multiple knowledge and approaches to knowing, owing to the understanding that knowledge is based on individual subjective experiences. This is often depicted through mixed methods research designs that harbour two approaches in a single study to address a single problem (Creswell, 2014). Philosophies such as dialectics, post-modernism, critical realism and pragmatism adhere to such ideology. The current study is driven by the pragmatic philosophy.

Pragmatism is the philosophy of research that borders on adapting approaches that support action and allow meaningful interpretation of the problem at hand (Shannon-baker, 2016) from different relevant viewpoints (Hall, 2013). Ultimately, this study is to arrive at findings that will inform policy and guide intervention. This can be achieved using an approach that will work best considering the nature of population and information being pursued. Thus, the study utilised pragmatism which dictates that research should translate theory into action and meaning making (Shannon-baker, 2016) by using an approach that 'works best' (Creswell, 2014).

In this regard, the current study seeks to understand the challenges and skills that relate to post disaster adaptation among flood victims; the factors that predispose the victims to the

experience of psychological distress and factors that could be harnessed to attain some level of growth following the disaster. Identifying these factors will significantly influence clinical psychological practice in terms of therapeutic processes and decisions involving clients who experienced adversity.

Pragmatism consciously allows for the mixing of methods, quantitative and qualitative methods (Morgan, 2007). Basically the paradigm allows the researcher to use the methods that will work to arrive at the goal of the study (Creswell, 2014; Halcomb & Hickman, 2015). This helps to obtain better information and understanding of the phenomenon at stake. In mixing the methods, the researcher decides depending on the goal of the research to apportion emphasis to the two approaches. For example, if a triangulation mixed method is being used, then equal attention/emphasis is given to the two methods. But in a nexted or embedded approach, one method, either the quantitative or the qualitative is given greater attention over the other method (Creswell & Zhang, 2009).

3.2 Research Design

3.2.1 The Concurrent Embedded Mixed Method Design

The Concurrent Embedded Mixed Method design, otherwise known as the Concurrent Nested Mixed Method design was used in this study. This design provides the opportunity for research data for both the quantitative and qualitative to be collected simultaneously (Halcomb & Hickman, 2015) in a one-phase procedure (Creswell, 2014). With this design, more attention is given to one data/study whereas the other data plays a supplemental role. As a mixed method, the design helps to harness the strengths of both methods to answer the research questions (Creswell, 2014). The design produces data that answer different research questions that could not have been answered by only one data set. Therefore, one data set becomes the primary data set and the other plays a supportive role (Creswell & Zhang, 2009)

In this study, the quantitative and the qualitative data were collected at the same time. The data was collected among the same group of participants. However, more emphasis was laid on the quantitative data. This was to answer the major research questions. Victims of disasters experience varied levels of psychological distress and growth depending on individual resources and social support systems. Thus, several factors help promote either the growth or the distress. The quantitative data was collected to establish the impacts of such factors (either protective or risk factor) and the general level of either distress or growth among the victims. Therefore, quantitative methods and tools were used to collect such data and appropriately analysed to answer the research question at stake. Since the tools used for the quantitative data collection are of western origin, effort was made to ascertain their appropriateness through pilot testing ahead of the main data collection procedure.

It was expected that the quantitative data might not have adequately explain all the responses of the participants. For example, the study sought to record the lived experiences of the victims. The qualitative was meant to record the exact ordeal they experienced, how they have managed to survive all this while and the challenges they tried to surmount. Therefore, the qualitative data was obtained to complement the findings of the quantitative study. Interviews were conducted and analysed to satisfy this concern. The design and its implementation are demonstrated in the figure 3.1 below.

Figure 3.1 below is adapted from Creswell and Zhang (2009). According to the authors, this design is crafted to mix one data up in the methodology for the other data. The two data sets are collected simultaneously. However, they do not necessarily answer the same research questions. One tends to complement the other. Therefore in the figure 3.1 below, it is observed that the qualitative data was obtained in the process of obtaining the quantitative data. This was necessary in order to understand the lived experiences of the victims. A huge

data set was obtained for the quantitative study. However, that could not answer the qualitative question. The results were merged during interpretation.

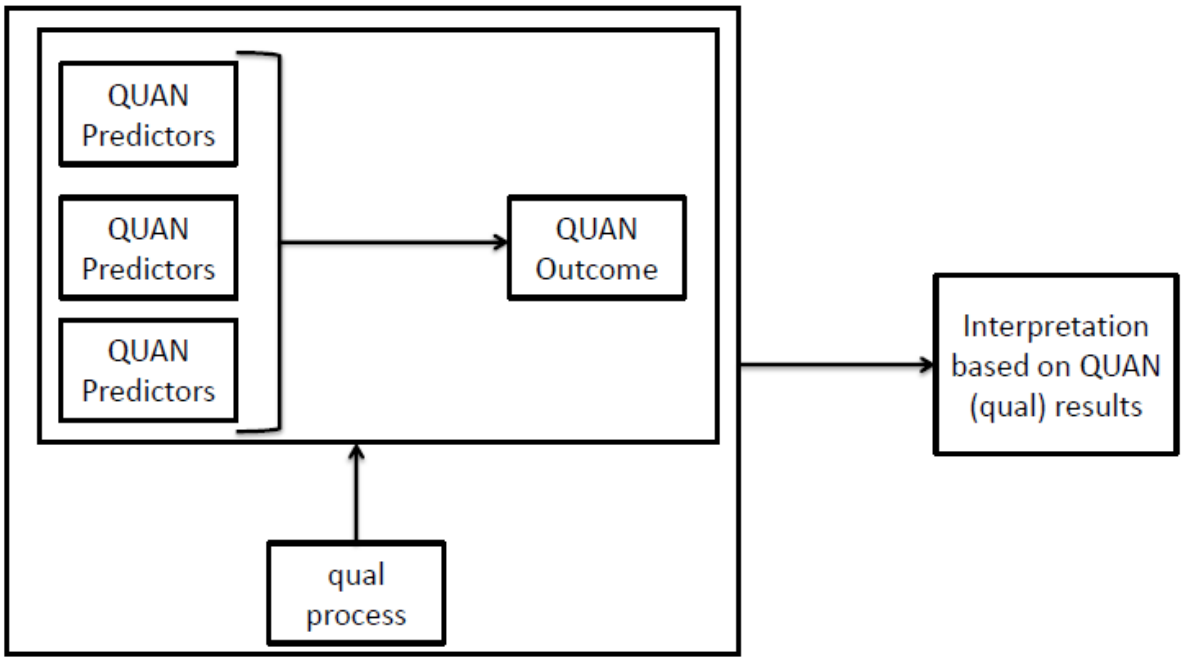

Fig. 3. 1:
Concurrent Triangulation Design showing the process of integrating the two methods (Quan + Qual)adapted from Creswell and Zhang (2009)

In the figure 3.1 above, the process adopted in data collection is depicted. Both quantitative and qualitative were collected simultaneously. Both were given equal weight in the study. Results obtained were compared and contrasted in order to provide an appropriate interpretation of the findings.

3.3 Research Setting

This study was conducted in Accra. Accra is historically known to have originated from Ga-Mashie. This consists of James town and Usher town. These two are all located along the sea; the Gulf of Guinea. Colonial activities, independence, migration and urbanisation culminated in an expansion of the city (Karley, 2009). Accra (Accra Metropolitan Assembly, AMA) which covers a total area of 173 square kilometers is located on Longitude 05°35'N of the Equator and on Latitude 00°06'E of the Greenwich Meridian (Afornorpe, 2016).

Flood disasters have occurred on an annual basis in Ghana, especially in the capital city of Accra. According to Karley (2009), flooding in Accra dated back to the 1930s where the city began to urbanise. The urbanisation resulted in over population, disruptions in town planning and designs as settlers tended to invade and encroach on lands that would have been demarcated for water ways. The desire to settle in Accra still persists in present days. Sanitation and other amenities are affected on daily basis due to the high population.

According to Afornorpe (2016), the geology of Accra is one that disposes the area to erosions and that leads to flooding. This natural characteristic has further been endangered by human activities such that the susceptibility of Accra to flood has become very high. The vegetation and sanitation are poor. Accra usually experiences high rainfalls between May and October with average rainfall of about 780mm per annum (Afornorpe, 2016).

Flooding in Accra is a perennial problem. The deadliest flood disaster in the current decade occurred in 2015 on the 3rd of June. Areas affected by that disaster included Malam, Kaneshie, Alajo, New Town and Kwame Nkrumah Circle. Out of these communities, the latter was the most hit by the disaster when a petrol filling station exploded and set surrounding houses, properties and people on fire. This led to over 150 casualties/deaths. These areas have also experienced several other flood disasters in the past. They are typically flood prone due to their topography and location. Due to the recurrent disaster in these areas, the study stands the change of obtaining rich data in order to unearth the study objectives.

The central business district is located along the coast. However, Accra extends inland with the closest to the central business district being the Kwame Nkrumah Circle. The Nkrumah Circle has the popular Odaw river/drain that connects several inland water bodies to the Atlantic Ocean. Close to this location are such communities as New Town, Alajo, and

Kaneshie. Closer to Kaneshie is Malam which also serves a passage way for run-over waters into the sea.

3.4 Study Population

This study used the population of the victims of the 3rd June 2015 flood disasters in Accra. This was a distinct disaster in Ghana due to the explosion of a fuel filling station at the Kwame Nkrumah Circle which claimed over 150 lives in the capital city. Specifically, the population of victims of this disaster in the settings described above (i.e. Kwame Nkrumah Circle, Kaneshie, Malam, New Town and Alajo) was used. Even though some residents had to relocate due to the flood, majority who were displaced resettled in the locations, making them available for the study.

This population has complained about their challenges across the media wave since the disaster. There was minimal psychological and economic intervention for them. Three years after the disaster, it is expected that symptoms or sign of distress and growth would be considerably experienced within the population. This makes the population ideal for the study. The size of this population is however not known as there is not an exact documentation on them.

3.5 General Data Collection Procedure

The population for this study is a widely dispersed one. Due to this, some visibility analysis was done before the start of the data collection. First of all, some stakeholders in the management of the disaster in 2015 were contacted for direction to possible participants. These included the National Disaster Management Organisation (NADMO), the Psychiatric Department of the Korle-Bu Teaching Hospital and the social welfare department. All these points of contact yielded no significant result. Secondly, a contact was made with a media organisation that reported the 3rd anniversary of the disaster in Accra. This organisation linked the researcher up with the Assembly Member of one of the communities that suffered

the disaster. This paved the way to reach the initial persons for the study. Thirdly, a visit was paid to the communities to scout for victims who still reside in the localities of the disaster. Participants were made to sign a consent form. A copy of the consent form was given to the participant while the researcher kept a copy.

3.6 Inclusion and Exclusion Criteria

Participants selected for this study were expected to meet certain criteria. Meanwhile, some of the participants met the criteria but were disqualified due to the exclusion criteria they met. The criteria for inclusion and exclusion are as follows:

To qualify to participate in this study, an individual must:

- Be a victim of the 2015 flood disaster in Accra in Kwame Nkrumah Circle, Alajo, Kaneshie, Malam and New Town
- Be 18 years and above since most people under 18 years might have been at school during the data collection period
- Be in Accra at the time of the study

An individual is not qualified to participate in the study if:

- He/she is currently on admission/treatment for any chronic or terminal illness not caused by the disaster
- Currently suffers significant memory loss
- Suffers a significant psychiatric condition

3.7 Ethical considerations

Before data collection, an ethical approval was obtained from the Ethics Committee for Humanities of the University of Ghana, Legon. The study strictly adhered to the recommendations of the committee. The researcher also observed the American

Psychological Association (APA) ethical considerations for using human participants in a research.

Confidentiality was observed by excluding the names and possible identifiers of the respondents in the study. Their responses were also used for the study only. The data obtained has not been exposed to any other person apart from those involved in the study namely the researcher and supervisors. Also, due to the large volume of the questionnaire and interviews, it was envisaged that participants would be tired before the end of their responses. Thus, breaks were allowed for participants to relax and finish up after a few minutes. Similarly, participants who needed more time to complete the questionnaire were allowed to take it home and return it a week after. No inducement was used to attract participants. A five Ghana Cedis (GHC 5, approximately one Dollar ($1)) airtime recharge card was however given to each participant for their participation.

Emotional reactions were anticipated. This is because of the nature of information being elicited from the participants. Therefore, arrangement was made with clinical psychologists and community psychiatric nurses in the communities to attend to participants who exhibited emotional difficulties. In all, three participants demonstrated high emotional challenges. Upon assessment by the professionals, a referral was made to the Pantang Psychiatric Hospital for further evaluation and assistance. The researcher made a follow up and obtained information that the participants were admitted but they all absconded a day after.

Freedom to decline or withdraw participation was also duly observed. In this regard, victims who were located and approached for possible participation and they declined to participation were not forced into participation. Over all, two (2) individuals declined to participate in the study. Reason given was that they have spoken to several researchers/journalists who promised that their concerns will be addressed but to no avail.

They indicated that if this will not bring them any compensation from the government, then they are not interested in participating. Indeed, this concern was raised by several other participants who were still willing to participate. It appeared that journalists have engaged the victims on countless occasions. However, their concerns have not received any government/national attention. Participants were informed that this study is for academic purposes and not for journalistic or governmental purposes. They were also informed that the findings of the study can inform national policy and treatment models for such victims but not to necessarily obtain government reliefs or compensations for them. This helped prevent high expectations from the participants. It also helped to obtain dispassionate responses from them.

3.8 Quantitative Methodology

3.8.1 Design

The quantitative study used the cross-sectional survey design. This is a design that allows for a one time data collection on the opinions of participants on the subject under investigation particularly through the use of questionnaires (Sedgwick, 2014). Using this design, the researcher ensures that data is collected across the various segments of the population. The data collection is done within a limited period of time. In this study therefore, data was collected among a sample of flood victims within a short period of time on their opinions on how they have adapted after the experience of the 3rd June, 2015 flood disaster.

3.8.2 Sample

Sample size is a significant factor in the power of a study or the authenticity of research findings (Hazra & Gogtay, 2016; Malone, Nicholl, & Coyne, 2016). According to Kelly, Webster, and Craig(2010), too small or too large sample size must be avoided by getting a balance between the two. Too small sample size will result in inconclusive findings,

typically resulting in type II error where the study will be deemed not to have sufficient power to detect the intended effect. On the other hand too large sample will lead to more precise than necessary outcomes and a waste of resources (Kelly et al., 2010). Accordingly, a sufficient enough sample size must be determined for every study.

To obtain an adequate sample size in order to avoid these errors, some factors needed to be considered. One of such factors is the statistical power of the study (Malone et al., 2016). The statistical power of a study is the ability of the study to appropriately reject the null hypothesis when the alternative hypothesis is true. In other words, it is when the study can detect a difference if one exists (Suresh & Chandrashekara, 2012). According to Suresh and Chandrashekara (2012) and Cohen (1988), a statistical power of 80% is ideal for a study and this is proportional to sample size. The current study used a statistical power of 95%.

Another factor to consider in determining sample size is the significance level of the study. This is the probability that a type I error will be committed (Kelly et al., 2010). This is often represented by p-value or 'α'. Conventionally in the social sciences, the significance level is set at .05 (Kelly et al., 2010). This means that there is only 5 out of 100 chances of a type I error to be committed.

The effect size is also important in sample size determination. This is the size of relationship that is expected in the study. This can be a large, medium or small one (Field, 2009). A medium effect size is used in this study because this is easily noticeable (Cohen 1988). Other factors to consider include the statistical tests to use and the number of predictors. In order to obtain a medium effect size (.15 for regression analysis) with high statistical power, significance level of .05 and 10 predictors, a minimum of 150 sample size is required (Cohen, 1988; Field, 2009). Calculating for this using a G-Power software produces a sample size of 172.

In this study, the Multiple Linear Regression was used with ten (10) predictors. A sample size of 400 was proposed for the study in order to avert the effect of attrition, non-completion and related unforeseen challenges that participants may present to the study. In all 336 participants were realized for the study, representing a response rate of 84%. This is a about double the minimum sample size required, making it adequate enough for the study.

3.8.3 Sampling method

Selection of the sample for the study was done using the snowball sampling technique. As much as the size of the sample is important, the method used in gaining the sample is also important (Martínez-mesa, González-chica, Duquia, Bonamigo, & Bastos, 2016). There are several techniques to sample participants for a study; grouped under probability and non-probability sampling techniques (Naderifar, Goli, & Ghaljaie, 2017). However, some factors determine which technique will be most appropriate for a given study. For instance, if the study is an experiment with a sample frame available, the researcher may use a probability sampling method such as simple or systematic random sampling. In cases where the population is a closeted or hidden one, a non-probability sampling such as snowball sampling may be used (Naderifar et al., 2017; Sadler, Lee, Lim, & Fullerton, 2010). In the current study, the snowball sampling technique was used.

Snowball sampling is often used when a particular population is not easy to access for which reason the researcher must identify some initial participant(s) and use them as links to subsequent participants (Martínez-mesa, González-chica, Duquia, Bonamigo, & Bastos, 2016; Dragan & Isaic-Maniu, 2013). This could be done either in qualitative studies (e.g. Graham et al., 2003; Veitch, Bagley, Ball, & Salmon, 2006) or in quantitative studies (e.g. Sadler, Lee, Lim, & Fullerton, 2010; Etter & Perneger, 2000). This sampling technique is suitable for the current study because the population of flood victims in Accra is not well delimited. Available data on the population such as sample frame, location and contact

information are rare. Some victims had relocated or changed their address or contact numbers. However, when one or two of these victims were identified, they assisted in providing information on other victims. This is because they had formed a group intended to push their needs to government and they easily identify themselves. This is the crux of snowballing where hard-to-find participants are identified based on the recommendation or network of initial participants (Sadler et al., 2010). That is, one participant leads to another participant (Rankin & Bhopal, 2001).

Therefore, in order to select the participants for this study, communities in focus were visited and enquiries were made from residents about who experienced the 2015 flood until the first person was identified. This first person helped with further information on how to get some few other participants. These few others also led the researcher to further participants until the sample size was reached.

3.8.4 Instrument

The study materials used in the quantitative study include standardized questionnaires for measuring the respective quantitative variables. The variables measured and the questionnaires used are described below under predictors, outcome variables, and moderating variables as follows:

Predictor measures

Predictors are factors or variables that are deemed to be the bases of the outcomes of a study. In other words, they are the variables that are manipulated for their effect to be observed or measured in the outcome/dependent variables (Flannelly, Flannelly, & Jankowski, 2014). They are also called the independent variables. In this study, there are four predictor variables. These include personality, assumptive worldview, self-construal and early traumatic experiences.

Assumptive worldview

The World Assumptions Scale (WAS). This scale was developed by Janoff-Bulman (1989). It is a 32-item self-report scale that examines an individual's cognitive schema about themselves and the world. It taps into three primary domains of assumptions: perceived benevolence of the world, meaningfulness of the world, worthiness of the self (Janoff-Bulman, 1989).

This scale measures world assumption along 8 levels (subscales). These are; the benevolence of the world (BW), benevolence of people (BP), justice (J), controllability (C), randomness (R), self-worth (SW), self-controllability (SC), and luck (L). It is a 6-point likert scale with responses ranging from 1=strongly disagree to 6=strongly agree. Sample items include *'Misfortune is least likely to strike worthy, decent people'*, and *'I almost always make an effort to prevent bad things from happening to me'*. The scale has reliability of Cronbach alpha ranging from .60 to .75 (Janoff-Bulman, 1989).

Self-construal

The Self-Construal Scale: This is a 24-item scale developed by Singelis in 1994 to measure a person's independent and interdependent dispositions. It therefore has two subscales. Both subscales have 12-items each. The scale is a self-report scale rated using a 7-point likert scale ranging from1=strongly disagree to 7=strongly agree. Sample items include *'I have respect for the authority figures with whom I interact* (Interdependence); *I'd rather say 'No' directly than risk being misunderstood'* (Independence).

Reliability of the scale was reported to be between Cronbach alpha of .69 and .73 (Singelis, 1994). Items for the interdependent subscale are 3,4,5,6,9,12,13,15,17,19, 21, and 23 whereas items for the independent subscale include 1,2,7,8,10,11,14,16,18,20,22, and 24.

Personality

The Big Five Personality Inventory: Personality was measured using the Big Five Personality Inventory developed by Goldberg (1992). It has 50 items with five (5) subscales namely extraversion, agreeableness, conscientiousness, neuroticism, and openness. Each subscale has 10 items. The scale rates responses on a 5-point likert scale ranging from 1=not at all accurate to 5= extremely accurate. According to Sveen et al. (2016), the scale has the following reliability values; 0.82 for extraversion, 0.73 for agreeableness, 0.74 for conscientiousness, 0.80 for neuroticism, and 0.80 for openness. Sample items are *'I get stressed out easily'* and *'I have a soft heart'*. The scale is scored by summing up component items to obtain total score for each subscale. However, items numbered 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 29, 30, 32, 34, 36, 38, 39, 44, 46, 49 are reverse scored.

Items for the respective subscales are Extraversion: 1, 6, 11, 16, 21, 26, 31, 36, 41, 46, Agreeableness: 2, 7, 12, 17, 22, 27, 32, 37, 42, 47, Neuroticism: 4, 9, 14, 19, 24, 29, 34, 39, 44, 49, Conscientiousness: 3, 8, 13, 18, 23, 28, 33, 38, 43, 48, and Openness: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50.

Early traumatic experiences

The Trauma History Questionnaire: This scale was used to assess past traumatic experiences of participants. It is a 24-item questionnaire with yeas or no responses developed by Green (1996). The questions are divided into three (3) traumatic areas namely crime experiences (e.g. robbery), general disaster and trauma questions (e.g. injury, witnessing death), and questions about physical and sexual experiences (spanking or beating, rape/defilement). Participants are to indicate whether they had ever experienced the traumatic event or not. In addition to that, participants are required to provide the age or approximate age at which the experience happened as well as the number of times such an event was experienced. There is one 'other' item in the questionnaire that allows participants

to indicate any personal traumatic event or experience that might have been omitted in the questionnaire. Participants are to respond with details like they did for the other 23 items. Response on this 'other' item is usually used at the researcher's discretion depending on the information provided. It may also be grouped under any of the domains that it is related to. Sample items are 'Has anyone ever attempted to or succeed in breaking into your home while you were there?', 'Have you ever experienced a "man-made" disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? (If yes, please specify below)', and 'Has anyone ever made you have intercourse or oral or anal sex against your will? (If yes, please indicate nature of relationship with person [e.g., stranger, friend, relative, parent, sibling] below)' or 'Has anyone in your family ever beaten, spanked, or pushed you hard enough to cause injury?' for the crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences respectively.

The questionnaire was scored by counting the number of events endorsed under each subtype of traumatic experience. A total score was obtained by adding all the responses. More items endorsed mean high traumatic history. Hooper, Stockton, Krupnick, and Green (2011) reported that the scale has an interrater reliability for the various trauma categories as present in at least 20% of respondents showing kappas in the excellent category, ranging from .76 for sexual assault to 1.00.

Items for the crime experiences are the first four (4), the general disaster and trauma items are items 5 to 17, questions about physical and sexual experiences are from 18 to 23, and the last item (item 24) is for 'other'.

3.8.5 Outcome Variable Measures

Psychological distress

The Symptoms Checklist-90-Revised (SCL-90-R): This scale was developed by Derogatis (1975). It is a 90-item five likert-point scale with nine dimensions of primary psychological symptoms or distresses and three global indices of pathology (Derogatis, Rickelst, & Rock, 1976). Responses range from 0=not at all to 4=extremely. The global indices of pathology include Global Severity Index (GSI) which is the combination of information on the number of symptoms and distress intensity, the Positive Symptom Distress Index (PSDI) which is about the intensity of distress, and the Positive Symptom Total (PST) which is the only about the number of symptoms (Derogatis et al., 1976).

The nine primary dimensions include somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism.

The Somatization (SOM) subscale measures distress or discomfort that arises from perceptions of bodily dysfunction. The Obsessive-Compulsion (O-C) subscale measure is on thoughts, impulses, and actions that are experienced as irresistible by the individual but are unwanted in nature. The Interpersonal Sensitivity (INS) subscale measures a person's feelings of personal inadequacy and inferiority in comparison with others. It also includes the feelings of self-discomfort, self-deprecation and uneasiness as experienced by people during interpersonal interactions. The Depression (DEP) subscale measures dysphoric mood, affect, lack of motivation, loss of energy, feelings of hopelessness, and suicidal thoughts. The Anxiety (ANX) subscale measures symptoms such as nervousness, tension, and trembling as well as feelings of terror and panic. The Hostility (HOS) subscale measures thoughts, feelings, or actions such as aggression, irritability, rage and resentment characteristic of the negative affect state of anger. The Phobic Anxiety (PHO) subscale

measures persistent fear response to a specific place, object or situation that is irrational. Paranoid ideation (PAR) is a disordered mode of thinking, projective thinking, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions. Psychoticism (PSY) is a continuous dimension of human experience, providing a continuum from mild interpersonal alienation to dramatic evidence of psychosis. Items include withdrawal, isolation, and schizoid lifestyle as well as first-rank schizophrenia symptoms such as hallucinations and thought-broadcasting.

The scale is scored by adding up the respective items measuring the various subscales and the result is divided by the total number of items for each subscale to obtain the score for the dimensions represented. A Global Severity Index (GSI), which is the average score of the 90 items of the scale, suggesting the best single indicator of the current level of the distress is also obtained by adding up the entire items divide by 90**.** The Symptom Total (PST) is scored by adding up the number of symptoms the respondent complained of, that is the number of items rated higher than zero. The Positive Symptom Distress Index (PSDI) is the average of the rating from 1 to 4 (the non-zero ratings) for the symptoms that were complained of.

This scale demonstrates a strong internal reliability of Cronbach's coefficient alpha for each of the nine subscales ranging from .77 to .90 (Derogatis et al., 1976). Sample items include 'Feeling afraid in open spaces or on the streets' and 'Feeling no interest in things'.

Items for the primary dimensions include the following: Somatisation 1, 4, 12, 27, 40, 42, 48, 49, 52, 53, 56, 58, Obsessive-Compulsion 3, 9, 10, 28, 38, 45, 46, 51,55, 65, Interpersonal sensitivity 6, 21, 34, 36, 37, 41, 61,69, 73, Depression 5, 14, 15, 20, 22, 26, 29, 30, 31, 32, 54, 71, 79, Anxiety 2, 17, 23, 33, 39, 57, 72, 78, 80, 86, Hostility 11, 24, 63, 67, 74, 81, Phobic anxiety 13, 25, 47, 50, 70, 75, 82, Paranoid ideation 8, i8, 43, 68, 76, 83, and Psychoticism 7, 16, 35, 62, 77, 84, 85, 87, 88, 90.

PTSD

The PTSD Checklist-Civilian version (PCL-C) The PCL-C is a standardized five point likert self-report rating scale for PTSD comprising 17 items that correspond to the key symptoms of PTSD. It was developed by Weathers, Litz, Huska and Keane (1993) to assess PTSD. Two versions of the PCL exist: the PCL-M is specific to PTSD caused by military experiences and the PCL-C is applied generally to any traumatic event. The PCL can be easily modified to fit specific time frames or events. For example, instead of asking about "the past month," questions may ask about "the past week" or be modified to focus on events specific to a deployment. Sample items include *'Suddenly acting or feeling as if the flood disaster were happening again (as if you were reliving it)?'*, and *Avoid activities or situations because they remind you of the flood disaster?'*. The scale has been reported to have a strong reliability of psychometric properties of Cronbach's alpha coefficient of 0.94 (Ruggiero, Ben, Scotti, and Rabalais, 2003). Scoring of the scale is by adding up responses on all 17 items on the scale to get a single total score.

Post Traumatic Growth

Posttraumatic Growth Inventory (PTGI): The PTGI is a self-report inventory developed by Tedeschi and Calhoun (1996). It measures the positive or salutogenic impact/growth following traumatic experiences. The scale has 21-items than can be grouped under five (5) subscales namely; growth relating to others (improved interpersonal relations), new possibilities (changes in aspirations and goals), personal strength (increased inner strength), spiritual change (increased spirituality), and appreciation of life (greater appreciation).

The scale has a 6-point likert rating ranging from 0 (I didn't experience this change) to 5 (I experienced this change to a very great extent). Sample items of include *'Knowing that I can count on people in times of trouble'*, and *'New opportunities are available which wouldn't have been otherwise'*. An overall growth score could be obtained by computing

the mean of all of the responses on the 21 items. The scale has a good reliability of Cronbach alpha = .93 (Nuttman-shwartz et al., 2011).

3.8.6 Moderating variables

Social support

Multidimensional Scale of Perceived Social Support (MSPSS): This is a 7-point likert scale developed by Zimet, Dahlem, Zimet and Farley (1988) to measure social support at three (3) levels namely, support from family, friends and significant others. Responses range from strongly disagree (1) to strongly agree (7). It is a 12-item scale with 4-items per subscale. Apart from obtaining a score for each subscale by adding up the items relating to the individual items, a total social support score can be obtained by adding up all the 12 items. Sample items are *'There is a special person who is around when I am in need'*, '*I get the emotional help and support I need from my family'* and *'I have friends with whom I can share my joys and sorrows'* for the friend, family and significant others subscales. Reliability of the total scale has been reported to be Cronbach's coefficient alpha = .93 whereas the subscales (family, friends and significant others) demonstrated reliabilities of .91, .89, and .91 respectively (Canty-Mitchell & Zimet, 2000). Items for the Friend subscale are 6, 7, 9, and 12. Items for the Family subscale include 3, 4, 8, and 11. Items for the significant others subscale include 1, 2, 5, and 10.

Self-efficacy

General self-efficacy scale: This scale was developed by Jerusalem and Schwarzer in 1981. It has also been translated and used in other languages and populations. It measures self-efficacy on a 4-point likert scale with responses ranging from 1-not at all true to 4-exactly true. The scale has 10 items of which are such items as *'I can always manage to solve difficult problems if I try hard enough*', and *'I can usually handle whatever comes my way'*. The scale has an internal consistency ranging between .76 and .90 (Schwarzer & Jerusalem,

1995). Luszczynska, Estatal, and Rica (2005) also reported that the scale recorded good reliability across several populations typically with Cronbach's alphas between .79 and .90. Scoring is done by adding up the responses on all 10 items to obtain a total self-efficacy score.

Belief in just world

Global Belief in Just World: This was used to measure the general belief that people deserve what they get and get what they deserve. It was developed by Lipkus (1991). It is a 7-item likert scale with ratings from 1=strongly disagree to 6=strongly agree. Example of the items include: '*I feel that people get what they are entitled to have', and 'I basically feel that the world is a fair place'*. Reliability of the scale has been reported to be .83 (Lipkus, 1991).

Resilience

Wagnild and Young's Resilience Scale: The resilience scale has 25 items as its full version. The scale also has a short version consisting of 14 items. The current study however used the full version. It was developed by Wagnild and Young (1993). This is a self-administered scale rated on a 7-point likert scale ranging from 1=strongly disagree to 7=strongly agree. The developers reported a reliability of alpha = .91 (Wagnild & Young, 1993). A study in Nigeria by Oladipo and Idemudia (2015) reported a reliability of alpha = .86. Sample items include *'I can be on my own if I have to'*, and *'I have enough energy to do what I have to do'*.

Religiosity

Santa Clara Strength of Religious Faith Questionnaire: This is a 10-item scale developed by Plante and Boccaccini (1997). It is a 4-point likert scale that measures an individual's level of religious faith. Responses on the scale range from 1=strongly disagree to 4=strongly agree. Sample items include *'I look to my faith as providing meaning and purpose in my life'*, and *'I look to my faith as a source of inspiration'*. Reliability of the scale is reported

to be Cronbach alpha=.95 (Plante & Boccaccini, 1997). Scoring of the scale is done by adding up all responses to obtain a total score where higher scores indicate higher religious faith.

Materials used in this study are summarized in the table 3.1 below. They are presented in the table under predictors, outcome variables, and moderating variables. Their Cronbach's alphas as reported in the literature are presented along with those obtained from this study.

Table 3.1:
Instruments used for Quantitative study and Cronbach's alphas

Construct	Scale	Developer	Developer's α	Pilot study (α)
Predictors				
Personality	The Big Five Inventory	By Goldberg (1992).	.82 to .90	.79
Assumptive world	World Assumptions Scale	By Janoff-Bulman (1989).	.60 to .75	.84
Self-construal	Self-construal Scale	By Singelis (1994).	.69 and .73	.88
Past traumatic experience	Trauma History Questionnaire	By Green (1996).	Not Applicable	-
Outcome Variables				
Psychological distress	Symptom Checklist	By Derogatis, et al. (1973).	0.77-0.90	.98
Posttraumatics stress disorder	PTSD Checklist – Civilian Version	Weathers, Litz, Huska and Keane (1993).	0.94	.90
Posttraumatic growth	Posttraumatic Growth Inventory	Tedeschi and Calhoun (1996).	.93	.92
Moderators				
Social support	Multidimensional Scale of Perceived Social Support	Zimet, Dahlem, Zimet and Farley (1988).	.89-.93	.92
Self-efficacy	General self-efficacy scale	Jerusalem and Schwarzer (1981).	.90	.87
Belief in Just World	Global Belief in Just World Scale	Lipkus (1991).	.83	.84
Resilience	Wagnild and Young's Resilience Scale	By Wagnild and Young (1993).	.91	.94
Religiosity	Santa Clara Strength of Religious Faith Questionnaire	By Plante and Boccaccini (1997).	.95	.93

3.8.7 Pilot Study

A pilot study was conducted using 50 participants to ascertain the reliability and appropriateness of the scale selected for the study. This provided an idea about the

challenges respondents will face on the main study. It also provided an idea about the approximate duration of the data collection per participant. Participants use for the pilot were drawn from the population under study. Reliability analysis was performed and the results are presented in the last column under pilot study of Table 3.1 above. From the table, it is observed that the Cronbach's alpha for the various scales are adequate, indicating good reliabilities.

3.8.8 Procedure for Quantitative Study

Data in this study was collected using a self-report approach. Questionnaires were distributed to participants as and when they are identified through the snowball method. Participants who could speak and write English Language completed the questionnaires on their own. Participants were given one week to finish responding after which the questionnaires were retrieved. However, some participants indicated that they may not have time to respond to the questionnaire in the absence of the researcher, therefore, the researcher stayed with them till they completed. Enough time was given to allow participant to relax when tired. Participants who could not read and write were engaged in an interview form, where the items were explained to them and their responses were captured on the scales. This took longer time than the time spent by those who could read and write. Therefore, for those who needed explanations/interpretations, two days on the average were spent with them. Two assistants with a bachelor's degree in psychology were recruited for the data collection. These assistants were those conversant with the local languages dominant in the research setting. Questionnaires that were completed were rejected and discarded. Data obtained was entered into the Statistical Package for the Social Sciences (SPSS), cleaned up and analysed.

A pilot study using 50 participants was initially conducted to ascertain the reliability of the scales used in the study. The outcome of the pilot indicated that, the scales exhibit

considerably good reliabilities. It also allowed the researcher to ascertain participants' understanding of the items on the scales and the possible challenges.

3.9 Qualitative Methodology

This section presents the methods used in conducting the qualitative component of this research. It presents the study design, sample, and the data collection tool, procedure and how data was analysed. The qualitative component of this research was designed to augment the findings of the quantitative study.

A qualitative study was considered appropriate because it would provide the opportunity for victims of disaster to tell their story in detail (Hammarberg, Kirkman, & Lacey, 2016; Haradhan, 2018). Consequently, it is expected that findings would provide a better insight into the ordeal that participants go through and make the needed recommendations.

The qualitative study sought to answer the following questions:

What are the lived experiences of the flood disaster victim? Specifically,

1. What account of the flood disaster do victims have in terms of what they experienced and how much they recall?
2. What specific psychological effects did victims experience due to the disaster?
3. What personal and collective strategies underscore victims' coping abilities over the years?

3.9.1 Approach – Phenomenology

The phenomenological design was used for the qualitative part of this study. This was to provide the basis for the understanding of the experiences of the victims through their own narratives.

Phenomenology is when participants provide detailed description of their experiences of a particular situation and the researcher tries to identify the essence of such experiences

(Creswell, 2014). Creswell (2014) describes phenomenology as both a philosophy and a method, it makes it possible for an extensive study of a smaller number or participants in order to establish patterns within the meanings of the experiences of the participants. Phenomenology thus forms the basis of the qualitative study to help clarify what disaster victims endure and how they perceive their own experiences.

3.9.2 Sample and Sampling Technique

A sample size of 13 was used for this study. This was made up of victims of the June 12 flood/fire disaster in Accra in 2015. According to Creswell (1998), a sample size of five (5) to 25 is recommended for a phenomenological study. Richness of information obtained is rather suggested and there is priority of depth over length (Pietkiewicz & Smith, 2014). In spite of this, saturation was a major factor in deciding to use the current sample size. This is when the information being provided by respondents became similar with no new information being obtained. This prompted the researcher to end after the 13th participant. Convenient sampling was employed to select 13 participants participate in the qualitative study. The demographic characteristics of the participants are presented in Table 3.2 below.

Table 3.2:
Demographic Information of Participants

Participant	Age	Gender	Occupation	Disaster experienced	Religion
1	36	Female	Health worker/student	Flood	Christian
2	44	Female	Trader	Flood/fire	Christian
3	38	Female	Trader	Flood/fire	Christian
4	48	Female	Trader	Flood/fire	Christian
5	37	Male	Herbalist	Flood/fire	Christian
6	63	Female	Not working	Flood/fire	Christian
7	60	Male	Transport owner / driver	Flood/fire	Christian
8	47	Male	Drive	Flood/fire	Christian
9	42	Male	Civil servant	Flood/fire	Christian
10	30	Male	Trader	Flood/fire	Christian
11	67	Female	Retired	Flood/fire	Christian
12	32	Male	Civil servant	Flood/fire	Christian
13	43	Male	Teacher	Flood/fire	Christian

Most of the participants experienced the 'twin disaster' except participant one who experienced only flood. There is a fair gender balance of the participants. All participants interviewed are Christians.

3.9.3 Data collection Material

A semi-structured interview guide (see Appendix D) was developed for the qualitative study. Specifically, the interview guide had three sections around three issues namely: an account of the tragedy/disaster victims encountered, the impact of the tragedy on their lives (both positive and negative), and how they survived till now (the strengths they relied on/coping).

The guide was reviewed by two independent experts for appropriateness before it was used.

3.9.4 Pilot Study

The interview guide was piloted using four (4) participants. Generally, the essence of the pilot was to establish the appropriateness of the guide. It was also aimed at addressing any

conceptual confusion in the wording of questions. Further, it also helped to establish the average duration the interviews would have lasted during the main study. Through the pilot study, it was observed that items on the interview guide must be arranged in a certain order to allow for a good flow of the information provided by participants. It was also clear that some questions must be put together and some separated in order to capture detailed information. For example, the impact of the disaster was recategorised under physical, psychological (with subcategories such as anxiety, emotional, behavior) and positive impacts.

3.9.5 Data Collection Procedure

Verbal consent was obtained from participants who agreed to participate in this study. Thus, after the first study, consented participants were engaged for the study two. Their contact numbers were taken and a meeting was arranged for a later date usually the following day for the interview. However, five (5) out of the 13 participants were interviewed on the same day they took part in study one because they preferred it so. Participants decided the time and venue of the meeting. Except for one participant who opted to be interviewed at home due to health issues, the interviews were conducted at the participants' workplaces since most of them spent the day at the Workplace.

Prior to the interview, participants were informed that the interview would be audio recorded and transcribed for analysis. Initially, participants thought the recording was meant for the media so that their plights will reach the government but this was clarified that it was purely for academic purposes. On the average, interviews lasted for between 45 minutes to one (1) hour.

3.9.6 Data Processing and Analysis

Data obtained in the interviews were all tape recorded. Each of the tapes was named distinctively to avoid overlapping information. The tapes were all transcribed verbatim by

the researcher. Interviews were mainly held in English. However, interviews with participants who spoke in a local language were transcribed verbatim and translated by a professional from the Department of Linguistics, University of Ghana, Legon. Transcribed and translated scripts were reviewed for spellings, punctuations and correctness of the transcriptions along the audio tape by the researcher for clarity of the information they contained.

Thematic analysis was used to analyse the data obtained in this study. In doing so, the six step approach to thematic analysis by Braun and Clarke (2006) was used. The researcher transcribed the interviews, read and re-read them to familiarise with the data and made notes. Codes were generated using ATLAS.ti. The codes were then grouped into themes. These themes and corresponding codes were reviewed by two other independent researchers (a masters and a PhD holder in Psychology) with considerable experience in qualitative analysis.

The themes were reviewed in relation to the codes. Sub-themes were developed to match the relationship between the codes. Finally, names were assigned to each of the themes and sub-themes. Extracts were taken from the transcripts to illustrate each theme.

3.9.7 Rigor and Credibility of Data and Result

Before the analysis of the data obtained, the researcher and the second coder met and discussed the scope of the research and data. This gave the two coders an even platform for the codes to generate from the transcripts. The codes generated were then compared and fused together.

For the purposes of credibility and trustworthiness, the themes drawn from the codes were informed by the literature. For example, the themes for distress were greatly informed by the DSM-5 criteria for PTSD and related disorders, anxiety and mood disorders. The data

from the quantitative study on the distress, risk and protective factors also supported the data in the qualitative study.

The transferability of the findings of the qualitative study is in the congruence of the findings with the literature reported across various settings. The stories of the participants were queried with probes that helped to unearth details spanning various angles of their experiences. This makes the findings applicable to similar populations.

To ensure confirmability, data and analysis was scrutinised and peer review. As indicated above, masters and PhD psychology degree holders peer reviewed the transcripts and codes. This was followed by an expert qualitative researcher. Also, the six step approach to thematic analysis by Braun and Clarke (2006) was judiciously followed.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the results of the study. This is presented in two part. The first part presents the findings of the quantitative study, and the second part presents the findings of the qualitative study.

4.1 Quantitative Findings

4.1.1 Data Analysis/Analytic Plan

The quantitative data collected was analysed using the SPSS Version 16. The data entry was done as and when questionnaires were retrieved from participants. This was to avoid forgetfulness especially about the ambiguity in responses that was typically clarified by participants when they returned the questionnaires. This also afforded the researcher to detect and correct wrong entries as there were not too much to enter at a time.

Preliminary analysis was conducted after the data set was complete. This was to obtain demographic and descriptive results of the data. Exploratory Factor Analysis (EFA) was also conducted to ascertain the suitability of one of the scales. This also helped to determine the components of that scale as work with. Inferential analysis involving correlation analysis and regression were conducted.

To test for predictor and moderator effects in the study, five hypotheses were tested. The first hypothesis considered how much each predictor variable predicts the individual outcome variables. This was stated as 'Risk factors (independent self-construal, neuroticism, assumptive world, and previous traumatic experiences) will predict posttraumatic distresses (PTD) (psychological distress, and PTSD) among flood disaster victims'.

The second hypothesis tested how the moderator variables predicted PTG and this was stated as 'Protective factors (social support, intervention, belief in just world, religiosity, self-efficacy, and resilience) will predict posttraumatic growth (PTG) among flood disaster victims'. The third hypothesis tests for how protective factors (moderators) moderate the relationship between to predictors and the outcome variables. This was stated as 'protective factors will moderate the relationship between risk factors and PTD among flood disaster victims'.

Therefore, hypotheses 1, 2 and 3 were tested using a Hierarchical Multiple Linear Regression. This was used to test for the predictive effect of the risk and protective factors in the study (hypothesis 1 and 2) and to test for the moderation effect of the moderators in the study (hypothesis 3). In testing these hypotheses, demographic factors namely age, number of years in residence, education, marital status and employment status were held constant.

The fourth hypothesis tests the relationship between protective factors and PTG and the fifth hypothesis tests the relationship between PTSD and PTG. They were stated as 'protective factors will have a significant negative relationship with PTD among flood disaster victims' and 'there will be a significant negative relationship between PTG and PTD among flood disaster victims' respectively. Thus, hypotheses 4 and 5 were tested using the Pearson Product Moment Correlation Coefficient (Pearson r) to determine the association between study variables.

4.1.2 Preliminary Analysis

Preliminary analysis included the bio-data of the research sample, factor analysis, descriptive statistics and test of normality and reliability, and correlation matrix on the relationship between study variables.

Demographic Characteristics of Research Participants

The demographic characteristics of the sample are presented in the Table 4.1. It is shown that the mean age of the participants for the study is 33.22 (SD=10.47). There are 193 (57.4%) males and 143 (42.6%) females sampled for the study. Majority of the participants had secondary education [151 (44.9%)]. Those with tertiary education are 96 (28.6%), a little above those with basic education who were 89 (26.5%). It is also observed that on the average participants have lived in the location of the disaster for 11.07years (SD=8.70).

The majority of participants are single or widowed (55.7%). This is followed by those married or cohabiting (33.6%). The least in this category are the divorced or separated (10.7%). The sample was also made up of more Christians [248 (73.8%)] as against 88 (26.2%) Moslems. Furthermore, most participants (69%) did not receive any form of assistance/support in the form of relief items or hospital treatment after the disaster. However, 31% indicated that they were either treated for various injuries, or they had received some relief items from NADMO/government, Red Cross, private organisations, and individuals from the general public. Majority of the sample is made up of self-employed participants [233 (69.3%)]. The rest are those who work for others such as the government or private companies (14.0%), and students (12.2%).

Table 4.1:
Demographic Characteristics of Respondents

Characteristic	Frequency (N)	Percentage (%)	Mean	Standard Deviation
Age			33.22	10.47
Duration in settlement			11.07	8.70
Sex				
• Male	193	57.4		
• Female	143	42.6		
Level of Education				
• Basic	89	26.5		
• Secondary	151	44.9		
• Tertiary	86	28.6		
Marital status				
• Single/widowed	187	55.7		
• Married/cohabiting	113	33.6		
• Divorced/separated	96	10.7		
Religion				
• Christian	248	73.8		
• Moslem	88	26.2		
Support (relief items, medical treatment) after disaster				
• Yes	104	31		
• No	232	69		
Occupation				
• Student	42	12.2		
• Unemployed/retired	15	4.5		
• Self-employed	233	69.3		
• Work for others	47	14.0		
Professional intervention received				
• Medical	11	3.3		
• Religious	9	2.7		
• None	316	94.0		

It is also observed from the table 4.1 above that most of the participants (94%) did not receive any professional intervention for the traumatic situation they experienced. The remaining received medical intervention (3.3%) and religious intervention (2.7%). No participant indicated receiving professional psychological intervention such as counselling or therapy.

Exploratory Factor analysis

Exploratory factor analysis was conducted to examine the validity of the Big Five Personality Scale. This was done because the scale is of western origin and has not been validated in the Ghanaian context. It was also necessary to do so in order to determine the subscales of the scale since these subscales were used in the data analysis. Thus, the factor analysis was conducted to ascertain the factor structure of the scale before being used in the study.

The Principal Axis Factoring (PCA) with Equamax rotation was used. The Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were considered. To retain the number of factor components, the Eigenvalue and scree plot were inspected. It has been argued that the use of the Eigenvalue tends to overestimate the number of factors to retain (Ruscio & Roche, 2012). Thus, the scree plot was given more attention. Items with factor loading of .30 or more were retained.

The Big Five Personality Scale

The results indicate that the Bartlett's Test of Sphericity is significant (x^2=4307.00, p=.00) and a significant KMO test of sampling adequacy is .752. Contrary to the five components in the original scale, the Eigenvalue of the exploratory factor analysis (EFA) generated 16 factors whereas the scree plot indicated two factors. The 16 factors might be an over estimation. Thus, the researcher restricted the number of factors to generate to 5 with minimum factor loadings of .30 retained. The following result presented in the Table 4.2 below is obtained.

	Item	Component				
		1	**2**	**3**	**4**	**5**
1	I am the life of the party	**.619**	-.041	.113	-.056	.196
2	I feel little concern for others	**.661**	.105	-.169	-.058	.310
3	I am always prepared	**.589**	-.153	.055	.260	.033
4	I get stressed out easily	**.554**	.293	.155	-.037	.111
5	I have a rich vocabulary	**.480**	.106	.172	.193	-.130
6	I don't talk a lot	.189	.150	.009	.250	.014
7	I am interested in people	.109	.019	.222	**.393**	.029
8	I leave my belongings around	-.068	.127	.039	-.035	**.522**
9	I am relaxed most of the time	.077	-.202	.281	.113	**.530**
10	I have difficulty understanding abstract ideas	.056	.222	-.034	.204	**.474**
11	I feel comfortable around people	.040	-.130	.033	**.431**	.250
12	I insult people	.033	**.401**	-.174	-.164	.202
13	I pay attention to details	.287	-.006	.111	**.511**	-.054
14	I worry about things	.286	.209	-.085	**.389**	.115
15	I have a vivid imagination	.267	.084	.121	**.516**	-.142
16	I keep in the background	.188	.189	.030	**.550**	-.036
17	I sympathize with others' feelings	-.041	-.049	.250	**.473**	.142
18	I make a mess of things	-.191	**.452**	-.275	.031	.239
19	I seldom feel blue	-.107	.076	.064	-.021	**.402**
20	I am not interested in abstract ideas	.099	.219	.048	.134	**.519**
21	I start conversations	.135	-.105	.089	.370	**.490**
22	I am not interested in other people's problems	.172	.343	-.006	.025	**.395**
23	I get chores done right away	.032	.033	.181	**.514**	.135
24	I am easily disturbed	.001	**.386**	.118	.197	.072
25	I have excellent ideas	**.542**	-.099	.467	.212	.002
26	I have little to say	**.604**	.018	.060	.237	.005
27	I have a soft heart	**.428**	-.116	.289	.154	.024
28	I often forget to put things back in their proper place	.149	.242	-.103	.100	**.388**
29	I get upset easily	.099	**.474**	.136	.063	.129
30	I do not have a good imagination	-.008	**.507**	.106	-.119	.259
31	I talk to a lot of different people at parties	.165	.290	.236	-.036	**.368**
32	I am not really interested in others	.061	**.451**	.168	-.026	.245
33	I like order	.160	.068	**.649**	-.010	.081

34	I change my mood a lot	.215	**.400**	.142	-.031	-.034
35	I am quick to understand things	**.400**	.169	.142	.255	-.072
36	I don't like to draw attention to myself	.278	.111	.083	.221	-.082
37	I take time out for others	.302	.022	.053	**.476**	.213
38	I shirk my duties	-.153	.287	-.400	.267	.092
39	I have frequent mood swings	.042	**.490**	.053	.162	.100
40	I use difficult words	.057	**.589**	.004	.036	.146
41	I don't mind being the centre of attention	.080	.246	**.407**	.014	.107
42	I feel others' emotions	.113	.172	**.590**	.068	.062
43	I follow a schedule	-.040	.178	**.567**	.127	.037
44	I get irritated easily	-.036	**.509**	.172	.172	-.157
45	I spend time reflecting on things	.167	.241	.357	**.320**	-.206
46	I am quiet around strangers	.204	.277	.288	.220	-.196
47	I make people feel at ease	.105	.027	**.475**	.263	.140
48	I am exacting in my work	-.018	.030	**.318**	.268	.042
49	I often feel blue	-.131	.188	-.046	.114	-.208
50	I am full of ideas	.109	-.084	**.526**	.147	.079

Table 4.2:
Exploratory Factor Analysis of Big Five Personality Scale

Five (5) items did not load significantly onto any of the 5 factors generated. These items include items 6, 36, 38, 46, and 49. Factor 1 has 9 items (items 1, 2, 3, 4, 5, 25, 26, 27, and 35) loading onto it, factor 2 has 10 items (items 12, 18, 24, 29, 30, 32, 34, 39, 40, and 44), factor 3 has 7 items (items 33, 41, 42, 43, 47, 48, and 50), factor 4 has 10 items (items 7, 11, 13, 14, 15, 16, 17, 23, 37, and 45) and factor 5 has 9 items (items 8, 9, 10, 19, 20, 21, 22, 28, and 31). The factor obtained are therefore named as follows; factor 1=agreeableness, factor 2= neuroticism, factor 3= conscientiousness, factor 4= openness and factor 5= Extraversion

4.1.3 Descriptive analysis: Mean, Normality and Reliability

A descriptive analysis was conducted to check for the means and standard deviation of the various study measures/scales. The analysis also checked for the skewness and kurtosis, and

the reliabilities (Cronbach's alphas) of the various measures. The results showed that scores on all the measures are evenly distributed. Skewness recorded ranged between -.815 and .701. The kurtosis ranged between -1.483 and 2.809. According to Field (2009) and Tabachnick and Fidell (2007), normal distribution of scores (skewness and kurtosis) is assumes if scores fall within +/-2. The measures also recorded adequate reliability coefficients (above .70) except for three subscales that recorded .65 and above. The results are presented in Table 4.3 below.

Table 4.3:
Test of Normality, Reliability, Means and Standard Deviation

Measure	Mean (N=336)	Std. Dev.	Min	Max	Skewness	Kurtosis	Cronbach Alpha
SCL (GSI)	1.22	.85	.00	3.21	-.054	-1.483	.98
• somatization	1.15	.86	.00	3.67	.201	-1.115	.88
• Obsessive-compulsive	1.30	.90	.00	3.50	.083	-1.249	.86
• Interpersonal sensitivity	1.32	.94	.00	3.33	.035	-1.367	.85
• Depression	1.25	.88	.00	3.54	.078	-1.220	.88
• Anxiety	1.16	.89	.00	3.40	.190	-1.169	.86
• Hostility	1.16	1.00	.00	3.67	.309	-1.186	.82
• Phobic anxiety	1.13	.95	.00	3.57	.263	-1.192	.83
• Paranoid ideation	1.29	.94	.00	3.67	.211	-.942	.79
• psychoticism	1.18	.99	.00	3.60	.244	-1.241	.90
Personality	151.00	21.42	45	196	-.47	1.54	.85
• Extraversion	30.45	7.11	9	43	-.38	-.51	.77
• Neuroticism	31.37	6.80	10	46	-.45	.13	.68
• Agreeableness	29.13	6.22	9	54	-.30	.78	.68
• Conscientiousness	24.72	5.08	7	35	-.63	.39	.71
• Openness	35.33	6.40	10	47	-.73	.13	.65
PTG	75.38	19.56	21.00	113.00	-.600	.368	.90
PTSD	39.49	16.66	17.00	81.00	.078	-1.040	.93
AWS	118.87	19.39	31.00	166.00	-.815	2.809	.83
Self-construal	112.47	23.20	24.00	161.00	-.803	1.310	.88
• Independent self-construal	57.00	12.56	12.00	83.00	-.711	.766	.79
• Dependent Self-construal	55.47	12.06	12.00	80.00	-.643	.897	.79
Social support	56.05	15.69	12.00	84.00	-.322	.094	.90
Self-efficacy	29.15	5.78	10.00	40.00	-.065	-.407	.80
Belief just world	24.93	7.76	7.00	42.00	-.191	-.392	.80
Resilience	118.31	23.97	25.00	166.00	-.591	1.030	.91
Religiosity	32.30	6.44	10.00	40.00	-.578	-.291	.88
Traumatic history	6.47	5.35	0.00	24.00	.701	-.237	-

SCL (GSI): Symptoms Checklist (Global Severity Index), PTG: Posttraumatic Growth, PTSD: Posttraumatic Stress Disorder, AWS: Assumptive Worldview Scale

4.1.4 Correlation Matrix

The correlation matrix presented in table 4.4 below is a Pearson Product Moment Correlation Coefficient result showing how the various study variables, and some demographic variables (age, duration of residence in disaster area and previous traumatic experience) are related.

It is observed from the table that there is a significant positive correlation previous traumatic history and the outcome variables (distress, PTSG and PTG) (r=.58, p<.01; r=.40, p<.01; r=.11, p<.05 respectively). There is also a significant negative correlation between assumptive world and two outcome variables namely distress and PTSD (r=-.25, p<.01; r=-.37, p<.01 respectively). Agreeableness correlates negatively but not significantly with distress and PTSD (r=-.09, p>.05; r=-.08, p>.05 respectively). On the other hand, Neuroticism correlated positively and significantly with distress and PTSD (r=.14, p<.05; r=.12, p<.05 respectively) There is also a significant negative relationship independent self-construal and distress, and PTSD (r=-.48, p<.01; r=-.40, p<.01 respectively) and negative significant relationship between dependent self-construal and distress, and PTSD (r=-.48, p<.01; r=-.37, p<.01 respectively).

It is observed that, there is a significant negative correlation between the moderating variables (social support, self-efficacy, belief in just world, resilience, and religiosity) and two outcome variables (distress and PTG). However, resilience and religiosity correlated positively and significantly with PTG.

Table 4.4:
Correlation Matrix showing the relationship between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Age	1																		
Dur.	.49**	1																	
GSI	.10	-.09	1																
PTG	.12*	.08	.29**	1															
PTSD	.18**	.01	.82**	.30**	1														
AW	-.04	.00	-.25**	.10	-.24**	1													
IndSC	-.05	.12*	-.48**	.05	-.40**	.33**	1												
IntSC	-.06	.19**	-.46**	.08	-.37**	.40**	.78**	1											
Extr	-.13*	.04	-.39**	.04	-.28**	.36**	.52**	.54**	1										
Neur	-.01	-.12*	.14*	.04	.12*	.09	.01	.04	.17**	1									
Agr	.08	-.03	-.09	-.07	-.08	.09	.13*	.19**	.27**	.44**	1								
Cons	.02	.12*	-.30**	.11	-.27**	.32**	.29**	.32**	.40**	.25**	.27**	1							
Opn	-.09	.02	-.39**	.09	-.32**	.27**	.46**	.46**	.50**	.20**	.31**	.42**	1						
PTH	-.15**	-.01	-.47**	-.07	-.44**	.25**	.45**	.40**	.46**	-.02	.17**	.26**	.35**	1					
SS	.01	.25**	-.36**	.08	-.29**	.34**	.45**	.48**	.43**	-.04	.14*	.40**	.37**	.46**	1				
SE	-.30**	-.14*	-.12*	.11	-.15**	.11*	.20**	.21**	.30**	-.02	.03	.05	.14**	.29**	.26**	1			
BJW	-.02	.18**	-.42**	.18**	-.36**	.35**	.45**	.47**	.47**	-.02	.12*	.49**	.43**	.50**	.67**	.25**	1		
Res.	-.05	.20**	-.46**	.13*	-.35**	.40**	.49**	.55**	.53**	-.06	.16**	.38**	.37**	.49**	.60**	.22**	.63**	1	
Rel.	.10	-.19**	-.58**	.11*	-.40**	.23**	-.44**	-.42**	-.39**	.06	-.05	-.28**	-.31**	-.25**	-.36**	.000	-.34**	-.44**	1

*p<.05; **p<.01; n=336

Dur=Duration in residence, GSI= Global severity index PTG= Posttraumatic Growth, PTSD=Posttraumatic stress disorder, AW= Assumptive world, IndSC= Independent self-construal, IntSD=Interdependent self-construal, Extr=Extraversion, Neur= Neuroticism, Agr= Agreeableness, Con=Conscientiousness, Opn= Openness, PTH= Previous Traumatic History, SS= Social support, SE= Self-efficacy, BJW=Belief in Just World, Res=Resilience, Rel=Religiosity

4.1.5 Hypotheses Testing

Hierarchical multiple regression analyses were conducted to test the first three hypotheses. Before the regression analysis was conducted, a test for multicollinearity was conducted using the Variance Inflation Factor (VIF) and Tolerance values. For this assumption to be met, Tabachnick and Fidell (2006) propose a tolerance value greater than .10 and VIF value less than 10. The tolerance values in this study ranged between .34 and .85 and the VIF values ranged between 1.21 and 2.96. This thus satisfies the multicollinearity assumption.

For the first two hypotheses, a two-step regression was conducted. In the step one, the effect of demographic variables was tested. This also helped to hold such effect constant in order not to influence the impact of the independent variables. Categorical demographic variables were held dummy coded. For example, Gender: 1=Male, 0=Female, Education: 1=Basic education, 0=Others, Employment: 1=No employment, 0=others. In the step two of the regression, the independent variables were entered. These include the risk and protective factors.

For the moderation analysis for the hypothesis three, the first two steps described above were used in addition to a third step where the interaction terms for the independent variables and the moderating variables were entered. The results are presented according to each hypothesis below.

Hypothesis one: *Testing the effects of Personality, independent self-construal, assumptive world, and early traumatic experience on General Distress and PTSD*

This hypothesis states that risk factors (independent self-construal, personality, assumptive world, and early traumatic experiences) will predict posttraumatic distresses (PTD) (general distress and PTSD) among flood disaster victims. A hierarchical multiple linear regression was used the results are presented in the Tables 4.5 and 4.6.

From Table 4.5, the overall regression model observed is significant, accounting for 51.2% variance in general distress (R^2=.51, F=16.52, p=.00). Controlling for the effect of demographic variables in step 1 shows a significant model (R^2=.09, F=5.18, p=.00) with age (β=.17, p<.05), education (β=-.19, p<.01), and duration in residence (β=-.14, p<.05) significantly affects general distress.

The step 2 also shows a significant model a significant model (ΔR^2=.43, F=16.52, p<.01). It is observed that of all the risk factors being tested in this hypothesis, only neuroticism (β=.16, p<.01), and early traumatic experience (β=.37, p<.01) contribute significantly to the total variance in psychological distress. The contributions of independent self-construal and assumptive world on the other hand are not significant [β=-.06, p>.05; and β=-.07, p>.05 respectively].

In addition, the effect of protective factors on general distress was tested. The results shows that only social support (β=-.24, p<.01) contributes a significant reduction in the total variance of general distress. It was also observed that openness contributes a significant reduction in the total variance of general distress (β=-.12, p<.05). Resilience, self-efficacy, belief in just world and religiosity did not contribute significantly to the total variance in the general distress.

Table 4.5:
Hierarchical Multiple Linear Regression showing how Risk Factors predict General Psychological Distress

Model		B	Std. Error	*β*	*t*	*P*
1	**(Constant)**	1.021	.221		4.618	.000
	Age	.014	.006	.174	2.480	.014
	Gender	-.168	.094	-.097	-1.788	.075
	Education	-.358	.103	-.186	-3.488	.001
	Marital Status	.104	.105	.061	.997	.320
	Employment	-.175	.223	-.042	-.784	.434
	Duration in residence	-.014	.006	-.144	-2.289	.023
2	**(Constant)**	2.512	.396		6.336	.000
	Assumptive world	.000	.002	-.011	-.233	.816
	Independent Self-construal	-.004	.005	-.064	-.935	.351
	Dependent Self-construal	-.006	.005	-.091	-1.291	.198
	Extraversion	.006	.007	.048	.845	.399
	Neuroticism	.021	.006	.166	3.520	.000
	Agreeableness	-.002	.007	-.017	-.354	.723
	Conscientiousness	-.015	.008	-.087	-1.730	.085
	Openness	-.016	.007	-.124	-2.377	.018
	Previous Trauma history	.060	.008	.374	7.110	.000
	Social support	-.013	.003	-.243	-4.755	.000
	Self-efficacy	.010	.009	.065	1.100	.272
	Belief in just world	.000	.005	-.004	-.084	.933
	Resilience	-.002	.002	-.047	-.759	.449
	Religiosity	-.004	.008	-.034	-.555	.579

R^2 =.512, F=19.624, p<.00; R^2 =.086, F=5.177, p< .001 for step 1; ΔR^2=.426, F=16.520, p< .001 for step2

From the table 4.6 below, below, a significant model was also observed (R^2=.37, F=10.87, p<.01). Step 1 which controlled form demographic variables also produced a significant model (R^2=.07, F=3.83, p<.01) with age (β=.23, p<.01) and gender (β=-.12, p<.05) significantly contributing to the total variance in PTSD. A significant model is also observed at step 2 (ΔR^2=.31, F=9.24, p<.01). It is observed that two risk factors namely neuroticism (β=.17, p<.01), and early traumatic experience (β=.23, p<.01), significantly contribute to the total variance in the PTSD. In addition to these, extraversion significantly contributes to the total variance in PTSD (β=.13, p<.05).

The result also shows that social support is the only protective factor (β=-.26, p<.01) contributes a significant reduction in the total variance of PTSD. Resilience, self-efficacy, belief in just world and religiosity did not contribute significantly to the total variance in the PTSD. However, conscientiousness also contributes a significant reduction in the total variance of PTSD (β=-.13, p<.03).

Table 4.6:
Hierarchical Multiple Linear Regression showing how Risk Factors predict PTSD

Model		B	Std. Error	*β*	*t*	*P*
1	**(Constant)**	30.141	4.371		6.896	.000
	Age	.372	.113	.234	3.291	.001
	Gender	-4.089	1.855	-.122	-2.205	.028
	Education	-1.304	2.030	-.035	-.642	.521
	Marital Status	1.787	2.067	.053	.864	.388
	Employment	-3.417	4.412	-.042	-.775	.439
	Duration in residence	-.160	.122	-.083	-1.316	.189
2	**(Constant)**	63.245	8.803		7.184	.000
	Assumptive world	-.051	.045	-.059	-1.138	.256
	Independent Self-construal	-.133	.103	-.100	-1.293	.197
	Dependent Self-construal	-.075	.110	-.054	-.681	.496
	Extraversion	.300	.151	.128	1.982	.048
	Neuroticism	.424	.131	.173	3.236	.001
	Agreeableness	-.171	.148	-.064	-1.162	.246
	Conscientiousness	-.411	.187	-.125	-2.196	.029
	Openness	-.254	.154	-.097	-1.650	.100
	Previous Trauma history	.726	.186	.233	3.898	.000
	Social support	-.279	.062	-.263	-4.531	.000
	Self-efficacy	.181	.193	.063	.936	.350
	Belief in just world	-.031	.111	-.015	-.282	.778
	Resilience	-.037	.049	-.053	-.756	.450
	Religiosity	.015	.178	.006	.083	.934

R^2 =.370, F=10.873 p<.00; R^2 =.065, F=3.832, p< .001 for step 1; ΔR^2=.305, F=9.243, p< .001 for step2

Hypothesis Two: *Testing the effects of social support, intervention, belief in just world, religiosity, self-efficacy, and resilience on PTG*

This hypothesis states that Protective factors (social support, intervention, belief in just world, religiosity, self-efficacy, and resilience) will predict posttraumatic growth (PTG) among flood disaster victims. To test the hypothesis, demographic factors (age, gender, number of years in residence, education, marital status and employment) were held constant. The hypothesis was tested using a hierarchical multiple linear regression. However, in this study none of the participants reported receiving professional psychological intervention. Therefore, intervention was excluded from the analysis. The result is presented in the Table 4.7 below.

The results show a significant model accounting for 18.9% variance in PTG (R^2=.189, F=2.70, p=.00). Controlling for the effect of demographic variables in step 1 also shows a significant model (R^2=.09, F=5.53, p=.00) with gender (β=-.12, p<.05), education (β=-.15, p<.01), and employment (β=-.18, p<.01) significantly affects PTG.

Model 2 is also significant (ΔR^2=.10, F=3.67, p<.01) with social support (β=-.21, t=3.36, p<.01), belief in just world (β=.13, t=.13, p<.05) resilience (β=.21, t=2.74, p<.01) and religiosity (β=.15, t=1.98, p=.05) contributing significantly to the total variance in the PTG. Self-efficacy on the other hand does not contribute significantly to the variance in PTG (β=-.12, t=2.23p>.05).

It is also observed that, no risk factor (neuroticism, previous traumatic history, assumptive world and independent self-construal) significantly predicts PTG. However, agreeableness contributes a significant reduction in the total variance of PTG (β=-.12, p<.05).

Table 4.7:
Hierarchical Multiple Linear Regression showing how Protective Factors predict PTG

Model		B	Std. Error	*β*	*t*	*P*
1	**(Constant)**	77.492	5.057		15.324	.000
	Age	.028	.131	.015	.215	.830
	Gender	-4.796	2.146	-.121	-2.235	.026
	Education	-6.751	2.349	-.153	-2.874	.004
	Marital Status	-2.190	2.391	-.056	-.916	.360
	Employment	-17.218	5.104	-.182	-3.373	.001
	Duration in residence	.250	.141	.111	1.775	.077
2	**(Constant)**	41.083	11.720		3.505	.001
	Assumptive world	.027	.060	.027	.460	.646
	Independent Self-construal	.003	.137	.002	.019	.985
	Dependent Self-construal	.073	.147	.045	.496	.620
	Extraversion	.021	.202	.008	.105	.916
	Neuroticism	.221	.175	.077	1.267	.206
	Agreeableness	-.392	.196	-.124	-1.994	.047
	Conscientiousness	.038	.249	.010	.153	.878
	Openness	.166	.205	.054	.808	.419
	Previous Trauma history	.464	.248	.127	1.870	.062
	Social support	-.263	.082	-.211	-3.206	.001
	Self-efficacy	-.343	.257	-.102	-1.334	.183
	Belief in just world	.318	.148	.126	2.156	.032
	Resilience	.172	.065	.211	2.643	.009
	Religiosity	.463	.237	.153	1.952	.050

R^2 =.189, F=2.703 p<.00; R^2 =.092, F=5.527, p< .001 for step 1; ΔR^2=.097, F=3.671, p< .001 for step2

Hypothesis Three – Testing the moderating effects of effect of social support, self-efficacy, belief in just world, resilience and religiosity on the relationship between neuroticism, previous traumatic history, assumptive world, independent self-construal and general distress and PTSD

Hypothesis three states that Protective factors will significantly moderate the relationship between risk factors and PTD among flood disaster victims. It is expected that protective

factors will weaken the relationship between risk factors and PTD. Thus, the stronger the protective factor, the weaker the relationship will be.

To test this hypothesis, a hierarchical multiple linear regression using Baron and Kenny's moderation analysis method was employed. Baron and Kenny (1986) provided a comprehensive approach to moderation analysis. In the Baron and Kenny (1986) moderation approach, there are series of steps. First, the predictor and moderator are centred (standardized). This is a linear transformation method that eliminates problems associated with multi-collinearity. This is done by subtracting the mean value for a variable from each score for that variable (Lingard & Francis, 2006). Secondly, an interaction term is computed (i.e., predictor X moderator) using the standardized values. In the third step, the outcome variable is regressed on the predictor, moderator, and their interaction. That is, in the hierarchical regression analysis, the predictor is entered in the first block, followed by the moderator in the second block and the interaction term in the third block. If the interaction effect is significant (i.e., if β of predictor X moderator is significant), then there is a moderation effect. However, if the interaction term is not significant, then there is no moderation effect.

Following these steps, the dependent variables were used in separate hierarchical multiple regressions, first for psychological distress and second for PTSD. They were regressed on neuroticism, assumptive world, independent self-construal and previous traumatic history (as predictors) and social support, self-efficacy, belief in just world, resilience and religiosity (as moderators) in the second block, after controlling for demographic variables in the first block. The interaction terms were entered in the third block. The results are presented in tables 4.8 and 4.9 below.

In the result presented in the Table 4.8 below, a significant model is observed (R^2=.62, F=4.61, p<.01). The step 1 produced a significant model with demographic variables contributing significantly to the total variance in general psychological distress (R^2=.09, F=4.61, p<.01). Step 2 also produced a significant model with the predictors and moderators contributing significantly (42.6%) to the total variance in general psychological distress (ΔR^2=.43, F=19.62, p<.01). In this model, neuroticism (β=.17, p<.01), openness (β=-.12, p<.05), previous traumatic history (β=.37, p<.01) and social support (β=-.24, p<.01) independently contribute significantly to the total variance in psychological distress.

In step 3, a significant model was observed with a total of 11.6% variance in general psychological distress (ΔR^2=.116, F=12.455, p<.01). The result shows that the interaction terms between assumptive world and religiosity (β=-.22, p<.01), independent self-construal and resilience (β=-.20, p<.01), neuroticism and social support (β=-.12, p<.05), neuroticism and self-efficacy (β=.20, p<.01), and neuroticism and resilience (β=-.18, p<.01) are significant.

In summary, religiosity moderates the relationship between assumptive world and general psychological distress, resilience moderates the relationship between independent self-construal and general psychological distress, social support moderates the relationship between neuroticism and psychological distress, and self-efficacy and resilience moderate the relationship between neuroticism and general psychological distress.

Table 4.8:
Hierarchical Multiple Linear Regression showing the moderating effect of Social Support, Self-esteem, Belief in Just World Resilience, and Religiosity on the Relationship between Risk Factors (Assumptive World, Independent Self-construal and Previous Traumatic History) and General Distress.

Model		B	Std. Error	*β*	*t*	*p*
1	(Constant)	1.021	.221		4.618	.000
	Age	.014	.006	.174	2.480	.014
	Gender	-.168	.094	-.097	-1.788	.075
	Education	-.358	.103	-.186	-3.488	.001
	Marital Status	.104	.105	.061	.997	.320
	Employment	-.175	.223	-.042	-.784	.434
	Duration in residence	-.014	.006	-.144	-2.289	.023
2	(Constant)	2.512	.396		6.336	.000
	Assumptive world	.000	.002	-.011	-.233	.816
	Independent Self-construal	-.004	.005	-.064	-.935	.351
	Dependent Self-construal	-.006	.005	-.091	-1.291	.198
	Extraversion	.006	.007	.048	.845	.399
	Neuroticism	.021	.006	.166	3.520	.000
	Agreeableness	-.002	.007	-.017	-.354	.723
	Conscientiousness	-.015	.008	-.087	-1.730	.085
	Openness	-.016	.007	-.124	-2.377	.018
	Previous Trauma history	.060	.008	.374	7.110	.000
	Social support	-.013	.003	-.243	-4.755	.000
	Self-efficacy	.010	.009	.065	1.100	.272
	Belief in just world	.000	.005	-.004	-.084	.933
	Resilience	-.002	.002	-.047	-.759	.449
	Religiosity	-.004	.008	-.034	-.555	.579
3	(Constant)	3.258	.414		7.864	.000
	AW X Social support	-.036	.029	-.059	-1.228	.221
	AW X Self-efficacy	-.021	.060	-.029	-.347	.729
	AW X Just world	-.030	.034	-.045	-.882	.378
	AW X Resilience	.033	.053	.053	.621	.535
	AW X Religiosity	-.142	.040	-.220	-3.545	.000
	Trauma history X Social support	.111	.058	.116	1.919	.056
	Trauma history X Self-efficacy	-.043	.057	-.045	-.761	.447
	Trauma history X Just world	.043	.052	.048	.820	.413
	Trauma history X Resilience	.121	.062	.122	1.936	.054
	Trauma history X Religiosity	-.028	.047	-.031	-.591	.555
	IndSC X Social support	.046	.042	.065	1.103	.271

IndSC X Self-efficacy	.086	.060	.106	1.422	.156
IndSC X Just world	-.050	.043	-.068	-1.152	.250
IndSC X Resilience	-.133	.044	-.198	-3.051	.002
IndSC X Religiosity	.050	.040	.073	1.247	.214
Neuroticism X Social support	-.085	.037	-.119	-2.270	.024
Neuroticism X Self-efficacy	.149	.051	.201	2.900	.004
Neuroticism X Just world	-.025	.034	-.034	-.743	.458
Neuroticism X Resilience	-.120	.046	-.179	-2.614	.009
Neuroticism X Religiosity	-.002	.052	-.002	-.032	.974

AW= Assumptive world; IndSC= Independent self-construal
R^2 =.628, F=4.607, p<.01; R^2 =.086, F=5.177, p<.01 for step 1; ΔR^2=.426, F=19.624, p<.01 for step2; ΔR^2=.116, F=12.455, p<.001 for step3

The Table 4.9 below presents the results of the moderation effect of the moderating variables on the relationship between the predictors and PTSD. The regression shows a significant model (R^2=.53, F=5.43, p<.01). In step 1, the effect of the demographic variables were controlled. This shows a significant model (R^2=.065, F=3.83, p<.01). In step 2, a significant model is observed with a total variance of 30.5% in PTSD (R^2=.305, F=10.87, p<.01). The step 3 also produced a significant model with 17.0% variance in PTSD (ΔR^2=.170, F=8.63, p<.01).

In the model 3, it is observed that social support (β=-.108, p<.05), belief in just world (β=-.137, p<.05), and religiosity (β=-.202, p<.01) significantly moderates the relationship between assumptive world and PTSD. It is also observed that the relationship between previous traumatic history and PTSD is significantly moderated by belief in just world (β=.153, p<.05). Finally, social support (β=-.181, p<.01) self-efficacy (β=.170, p<.05) and resilience (β=-.166, p<.05) significantly moderate the relationship between neuroticism and PTSD.

In summary, social support, belief in just world and religiosity significantly moderate the relationship between assumptive world and PTSD, belief in just world significantly moderates the relationship between previous traumatic history and PTSD; and social support, self-efficacy and resilience significantly moderate the relationship between neuroticism and PTSD.

Table 4. 9:
Hierarchical Multiple Linear Regression showing the moderating effect of Social Support, Self-esteem, Belief in Just World Resilience, and Religiosity on the Relationship between Risk Factors (Assumptive World, Independent Self-construal and Previous Traumatic History) and PTSD

Model		B	Std. Error	*β*	*t*	*P*
1	(Constant)	30.141	4.371		6.896	.000
	Age	.372	.113	.234	3.291	.001
	Gender	-4.089	1.855	-.122	-2.205	.028
	Education	-1.304	2.030	-.035	-.642	.521
	Marital Status	1.787	2.067	.053	.864	.388
	Employment	-3.417	4.412	-.042	-.775	.439
	Duration in residence	-.160	.122	-.083	-1.316	.189
2	(Constant)	63.245	8.803		7.184	.000
	Assumptive world	-.051	.045	-.059	-1.138	.256
	Independent Self-construal	-.133	.103	-.100	-1.293	.197
	Dependent Self-construal	-.075	.110	-.054	-.681	.496
	Extraversion	.300	.151	.128	1.982	.048
	Neuroticism	.424	.131	.173	3.236	.001
	Agreeableness	-.171	.148	-.064	-1.162	.246
	Conscientiousness	-.411	.187	-.125	-2.196	.029
	Openness	-.254	.154	-.097	-1.650	.100
	Previous Trauma history	.726	.186	.233	3.898	.000
	Social support	-.279	.062	-.263	-4.531	.000
	Self-efficacy	.181	.193	.063	.936	.350
	Belief in just world	-.031	.111	-.015	-.282	.778
	Resilience	-.037	.049	-.053	-.756	.450
	Religiosity	.015	.178	.006	.083	.934
3	(Constant)	74.353	9.010		8.252	.000
	AW X Social support	-1.282	.632	-.108	-2.029	.043
	AW X Self-efficacy	-.906	1.300	-.064	-.698	.486
	AW X Just world	-1.757	.733	-.137	-2.397	.017
	AW X Resilience	2.022	1.151	.168	1.756	.080
	AW X Religiosity	-2.543	.869	-.202	-2.925	.004
	Trauma history X Social support	2.258	1.254	.121	1.800	.073
	Trauma history X Self-efficacy	-.187	1.236	-.010	-.152	.880
	Trauma history X Just world	2.670	1.134	.153	2.354	.019
	Trauma history X Resilience	.574	1.356	.030	.424	.672
	Trauma history X Religiosity	.561	1.033	.032	.543	.587

IndSC X Social support	.087	.909	.006	.096	.924
IndSC X Self-efficacy	2.062	1.314	.130	1.570	.118
IndSC X Just world	-1.147	.943	-.080	-1.217	.224
IndSC X Resilience	-1.309	.948	-.100	-1.381	.168
IndSC X Religiosity	.197	.871	.015	.227	.821
Neuroticism X Social support	-2.518	.813	-.181	-3.097	.002
Neuroticism X Self-efficacy	2.467	1.118	.170	2.207	.028
Neuroticism X Just world	-.741	.744	-.050	-.997	.320
Neuroticism X Resilience	-2.170	.997	-.166	-2.176	.030
Neuroticism X Religiosity	.210	1.133	.015	.185	.853

AW= Assumptive world; IndSC= Independent self-construal
R^2 =.539, F=5.427, p< .01; R^2 =.065, F=3.832, p< .01 for step 1; ΔR^2=.305, F=10.873, p< .01 for step2; ΔR^2=.170, F=8.634, p< .001 for step3

Hypothesis Four: *Testing the relationship between protective factors (social support, self-efficacy, belief in just world, resilience and religiosity), and PTD*

This hypothesis states that protective factors will have a significant negative relationship with PTD among flood disaster victims. This was analysed using the Pearson Product Moment Correlation Coefficient (Pearson r). The result is presented in the correlation matrix table (Table 4.4 above). The results shows that all five protective factors namely social support, self-efficacy, belief in just world, resilience and religiosity are negatively and significantly correlated with psychological distress (r=-.47, p<.01), (r=-.36, p<.01), (r=-.12, p<.05), (r=-.42, p<.01), (r=-.46, p<.01) respectively and PTSD (r=-.44, p<.01), (r=-.29, p<.01), (r=-.15, p<.01), (r=-.36, p<.01), (r=-.35, p<.01) respectively. This supports the hypothesis being tested. However, subjecting these variables regression analysis, it was observed that only social support significantly contributed to a reduction in the PTG.

Hypothesis Five: *Testing the relationship between PTD and PTD*

There will be a significant negative relationship between PTG and PTD among flood disaster victims. This was analysed using the Pearson Product Moment Correlation

Coefficient (Pearson r). The result is presented correlation matrix table (Table 4.4 above). The result indicated that there is rather a significant positive correlation between PTG and PTSD (r=.82, p=.00). There is also a significant positive correlation between PTG and general psychological distress (r=.29, p=.00). This does not support the hypothesis being tested. It means an increase in PTG corresponds with a possible increase in PTD and vice versa.

4.1.6 Summary of Qualitative Findings

The following is a summary of the results of the data analysis presented above:

1. Neuroticism, and previous traumatic history significantly predict general psychological distress and PTSD.
2. Social support, belief in just world, resilience, and religiosity significantly predict PTG
3. A.
    i. Religiosity significantly moderates the relationship between assumptive world and psychological distress
    ii. Resilience moderates the relationship between independent-self-construal and psychological distress
    iii. Social support significantly moderates the relationship between neuroticism and psychological distress
    iv. Self-efficacy and resilience significantly moderate the relationship between neuroticism and psychological distress.

    B.
    i. Social support, belief in just world, and religiosity significantly moderate the relationship between assumptive world and PTSD

ii. Belief in just world significantly moderate the relationship between previous traumatic history and PTSD

iii. Social support, self-efficacy and resilience significantly moderate the relationship between neuroticism and PTSD

4. Social support, self-efficacy, belief in just world, resilience and religiosity are negatively and significantly correlated with PTD (psychological distress and PTSD)
5. There is a significant positive correlation between PTG and PTD

4.1.7 Additional Findings

Additional findings from the results include;

- Openness significantly and negatively predicts general psychological distress
- Extraversion significantly and positively predicts PTSD
- Conscientiousness significantly and negatively predicts PTSD
- Agreeableness significantly and negatively predicts PTG
- Social support significantly and positively predicts PTD (general psychological distress and PTSD)
- Age, education, duration in residence predict PTD
- Gender, education and employment predict PTG

4.2 Qualitative Results

In all, three themes were generated. These include *experiences during disaster*, *psychological impacts* and *adjustment factors*. Each of these themes have subthemes that are presented below with corresponding quotes. The themes were carefully named to reflect the information provided by participants and also to satisfy the research questions to be answered by the study.

Table 4.10: Summary of Themes, Subthemes and Supporting Quotes

Theme	Subtheme	Supporting Quote
Perceived cause of Disaster	Engineering failures.	"*...when they were constructing the N1 high way, there was this big gutter... But immediately they constructed that N1 they blocked that gutter... the new gutter that they were constructing was left half way. (P 1, Female, 36years)*
	Anti-environmental behaviours	*"...Some environs dispose their refuse into the gutters. ...Those in Alajo do not have toilets, so they even throw their faecal matters into the gutters." (P 5, male, 37years)*
Experiences following disaster	Loss and Biographical disruption	Disfigurement: *"...Look at my body. Now I always have to wear long sleeves and a cap to cover myself. People fear how I look now... (P 8, male, 47years)*
		Death: *"...My elder sister who was 58 years died... Because of the fire...And my senior brother whose 18 years girl was also at the down also lost her life". (P 2, female, 22years)*
		Loss of property: *"...Well, we lost a lot of material things. Our clothes, cars and many things" (P12, male, 32years)*
	Psychological impacts	Anxiety: *"...I always dream about it. It's like the thing is happening again. I fear at night because of the dreams. Even during the day sometimes, I dream about it. When I have the dream and I wake up then I become disturbed." (P 8, male, 47years)*
		Behavioural changes*: Currently, I do not sleep so well, I wake up at 2 am and can't go back to bed. Whereas I sleep better outside." (P 4 female, 48years)*
		Mood effects: *"...My brother, it is tough for me. If not my wife, hmmm. If it were some women, they would have left me. I have been crying aaa. I feel really sad." (P 8, male, 47years)*
3. Adjustment experiences	Societal level intervention	*"...A lot of support for possessions came. NADMO also came. Government gave us GHS 100 for 3 months. They registered us and gave us and ATM card [Actually an ezwich card] which we withdrew funds for just 3 months. (P5, male, 37years).*
	Family level intervention	*"...my daughter lives at Italy... so my daughter come down and she came to help me to acquire those things back... helped me to build my own house where I now live" (P7, male, 60years).*
	Spiritual support	*"...at first I was not going to church. It is now that I am going. They don't know anything about my situation. But for me I go to church now because I know what God has done for me." (P 10, male, 30years)*
	Post disaster vulnerability	*"...I think government must do something; they must sympathise with us. If they promise something and they are not doing it, they should know that we are suffering." (P 10, male, 30years)*

Perceived cause of disaster

This subtheme examines the impression participants had about the cause of the disaster. Participants who happen to be at the point of the disaster had their own beliefs about what might have resulted in the disaster. From the narratives, it was noted that participants attributed the disaster to inappropriate town planning and constructions and human behaviours. Therefore, two subthemes emerged under this theme namely *engineering failures* and *anti-environmental behaviours*.

Engineering failures: This subtheme describes the cause of the disaster participants attributed to construction or engineering problems. At the time of the disaster, the Kwame Nkrumah Circle Interchange was under construction. Probably, during the construction, drainages were temporarily blocked either deliberately or not deliberately by construction works. Participants indicated that this might have resulted in the flooding. For example, one participant stated that *"…the road was under construction so trip of sand covered the roads, gutters so the rain came with force and did not get a place to pass. It entered the tank and uncover the top and the fuel came out" (Participant 2, Female, 44years).*

Another participant whose residence is not within the construction zone but was still flooded supported the idea that engineering failures might account for the disaster. This is because construction works in her vicinity was done several years before the disaster. She states that "*…when they were constructing the N1 high way, there was this big gutter even though at first it gets flooded but it was just around the edges, not major flooding. But immediately they constructed that N1 they blocked that gutter… the new gutter that they were constructing was left half way. They didn't do the rest" (Participant 1, Female, 33years)*

Some participants also attributed the fire to poor maintenance at the fuel filling station. Some of them said the following:

> *"…what I know is that, first we share wall with the filling station, anytime it rains they use rubber to cover their machines because of leakage. When it rains the petrol burst" (Participant 2).*
>
> *"…my house shares a wall with the filling station. From 5pm the rain was getting heavier, thus it entered our house to the level of our neck. You could smell petrol in the water, but since we had 2 vehicles in the yard, I assumed it was from their burst fuel tanks. However, the smell of fuel was so much that you'll have to cover your nose before you could enter my room. I then realised it was from the filling station and not our vehicles. The smell of fuel was also on me" (Participant 4)*
>
> *"…the filing station that exploded, the owner didn't maintain the place. I heard there were leakages from their fuel reservoir. And then also the authorities that needed to check all those things must be punished. Ghana we are not serious at all. So this thing happened and people talk and talked but now it has died off again" (Participant 12)*

Anti-environmental behaviours: This is about negative human behaviours that might have resulted in the floods and related disasters. Participants attributed the disaster to these behaviours by indicating that people indiscriminately dispose refuse into the drains. The refuse choke the drains and prevent the free flow of running water whenever it rains. This diverts the water into homes and cause flooding. They also stated that some households do not have toilet facilities and so dispose their feacal matter into the drains. One of the participants admonished Ghanaian by saying *'…Ghanaians must learn to protect our own environment' (Participant 9, male, 42years).*

These are some of the responses participants gave about this:

> *"…We have a big gutter but you see people throwing rubbish and defecating into it especially in the morning. So all these things contributed to the flood" (Participant 1, Female, 36years)*
>
> *"…some from dispose their refuse into the gutters. … Those who do not have toilets … even throw their faecal matters into the gutters (Participant 5, male, 37Years).*

Experiences following disaster

This theme describes the impact of the experiences of the participants. These include experiences both during and after the disaster. Participants experienced physical and psychological impacts and these are captured under subthemes known as *biographical disruption* and *psychological impacts.*

Biographical disruption: This describes physical or bodily disfigurement or alterations caused by the disaster to participants. Those who were affected by the fire had some various degrees of burns. This leaves them with some physical deformities that affect their daily activities. For example, one participant stated that

> *"...Look at me body. Now I always have to wear long sleeves and a cap to cover myself. People fear how I look now. Look at my picture [participant pulls out a picture of himself before the disasters and he looks really different]. Now look at me. The difference. Hmmm". (Participant 8, male, 47 years).*

He also indicated that due to his current appearance he has only limited places to go to because people will laugh at him. For example, he said; *"...when my children say their parents should come to PTA (Parent-Teacher Association), I can't go again because their friends will laugh at them." (Participant 8, male, 47 years).*

Other participants who were also burnt in the disaster stated how they are disfigured as follows;

> *"...I was also burnt. It wasn't a small issue, from my head to toe, every part of my body burnt... I look old at once" (Participant 3, female, 38years).*
>
> *"...I also feel bad about my skin now. I am not married and now see my skin. I feel shy." (Participant 12, male, 32years)*

Another participant indicated that even though she was not burnt, when jumped from a storey building in an attempt to escape the fire and this got her paralysed after a couple of weeks. She stated the following;

> *"…It was after say around 2 weeks then I could see that when I am walking, my legs wobbles. So I didn't know anything about spine something. So one morning, when we woke up we swept the area, and I sat down, I wanted to get up, but I couldn't get up… It has disabled me, it cost me my ability to work." (Participant 6, female, 63years).*

This participant also indicated that her current state has rendered her unable to work since she is not able to walk and move about;

> *"…I am not able to work. Because it is from this work, I use to gather small, small money to help these children and now that I am not going. There is no father, I am the only father and the mother. So I can say it is Jehovah GOD that has sustained us." (Participant 6, female, 63years).*

Participant 2 stated that she had skin depigmentation due to the fuel that spilled on the surface of the water. She was not burnt but because she swam through the water, her skin was affected significantly.

> *"…The problem I face is that I was not burnt, but when I jumped from the top there was a container choked there so my side hit the container before it turned me. Because of the road construction there were a lot of things packed as the rain roll you the things will be hitting you. See my skin. The colour has changed" (Participant 2, female, 44years).*

The words of one participant suggests that there is a level of stigma towards disfigurement in society. His comment suggests that society needs to appreciate the challenges of people and support them in which ever small way and that acceptance will help sufferers:

> *"…Ghanaians must know that there are people in society who are ugly not because they want it. Let them accept them." (Participant 8).*

Participants also suffered the loss of their loved ones such as relatives and friends. Some loss their relations or friends through the fire and others through the flood. Some participants said the following;

> *"…My elder sister who was 58 years died… Because of the fire. She was not at the top, she was down. And my senior brother whose 18 years girl was also at the down also lost her life" (Participant 2, female, 44years).*

"…I have no family members left. The fire killed all of them" (Participant 5, male, 37years).

Some lost their marital partners and were confronted with the difficulty of breaking the news of the death to the children;

> *"…Finally, I gathered the courage to go to Circle. She was not there too. My brother, it was on the 7th day that I found my wife's body at the mortuary at 37 hospital ooo. I couldn't cry. I was trying to be strong for my children. We have two children. They were always asking where their mother was. I was just hoping to see her at least alive in the hospital and tell them something but finally I have to go and break the news to them" (Participant 9).*

Participants also lost their properties in the disaster. Some lost their homes, clothing, cars, and shops and other belongings. For some, it was all their live time possession that they have lost. Due to this, some participants find it difficult to resettle. Some sleep outside because they are unable to raise funds to rent accommodation. Some who were previously importers are now selling sachet water.

Some participants who lost properties said;

> *"…We lost everything. We didn't pick anything from that house. But you know people even came and robbed the few things that remained" (Participant 1, female, 36years).*
>
> *"…I lost all my possessions. My electronic devices, wardrobe, the building even had cracks" (Participant 5, male, 37years).*

> *"…Well, we lost a lot of material things. Our clothes, cars and many things" (Participant 12, male, 32)*

For others, the loss of the job appears to have completely redefine their state and they perceive that they have reduced to nothing:

> *"…I am into business, I import things. My customer is in Italy and one is in US, they send me things, mattress, television, fridge and others. I cleared them, I do supply to my customers in Bogoso, Goaso, Prestea, and Tarkwa… Now I sell pure water, my ice chest is behind you". (Participant 2, female, 44years)*

Some victims have hard time making a living because their source of livelihood had been severely affected. For example, some participants said;

> *"…Since then we have been through hardship. We don't get money to do anything" (Participant 3).*

Others also indicated;

> *"…I sleep outside, those are my things. My bags, sponge everything is inside. I sleep in front of Vienna City." (Participant 2).* Another added*; "…it has cost me my children's schooling" (Participant 6, female, 63years).*

Psychological impacts: This subtheme examines the psychological distress endured by victims over the years as a result of the disaster they experienced. This captures three dimensions namely *anxiety*, *behavioural changes*, and *mood effects*.

With regards to anxiety, long after the disaster participants still expressed feelings of uneasiness and fear about the event and related situations. They reported nightmares and uncomfortable memories about the event. Some participants expressed anxiety over the location of the disaster as shown in the following narratives;

> *"…I stopped going to circle or passing there. I remember one day I was going to Accra from Achimota, I used 37 instead of circle. It makes my heart beat. But this year I manage to go there like three times." (Participant 10, male, 30years)*

> *"…Eeii, I get scared when I see it [i.e. the circle filling station], I panic. After we were discharged from the hospital I didn't want to come here. I came and stood at*

> *an area and decided boldly to come if not the fear will be there forever. So I came with boldness, courage but sometimes I get frightened with goose bumps." (Participant 4, female, 48years).*
>
> *"...I still use circle to the work and back. When I get there at first it scares me. Right now, it annoys me." (Participant 12, male, 32years)*

Some participants also indicated that they experience anxiety at specific times such as towards night, and during rains. *"...I get panic, when am sleeping or walking around and when it's getting to evening" (Participant 3).* Another said *"...I am better now but whenever it rains my fears and anxieties resurges". (Participant 5, male, 37years)*

For others, the anxiety has been globalised or generalised when it rains:

> *"...When it is about to rain, I remember that day. It often keeps me awake especially if the rain is falling at night. Aha! And also, I don't know, when I go upstairs, I remember the incidence papa. It looks like it is happening again. Fortunately, my room is downstairs so I avoid the top as much as possible." (Participant 11, female, 67years).*

Some participants expressed his experience of nightmare as follows:

> *"...I have dreams about it as if it is happening again. Almost every week that happens to me." (Participant 12, male, 32years).*
>
> *"...I always dream about it. It's like the thing is happening again. I fear at night because of the dreams. Even during the day sometimes, I dream about it. When I have the dream and I wake up then I become 'basaa' (i.e. disturbed)." (Participant 8, male, 47years)*

Behavioural changes include information on some negative changes in the behaviour of victims following the disaster. This includes changes in sleep, eating and physical activities. Below are some extracts from their narratives;

> *"...I can't sleep. I lie down like that then I open my eyes. I don't feel fine now". (Participant 3, female, 38years)* and *"...Currently I do not sleep so well, I wake up at 2 am and can't go back to bed. Whereas I sleep better outside" (Participant 4, female, 48years).*

For those experiencing eating related changes:

> *"…Eating, it is the worst of it all. Sometimes I can be stressed and forget whatever I am doing. I don't even feel like eating" (Participant 2, female, 44years),* and *"…As for food I can eat a little. When I am eating, I don't feel its taste, especially when I remember that I have nowhere to sleep." (Participant 3, female, 38years).*

Nevertheless, some participants indicated that their sleep and eating patterns had not changed that much. Below are some narratives;

> *"…As for eating honestly I can eat normal." (Participant 10, male, 30years),* and *"…As for sleeping, I sleep well… No. Me, I dey eat paa oh (i.e. I eat so much) …" (Participant 6, female, 63years); "…I don't think my eating has been affected that much. When I feel hungry and I get the food I can eat. So, I think that it is okay." (Participant 11, female, 67years).*

With regards to physical activities, some participants reported loss of energy and zeal or motivation. One participant said the following;

> *"…I wasn't enjoying myself and the things I used to do in the past and it also impacted on my work. Because now even waking up and preparing for work became a challenge." (Participant 1, female, 36years).*

Mood effects describes the emotional feelings such as sadness, depression, loss of interest by victims of the disaster and anger. Some said they cried, felt sad and lost interest in activities. One of the participants responded that *"…I wasn't enjoying myself and the things I used to do in the past" Participant 1).* Largely, these experiences underscore depressive symptoms among the victims. Below are some other quotes from other participants*;*

> *"…My brother, it is tough for me. If not my wife, hmmm. If it were some women, they would have left me. I have been crying aaa. I feel really sad." (Participant 8, male, 47years),* and *"…I was thinking a lot. I still think but not like last year… I was getting angry too. The only thing is that I try not to offend the children." (Participant 9, male, 47years).*

A victim who was physically deformed by the disaster shared how difficult it is for him in public places. His ordeal affects the children as well as he indicated that the friends of his children will mock them when he turns up in the children's school. This is what he said;

> *"...I can be very sad because my children when they say their parents should come to PTA I can't go again because their friends will laugh at them." (Participant 8, male, 47years)*

He also lamented how the general public add to his pain.

> *"...It's not easy my brother. If I go and join a trotro, people don't want to sit on the seat with me. Meanwhile I didn't bring this upon myself. But the thing is that as for the people they don't know what happened to me. No, I look very scary. When I see people's reaction then I start to cry. I can't hold the tears. Hmmmm." (Participant 8, male, 47years)*

Adjustment experiences

Victims have endured lots of emotional and physical difficulties as a result of the disaster over the years. This theme describes the resources that help them to live through the difficult times. These include how society intervened in order to assist the participants in their difficult moments. It also explains how families have been of support to participants. There are however some experiences of vulnerability which might impede how well participants might have adjusted to the disaster effects. Therefore, there are four subthemes under this theme namely *societal level intervention, family level intervention and spiritual support* and *post disaster vulnerability*.

Societal level intervention: This describes interventions from society to support participants during and after the disaster. It was also noted that assistance from unrelated people, public figures and philanthropists was also helpful to victims. At the time, some political figures, footballers, and well to do Ghanaians were reported to have donated items and money for the upkeep of victims. Some also supported victims directly. Although participants'

responses indicated that these resources were not sufficient, but rather more driven towards attenuating acute crisis, they provided some initial relief:

> *"…It was Ken Agyapong who promised to take care of that child .so he asked me to look for school for him so he paid everything. 11 million old currency…. Mr Osei Kwame Despite also gave me some money. I used some to sew uniform for the children among others. I rented a room for 2 years. After the advance expired, I couldn't renew it" (Participant 2, female, 44years)*

As indicated above, the support received by the above participant lasted only during the early phase of the crisis, but ceased afterwards.

Some participants were critical of the support they received, casting insinuations of corruption and inefficient distribution. For example,

> *"…We even heard that Asamoah Gyan came to donate some money to us. But it was only one tin of milo and cowbell that we were given to go home." (Participant 10, male, 30years)*

Some participants also got support from government especially through the NADMO. For example, one participant said;

> *"…A lot of support for possessions came. NADMO also came. Government gave us GHS 100 for 3 months. They registered us and gave us and ATM card [Actually an ezwich card] which we withdrew funds for just 3 months. From there I did not get anything again. (Participant 5, male, 37years).*

The above also reiterates the insufficiency of the support participants received after the disaster. This signifies the temporary reliefs offered participants. However, the long term needs of the participants would not be appreciated by society.

Some participants also received support from friends. For example,

> *"…My friends have been good. Even though most of them died, the few I have, have been good to me. I also hassle small, small." (Participant 10, male, 30years)* and *"…Eee as for friends in terms of dresses, clothes they helped but not anymore" (Participant 2, female, 44years).*

Another participant indicated that things are still hard that she had to fall on friends sometimes for money and good to sell and pay back later:

> *"…Sometimes, when I see my friend, I beg for money say GHC10.00 and they give me. I collect cake from a certain woman and sell then I return the proceeds" (Participant 3m female, 38years).*

Another one also said that the sympathy and emotional support from friends was helpful:

> *"…There were a lot of friends who sympathised with me and my children. There were calling and encouraging especially the church people" (Participant 9, male, 42years).*

Family level intervention: Participants also reported how helpful family members have been in the trying moments of their lives. For many of them, relatives came to their aid. In this case, some participants supported by family members to relocate. Others were re-established in order to make a living. For example, *"…My children try to help me. As I told you they put up my shop again for me" (Participant 11, female, 67years).*

Some participants said their relations who were abroad and heard about their ordeal came to Ghana to support them:

> *"…As I said, physically my brother came down and bought the little, little things that would make us comfortable. (Participant 1, female, 36years)*
>
> *"…my daughter lives at Italy… so my daughter come down and she came to help me to acquire those things back… helped me to build my own house where I now live" (Participant 7, male, 60years).*

Another participant also expressed joy about how family members had been supportive;

> *"…My family was very supportive. They have helped me raise the kids this far. I don't really need money or materials from them. They have provided us with emotional support. They were really there" (Participant 9, male, 42years).*

Spiritual Factors: Some participants also used religious or spiritual coping methods such as praying and attending church. For example, some participants recounted that;

> *"…I have become stronger in faith and even now I have learnt a lot. Anytime I look back to that experience, I know that God had a hand in it." (Participant 1, female, 36years)* and *"…I thank God for life. At first, I didn't mind. Now I am close to God. It has also made me manage the little I have now." (Participant 10, male, 30years).*

The participant 10 was explicit even that it was the disaster that made him start going to church as in the following;

> *"…at first I was not going to church. It is now that I am going. They don't know anything about my situation. But for me I go to church now because I know what God has done for me." (Participant 10, male, 30years)*

For most of the participants, being alive is valuable than the possessions they lost. This gives them some strength to ride on. They appreciate that a supreme being (God) is the holder of all lives and that one must be grateful if we have life:

> *"…I appreciate life now than before. You can just vanish like that, so when we have a day, we must be grateful. Now I see people do things and I tell myself that they have not seen anything in life" (Participant 9, male, 42years)*
>
> *"…It has made me appreciate people a lot. And also, I value life. It is very simple to die. But God is the one that keeps us alive. I now try to be closer to God" (Participant 12, male, 32years).*

One participant expresses how God has been personal with him. He believes that he is precious to God and that might have spared his life. *"…I am precious to God. Having my life alone is precious to me. That is my strength…I know God is on my side. There is always hope once there is life." (Participant 7, male, 60years).* This participant also implies that life without possessions is sufficient. This must be a strong resource for coping with disaster effects.

Post disaster vulnerability*: This* subtheme describes the factors and situations that expose victims to negative post disaster effects. They include situations during the disaster and those afterwards. Some of these vulnerabilities include poor or delayed response by rescue teams and this may create a sense of helplessness in the face of the disaster. One participant said that;

> *"…Then I started calling the police 191 and they weren't picking. It was ringing and nobody was picking… So, this thing happened after 9pm, it around 3am that the military people came. But when they came, me I could see that the water was even going down." (Participant 1, female, 36years)*

> *"…We did not have NADMO number. Later we saw the police and fire service, so we asked them to come to our aid, but they said they are protecting the Bank, so they cannot come to our side. It was after over an hour before they came to our house." (Participant 4, female, 48years).*

It also emerged that lack of support from government for some of the victims risks aggravating their plight. One of the participants was explicit in her submission as follows;

> *"…What I have to say is a plea. As I speak, I have 4 children and because of this disaster they all face problems with their schooling. Each of them stays at a different place but what every parent want is to see her children with her. Now whether they eat and how they sleep I don't know. We have heard that World Bank gave money and Goil too. The government also promised … the president of Benin has brought us money and NADMO officials confirmed it. What are they waiting for? The money came because of the disaster. They should just give what belongs to us as a matter of urgency to help us start something". (Participant 2, female, 44years).*

Other participants also supported this with the following submissions.

> *"…I think government must do something; they must sympathise with us. If they promise something and they are not doing it, they should know that we are suffering." (Participant10, male, 30years)*
>
> *"…Not knowing they selected about seventeen people, out of all this people and gave them 100 million, they brought it to the media and we saw it on the tele. So, we think*

> *everybody who is affected can have that opportunity. I went there and that is what they told me I wasn't burnt and after all I did not die, it was only the burnt ones and the dead ones that their taking care of. (Participant 6, female, 63years)*
>
> *"...As for government, God will judge their actions. That is all I can say about them" (Participant 9, male, 42years)*

Another factor that poses risk for victims is lack of professional psychological intervention for victims. Responding to the question whether they were counselled or seen by a psychologist/counsellor, participants responded in the negative. Below are some of the narrative;

> *"...I didn't know about that. That time we were all too busy putting the house in order. There were too many information those days. So, I didn't know about that." (Participant 11, female, 67years).*
>
> *"...No. I heard there was something like that but at the time they were doing that I was busy looking for my wife. I told you that it took me 7days to get her body." (Participant 9, male, 42years).*
>
> *"...No. I never had any such support" (Participant 6, female, 63years).*
>
> *"...Those people [referring to psychologists] are scares. I have not seen one before. But I know they are there" (Participant 12, male, 32years)*

Another situation that exposed the participants to vulnerabilities is seeming neglect by family relations.

One participant said the following;

> *"...And later when I broke down, no one. Even the chief, the king that town is my cousin son, I send him a message looking for help. They told me they will meet the family and whatever come of it he will let me know. Maybe is today that we are discussion, is today that he will come. So as for my immediate family which is my children, they are doing their possible best at least to assist me." (Participant 6, female, 63years)*

> *"...Eeee as for the family we were all there at the time of the disaster. My father is late, his next of Kin was involved as well as the siblings so who will help who? So, there is nothing like family support." (Participant 2, female, 44years)*

For one particular participant, she had lost all family members in the disaster (the first-degree family members). This renders her alone especially because the extended family members were not part of his life. This is what she said; *"...I have no family members left." (Participant 4, female, 48years).*

Job loss is another risk factor among victims that exposes them to posttraumatic distress. This is indicated in the following statements;

> *"...I am worried about my job. What will I do? It has been 3 good years. I keep living on arms." (Participant 10, male, 30years)*

> *"...Life now is bad. No money, no job, and this skin. It is very bad now." (Participant 8, male, 47years)*

Summary of Qualitative Findings

In all, the qualitative study reveals the experiences of the victims of the 3rd June disaster in Accra. It reveals the physical and psychological challenges the victims endured over the years as a result of the disaster and the factors that underscore how they adjusted either positively or negatively to the impacts over the years. Their perceived causes of the disaster include under engineering failures and anti-environmental behaviours. Their experiences include biographical disruption such as disfigurement, death and loss of property, and psychological impacts such as anxiety, behavioural changes and mood effects. Participants' adjustment experiences involve societal level intervention, family level intervention, spiritual support and post disaster vulnerability.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter presents the discussion of the findings of the study by integrating both the qualitative and quantitative findings. The points of convergence and divergence are also presented. The chapter also presents the contributions and implications of the findings of the study to knowledge, research, clinical practice and policy decision. Finally, some recommendations and conclusions are made.

Link between Risk Factors and PTD

One of the major objectives of the study was to examine how risk factors relate to PTD. To examine this, neuroticism, assumptive world, previous traumatic experience, and independent self-construal on PTD were tested. It was found that neuroticism, and previous traumatic history significantly predict PTD (general psychological distress and PTSD). Independent self-construal and assumptive world however do not predict PTD. These factors are discussed in succession. It has been generally established in the literature that disasters result in distress (e.g., Chung & Kim, 2010; Dewaraja & Kawamura, 2006; Mason, Andrews, & Upton, 2010; Neuner et al., 2007). However, factors that predispose victims to distress after disasters are still been investigated. Some of these factors are those found by this result. These factors are known as risk factors.

Neuroticism: The study found that neuroticism significantly predicts PTD. This means that a person with neuroticism will more likely experience higher levels of psychological distress after disaster. The association between high neuroticism and likelihood of PTD has been reported variously (e.g. Breslau & Schultz, 2013; Ogle et al., 2017; Sveen et al. 2016). Since

people with this trait are bedevilled with negative emotionality, their coping abilities will become poor when adversities arise. This may increase their distress level.

Personality traits such as neuroticism are enduring. This means that people with neuroticism will already have enduring emotional challenges before they encounter the traumatic event. This is why such people are more at risk of experiencing higher levels of PTD. This must provide a cue for intervention programmes for victims in order to address the personality factors that could impact victim's distress levels.

Previous traumatic history: Previous traumatic history is another factor that significantly predicted PTD in this study. Many people experience at least one traumatic even in their life time (Bonanno & Mancini, 2008). According to Mock and Arai (2011), these experiences make the individual vulnerable to future negative health impacts. This means that in Ghana and other low- and middle-income countries where disasters are projected to increase, many more people in the near future will experience more posttraumatic distress.

Previous disaster experiences weaken resilience capacity and expose people to psychological distress (Greenfield, 2010; Pine & Cohen, 2002). This means that continuous exposure to trauma tends to break down coping resources. Interventions following trauma experiences are limited in Ghana and therefore not many people receive the needed post trauma care. Therefore, people exposed to trauma do not develop resource capacity to deal with the challenges following the adversity. There is Therefore inadequate or weakened resources to deal with subsequent. In this regard, more traumatic experiences would tend to increase distress levels.

The population for this study resides in a setting that has experienced several flood disasters over the years. Floods have become a perineal disaster in Ghana with Accra experiencing it every year (Asumadu-Sarkodie et al., 2015). Each year this disaster happens, victims

become displaced and disorganised. They barely get restored before another disaster happens. This will significantly affect their ability to deal with the current disaster. Other traumatic events that people might have experienced in addition to natural disasters include physical and sexual abuses, road accidents and robberies as seen in the findings of Anda et al. (2006). In this regard, people who suffer such traumas will equally be susceptible to PTD.

It is therefore imperative that people who report any form of abuse or trauma be taken through thorough assessment and treatment in order to alleviate the psychological challenges they may experience. This is because, when this is not done and they are faced with any tragedy in the future, they may struggle more than the need be due to accumulated impacts. Some of the impacts include anxiety, depression and aggressive behaviours (Gilbert et al., 2009).

Further support was obtained from in-depth interviews regarding factors that might risk the development of PTD. For example, delayed or inefficient support from government such as delay in rescue operations and inadequate relief items, and seeming neglect by society after the disaster, lack of professional psychological intervention, and lack of family presence and support. All these factors collectively indicate that lack of support is associated with vulnerability to distress.

The qualitative findings revealed that victims expressed the need for support during the disaster. This support is in terms of rescue and relief. It was reported that rescue team arrived at the disaster scene late. Also, upon arrival, priority was given to monuments over lives. This can create a sense of neglect among victims during disasters. Some victims reported that by the time rescuers arrived, they had managed their way out and most damages had been already caused. This can leave a permanent memory of insecurity when victims sense danger later in their lives. One of the ways of calling for help during disasters in Ghana is

by reaching out to the security services and the NADMO. Some victims said when the numbers of the police were called, there was no response. The emergency contact number of the NADMO is barely known by most Ghanaians. There is the need for effort to create awareness and revamp response processes within this service in the country.

Relief items were not enough for victims after the disaster. A participant reported that she was told that the items are for only those whom were burnt by the fire. However, there were victims who were not personally burnt but had their houses burnt. They deserve relief items too. In terms of hospital care, all victims should be given access to medical care regardless of the extent of the effects they had. Such medical cares must also be prolonged since some may have delayed onset of symptoms.

Unfortunately, professional psychological support was not available to victims. This would have helped victims to better cope with the situation (Kline et al., 2018; Linares et al., 2017). All participants interviewed said they did not have any psychological intervention. Even though a support centre was set up immediately after the disaster, the centre seemed far from the disaster scene. Victims also complained that they had too much information to deal with at the time so could not access the centre. This has implications for post disaster first aid interventions especially in terms of setting, information, personnel for the intervention and general strategy.

Some participants also indicated that family members were not available to support them. A participant mentioned that his family member cannot be countered on. This sends a signal of neglect. Regardless of the challenges between family members, adversities present the opportunity to settle differences. If there are no differences and this neglect is portrayed, it will further affect the victim's coping process. These factors underscore the importance of social support during and after disasters.

Independent Self-construal: The quantitative result showed that independent self-construal did not predict PTD in this study. This means that people who view themselves to be distinct from others in the community, more or less individualistic do not tend to experience any higher distress levels after the disaster experience. This is contrary to the position of Jobson and Kearney (2006) that people who are self-centred after disasters suffer more posttraumatic difficulties. It also contradicts Hafi and Shafi (2014) who opined that cultural orientations influence how distress symptoms are expressed. The idea is that people who are not communal are less likely be prepared or able to share their challenges in order to receive support that is available for their ordeal.

However, when disaster strikes, most communities become concerned and supportive where the lack of that support may result in distress as indicated earlier. In Ghana, support is high usually during and a little after the disaster. Goverenment provides support in various ways especially through the NADMO. Familes set out to support and friends lend helping hands. These supporte are usually made available to everyone regardless of their cultural orientation. Nevertheless, to be able to enjoy continuous support from the community may depend on how related one is to others in the community. This is because, many forget the victims after a short while. But those who express their concerns get the sympathy and support they may need. A victims with independent self-construal may not readly seek for support when even things become difficult. For example, such people may not be able to seek refuge with friends or neighbours when their house is flooded. They may also not be able to ask for financial or other material support in order to be relieved of their immediate effects of the disaster. This not withstanding, the finding shows that it does not affect their PTD levels in any significant way maybe because they have been able to live separately on their own.

Assumptive world: Assumptive world did not also predict PTD. Assumptive world is how people typically expect the world to turn out for them. Typically, disasters defy people's expectations and leave them with long-term impacts. However, in this study, assumtive world did not predict PTD. Thus, it is important note that even if the assumptions people have about the world tends to be challenged and shattered by disasters, this does not determine whether they will relive the traumatic experience or suffer other psychological impacts. Perhaps the relationship between assumptive world and PTD may be enhanced by other factors.

The theory of shattered assumptions indicates that because people with high positive assumptions about the world tend to perceive the world to be benevolent, meaningful and predictable, they get shattered when disaster strikes them (Janoff-Bulman, 1992). Perhaps, they tend to struggle to come to terms with the realities of the event. Maybe, after they accept the reality then they tend to accept what actually happened to them.

Perhaps, the attribution of the cause of the disaster may also influence victims' assumptive world and subsequent distress level. From the qualitative findings in this study, it was found that victims attributed the causes of the disaster to engineering failures and anti-environmental behaviours exhibited by citizens. It was lamented that construction works at the time precipitated the disaster. In 2015, the Kwame Nkrumah Interchange was upgraded into a three-layer overheard. This construction took several months to complete. During the raining season, the water ways in the area got choked and caused flooding. Ideally, path should have be created for running water ahead of the rains to avoid such tragedies. The situation became worse because generally, drainage in Accra has been poor. This agrees with Asumadu-Sarkodie et al. (2015) who reported that Accra has a poor drainage system.

One participant said the construction works on the N1 high way had blocked a big gutter in their area.

Some drains in Accra are too small. In some area there are none. Some are also damaged, creating danger for human existence. In some cases, when it is raining in Accra, commuters are not able to identify the end of drains. They either walk or drive into the drains when there is an overflow. Roads get flooded during rains in Accra. In fact, the Kwame Nkrumah interchange that was constructed around the time of the disaster began to be flooded a year after commissioning. There is the need for a review of construction activities in the country.

It was reported that fuel reserved in an underground thank leaked onto the surface of the water. This also raises some engineering concerns. It also reveals poor maintenance culture. Fuel stations need regular check and maintenance to avoid leakages and explosions. Anecdotal data reveals that this is a requirement for the renewal of operation license in Ghana. However, concerns have been raised about how functional this regulation has been especially following series of similar disasters in the country.

Human behaviour towards the environment is a crucial factor in disaster occurrence. Negative behaviours endanger human lives by exposing them to dangerous structures in the environment. There is indiscriminate disposal of refuse especially into drains in Accra. When it rains, the refuse block drainages leading to poor flow of running water. At the Kwame Nkrumah Circle where the disaster occurred, most people complained about how the main drainage that connect water to the sea is chocked by refuse. During the interviews, a participant indicated that when you see people dispose refuse into the gutter and you caution them, they insult and ask if the gutter belongs to you. This problem therefore compounds the already narrower, unmaintained drains that are in the country.

Some Ghanaian households do not have toilet facilities. For that reason, the drains became the grounds for dumping their faecal matter. People typically would tie these wastes in black rubbers and drop them in the drains. These behaviours can clearly be described as anti-environmental since they tend to deteriorate and endanger lives.

With these evidences in mind, residents may already anticipate disaster especially in the raining season. This means that their assumptions that the world is meaningful might have been already challenged. Therefore, they are less likely to feel the shock of having their assumptive world altered after the disaster, and consequently less impact on their distress level.

Link between Protective factors and PTG

The second major objective in this study was to examine the effect of protective factors in PTG. The results indicated that social support, belief in just world, resilience, and religiosity significantly predict PTG. It was however found that self-efficacy does not predict PTG. Protective factors are factors that sooth an individual against negative impacts and promote wellness. As indicated, four out of the five were found to promote PTG among disaster victims.

Social support: Social support is one of the protective factors that significantly predicted PTG. However, the result shows that social support is associated with a reduction in PTG. This means that victims who received more social support are likely to experience less growth. This is contrary to the popular understanding on the role of social support in PTG, contradicting the findings of several studies such as Feeney and Collins (2015), Yi et al. (2015), and Platt et al. (2014). Social support involves assistance from friends, family and significant others in society. According to Berkman and Glass (2000), these supports from people around us motivates the individual to adopt positive self-care behaviour and to

develop a sense of security and self-worth. It is also said to restore health and wellbeing (Sarason et al., 2001).

Social support systems in Ghana after disasters include government aids, assistance from friends and families, and support from philanthropist and other well-meaning Ghanaians. Usually, government assists victims through the NADMO by providing relief items and supporting with medical care. Ghanaians also support through cash and material donations to victims. In many communities, the community leaders offer school classrooms and palaces for displaced victims. Churches and mosques are also released for the same purpose. Non-Governmental Organisations (NGOs) also provide assistance in disaster periods in Ghana. Families receive their relations to stay with them, they provide necessary needs and support victims emotionally. These systems are expected to help victims to recover quickly and grow from the impact of the adversity as also indicated by Han et al. (2019) and Oniszczenko, and Firla (2017).

However, rather than experiencing growth, victims with higher social support experience less growth. People who receive support from others in times of need may tend to feel that they are a burden on their supporters and as such feel embarrassed. In view of this, Sheikh (2004) conclude that the role of social support in PTG is unclear.

In the case of the flood victim who has lost his belongings and home, it should be a big deal to now live with others and practically be cared for. The current population under study have victims whose homes were destroyed by fire. This means that it would take months for them to get another descent house for relocation. Perhaps, a person who previously used to be the source of support for people is not being supported, thus creating a sense of defeat and, pain and guilt.

The findings of the qualitative results in this study on the other hand agree with the common understanding of the role of social support in difficult times where participants reported social and family level interventions as some of the resource for coping in their hard times. Social support features prominently in the interventions identified in this study. Both the societal and family level interventions portray social support as a key resource for the disaster victims. This corresponds with the literature where social support have been found as a significant coping resource or protective factor against PTD (e.g., Feeney & Collins, 2015; Han et al., 2019; Sarason et al., 2000). It is also in consonance with the finding in this study that social support predicted a reduction in PTD.

Societal level intervention received by victims included support from politicians, philanthropists and sympathisers. It also included government assistance either in cash or in kind. Usually in Ghana, government offers relief items to victims during disasters. These include mattress, bucket, food items, water, and cloths. Other well-meaning Ghanaians also provide items that may be of need to victims. Participants reported that they received such items from government and sympathisers including money. However, they were also quick to add that these items especially the money was not sufficient. One participant mentioned that after renting an accommodation with the money she received for two years, she was not able to renew the rent because the money was finished and her job was crippled by the disaster.

It was also indicated that government paid the medical bills of victims who were hospitalised. At least that would relieve the victims and families of the financial burden that comes with treatment for injuries during disasters. Again, some Ghanaians also donated various items to victims while they were at the hospital. People visited them, sympathised

and prayed with them. This inspires some sense of belonging, collectivism, care and self-worth among victims (Berkman & Glass, 2000).

However, there is a seeming corruption and political game in times like this. Victims indicated that government promised them compensations but they never had it. Some also said donations that were meant for them did not reach them. While some well-meaning citizens will be willing to help, others are found to be making personal gains at the expense of victims. There is the need for a protocol in the donation and distribution process during disasters in order to avoid instances of corruption and personal and political interests.

The availability of support from friends is a significant factor after the experience of adversity. In fact, this is when to know real friends. Sometimes, families may not have the support a victim may need. Friends may provide that support either financially or emotionally. As Oren and Possick (2009) indicated that people may receive support from friends when they are in need. This support may be received whether the victims have asked for it or not. This emphasises the need for communal existence which characterises collectivistic societies.

Family social support during adversities is an invaluable one, augmenting the positive effects of disasters (Platt et al., 2014). In a typical collectivistic culture like Ghana, family may typically feel affected when a family member is stricken by an adversity. Support from family members may come in various forms. In distress, people may receive emotional support from family members just as they may receive from friends. Some may receive physical support such as money and clothing. In this study, some participants had their sources of income re-established by family members while others had houses build by their family members for them. Seeing relatives showing care when in trouble would be encouraging and soothing.

This finding has implication for communal living. People with good connection with family and friends may tend to be more supported in addition to what they enjoy from government. Communities must also endeavour to stay cohesive and supportive especially in adverse times since this will provide relief and growth for victims.

Religiosity: This study also found that religiosity significantly predicts PTG. Religiosity offers similar support towards growth after disasters as social support (Chan & Rhodes, 2013). It has been argued that religiosity actually provides meaning for suffering and that lessens the adverse effect of disasters (Oren & Possick, 2009).

Taku and Cann (2014) explained religiosity as one's religious affiliation and strength of religious beliefs. This provides people with relationship with God and people in their religious circle. The people within one's religious group can be a source of physical, emotional and spiritual support in times of adversity to victims. They could help with prayers, money, cloths, food and housing. These activities will serve the same purpose as social support does as indicated above. Religious leaders may counsel their members who are traumatised and assist them to receive the necessary interventions. The individual may also look to God in the trying moments and will perceive that God is on their side. They will ask for God's protection and strength to pull through the challenges.

In Ghana, Christian and Islamic groups organise prayers for victims of disasters. They visit them while they are on admission and offer prayers and donations. It is yet these groups that provide residence when victims or members are displaced. Their activities depict love and emotional support that victims need in the face of adversity.

Similarly, from the qualitative results, it was found that victims also utilised spiritual and/or religious support during these hard times. Some indicated that they now see that God is on their side. This belief in a higher Being creates a sense of identity and renewal of faith. This

in turn may create a sense of protection and hope for victims. This is because, a victim may feel that if God does not allow them to perish in the disaster then he will protect them in other trying times in life. Participants indicated that they are now closer to God their maker and try often to be in his presence (that is in Church). This means they may also become religious and this in turn will be supportive for them (Chan & Rhodes, 2013). One participant said he now goes to Church and he alone knows why he does so. According to Ha (2015), this can help victims to understand the disaster better. Watlington and Murphy (2006) also maintained that being religious facilitates reduction in deppressive symptoms and PTSD.

Belief in Just World: Belief in just world another protective factor for PTG in this study. Belief in just world implies that whatever happens is deserving and that there is a reason and an opportunity from it. In the face of injustice, this belief enables the individual to restore a sense of justice in order to by assuming that it needed to happen (Dalbert, 2001; Furnham, 2003). This interpretation of traumatic events tends to lower the negative impact of the event. This will also afford the individual strength to match forward towards growth after the adversity.

Indeed, things happen for a reason. It is up to individuals to assign either a positive or negative reason to the events. When people see opportunity in negativity, they are more likely to fight harder and stay stronger (Bulman & Wortman, 1977; Dalbert, 1996, 1997). For example, someone who survives a fire disaster may be thankful to God and see how much God loves him/her. This will give them a renewed sense of life and purpose to get closer to God and be more responsible.

Resilience: Resilience was also found to predict PTG in this study. This is supported by other studies such as Mahdi, Prihadi and Hashim (2014), Yu et al. (2014) and Austin et al.

(2017) all of which found that resilience produces PTG. People who are resilient would stand strong when challenges arise. This helps them to navigate the processes required to defeat the negative impact of the challenge (Tomaszek et al., 2018).

Resilience helps people to cope better, live beyond expectation and function stronger when challenged. Such people will also expect the best out of adversities. They would look for opportunities and utilise them for the betterment of their lives. This is the whole process of adaptation in adverse times (APA, 2014).

Self-efficacy: It was however found that self-efficacy did not predict PTG contrary to the trend in the literature. Zulkosky (2009) indicated that high self-efficacy helps people to deal with difficulties and studies such as Lotfi-kashani et al. (2014) and Li et al. (2012) found that self-efficacy promotes PTG. In the current population of study however, the finding does not support the previous studies. This means that even if people with high self-efficacy are able to manage their difficulties, it does not translate into growth after an adversity.

Maybe victims were not able to utilise how efficacious they are towards growth. Perhaps other factors were relied upon more such as religiosity and social support. It is possible that when other factors are available and much stronger, people may tend to utilise them more over others. This defeats the assertion that self-efficacy is a central factor in how people feel and adapt to their environment as shown by Benight and Bandura (2004). Where support is available in the community, self-reliance and control does not seem to be most significant.

In the qualitative findings however, victims indicated the use of personal strength to forge ahead. They engaged in self-encouragement and engagement in actions that will eventually offer them relief. This resonates with the use of prayers and decisions to work harder to replace their lost possessions.

The Moderating Role of Protective Factors on the Link between Risk Factors and PTD

The study also revealed that some protective factors significantly moderate the relationship between some risk factors and PTD. It was found that religiosity significantly moderated the relationship between assumptive world and psychological distress, resilience moderates the relationship between independent-self-construal and psychological distress, social support significantly moderates the relationship between neuroticism and psychological distress, and self-efficacy and resilience significantly moderates the relationship between neuroticism and psychological distress.

Largely, all five protective factors in this study moderated the relationship between risk factors and PTD. This means the relationship between the protective factors and PTD is indirect modifying the strength of the relationship between risk factors and PTD. For example, someone with multiple previous traumatic history may still be better in dealing with posttraumatic challenges if he is religious and receives the needed attention from his congregation. Also, if support is available for victims from people around them, the negative impact of disasters will be minimised regardless of the individual's personality trait.

In times of adversity, people must utilise factors that are protective against distresses. Religious bodies and leaders must use their activities to alleviate pain after disasters, government must adopt the needed relief programme for support victims, and families and friend must as well be there for victims. Even before disaster, individuals must also develop their capabilities and resilience levels. People must adopt positive meanings to events and be prepared for any eventualities. By so doing, the presence of risks and traumatic events will only produce minimal effect on lives.

Relationship between Protective Factors and PTD

The fourth major finding of this study is that social support, self-efficacy, belief in just world, resilience and religiosity are negatively and significantly correlated with PTD (psychological distress and PTSD). This indicates that people's experience higher forms of protective factors is associated with a reduction in the distress levels they experience just as being argued earlier. Even though this does not imply causation, it indicates that protective factors serve a soothing role after disaster experiences. It was however found that social support significantly predicted PTD among the other protective factors. It can be argued that the chances that distress levels will reduce when protective factors are available is high among victims (Masten & Reed, 2002).

It is clear so far that disaster victims have the opportunity to grow and experience less negative impact. It is however relevant to reiterate that growth will not completely replace or prevent distress after adversity (Maitlis, 2012). However, when a sense of growth or positivity is acquired even in the wake of frustrations, it will help to deal with the negative outcomes more adaptively.

Relationship between PTD and PTG

The final objective of the study was to examine the relationship between distress and growth after disaster experiences. It was found that a significant positive correlation exists between PTG and PTSD contrary to a negative prediction that was made. Actually, the literature has presented disagreement on how related PTD and PTG are (Zoellner & Maercker, 2006). Some findings suggested positive relationship (e.g. Cadell et al., 2003; Solomon & Dekel, 2007). Other studies found negative relationship (e.g. Palmeret al., 2016). The current finding corroborates other findings that established positive relationship between PTG and

PTD. This means that higher distress levels correspond with higher growth after disaster experiences.

Victims that are more distressed tend to utilise more resources to be able to survive the challenges. They may acknowledge their challenge and seek assitance, or turn to God since these factor result in PTG. It is often said that until you are in trouble, you would not appreciate you strength. Therefore, people who are devastated by traumatic event may appreciate life and see their survival as an opportunity and so will strive for and acomplish growth. This is the impport of the OV theory that since there is life, there is hope (Joseph & Linley, 2005).

If the disaster does not kill the individual, it will make them stronger. Victims will surely wish to bounce back stronger and better than before the disaster. This does not prevent the memories and pains and fears. However, they could be a conduit for motivation and growth since it is an innate disposition for everyone to develop so long as there is life (Sheldon et al., 2003; Maslow, 1955).

The Experiences of Disaster Victims

The experiences of disaster victims are important in whatever is done to support them. By considering their experiences, interventions can be tailored to benefit victims. The findings from the qualitative results in this research show significant experiences of victims of the 3rd June, 2015 flood/fire disaster in Accra, Ghana. These experiences will have implication for clinical, social and political interventions. The findings are discussed in this section.

The experiences of victims of include physical and psychological effects. The physical effects are described biographical disruption. Biographical disruption describes the presence of a long term or chronic illness that alters and impedes one's behaviour. Participants suffered physical effects ranging from personal injuries through the loss of properties to the

death of their loved ones. These have left them with significant disruptions impede their general live and daily functioning. This finding concurs with Du, Fitzgerald, Clark, and Hou (2010) and Noe et al. (2016). Jonkman and Kelman (2005) also indicated that there are usually deaths during floods especially through drowning. In the 3rd June disaster in Accra, many people were drowned, many others were burnt though the fuel station explosion. Thus, apart from the over 150 lives that were lost through the explosion, there were several other bodies discovered that were dead through drowning.

Unfortunately, it is predicted that more lives will continue to suffer due to flood disasters in Africa (EM-DAT, 2015). This is true because in Ghana, subsequent years following the 3rd June disaster lives were lost again through floods in the capital city. This probability is due to the anti-environmental behaviours citizens exhibit that precipitates disaster occurrences. Of course, the drains and engineering mistakes have not change.

During disasters, some populations are more vulnerable ((Paul et al., 2018). These include children, women and the aged. With the perineal flooding in Ghana, these in the era of increasing aged population, more of such lives will be affected. This is because the more disaster that occur, the more lives are affected (Coker et al., 2006; Neuner et al., 2007). This poses strong national challenge that requires immediate attention.

The disaster has caused permanent physical disability for some victims. Some are unable to walk, work and socialize. It is reported in the literature that these effects are as a result of pricks from sticks, bottles and snake bites when victims are struggling to swim off floods (Lindell & Prater, 2004). In the current disaster under study, participants reported similar events. One participant indicated that she probably might have hit her hip against a container that was submerged in the water. Other had their injuries through the fire/explosion.

Lindell and Prater (2004) reported that natural disasters cause massive property damages or losses. As a result, victims usually become homeless (Paidakaki, 2012). As the result of this study showed, some participants reported that they have been sleeping outside in front of shops for some time now because their houses had been destroyed by the disaster and they currently are not able to rent a place to stay. Apart from homes, jobs were lost. Victims had their workshops destroyed completely. People had their goods destroyed and their moneys burnt up in the explosion. A participant reported that she used to import goods and sell but now she sells sachet water. The crucial aspect of these effects is that they have significant implication for psychological health among victims (Frankenberg et al., 2008).

These effects also affect economic activities of the state (Klomp, 2016). Government was compelled to foot the medical bills of victims who were hospitalised due to the disaster. Till date, victims still expect and demand from government compensations for their losses. Immediately after disaster, government also need to reconstruct affected roads, bridges, and monuments. In Ghana, the NADMO tends to be overstretched during disasters since victims tend to require relief items beyond expectation. Since many people tend to be affected by disasters, their jobs and earnings get affected and that translate into poor savings and, poor GDP and related economic indicators (Brei et al., 2018; Klomp, 2016; Ladds, Keating, Handmer, & Magee, 2017).

Indeed, victims expressed psychological impacts of the disaster on their lives. The psychological impacts associated with disasters is extensively demonstrated in the literature. For the current study, mood disturbances, anxiety related effects and behavioural problems were reported. These reports are in tune with Haqqi (2006), Griensven et al., (2006) and Chung and Kim (2010).

PTD is a major psychological concern among disaster survivors (Hussain et al., 2011). This includes anxiety, depression, hypersensitivity, and insomnia (American Psychiatric Association, 2013b). Victims in this study reported most of these distresses. They feel depressed and cry a lot, they are anxious, unable to sleep, have high interpersonal sensitivity and poor appetite.

These distresses have implication for suicidality among victims (Guo et al., 2017; Kolves et al., 2013). Orui and Harada (2014) pointed out that suicidal implications of disasters is high among females in the whole. Another group that may be of concern in this instance is those with higher losses during the disaster. Fang and Chung (2019) reported higher psychological impacts among these group compared to those with fewer losses. For example, a victims who loses the whole family, house, cars and shop in the disaster will be more psychologically distressed compared to one who loses only shop. This must be of concern for policy makers and therapists. In this regard, resources available must be harnessed to assist such victims in order to deal with their ordeals.

5.1 Summary of the Study

The current study examined the impact of disaster and how this is influenced by risk and protective factors. The population used for the study is the 3rd June 2015 flood/fire disaster victims at the Kwame Nkrumah Circle in Accra Ghana. In all, 336 participants participated in the study. The study used the concurrent mixed method design where the quantitative study used a cross-sectional design and tested five hypotheses through regression analysis and the qualitative used phenomenology and answered three research questions through thematic analysis.

Quantitatively, it was found that risk factors namely neuroticism, independent-self construal and previous traumatic history significantly predict psychological distress and assumptive

world, independent self-construal and previous traumatic experience significantly predict PTSD. It was also found that protective factors namely social support, belief in just world, resilience, and religiosity significantly predict PTG. The quantitative study found that religiosity significantly moderates the relationship between assumptive world and psychological distress, social support significantly moderates the relationship between previous traumatic history and psychological distress, resilience moderates the relationship between independent-self-construal and psychological distress, self-efficacy and religiosity significantly moderates the relationship between neuroticism and psychological distress, social support and religiosity significantly moderate the relationship between assumptive world and PTSD, social support, belief in just world, resilience and religiosity significantly moderate the relationship between previous traumatic history and PTSD, and social support, self-efficacy and resilience significantly moderate the relationship between neuroticism and PTSD. Finally, the study one also found that social support, self-efficacy, belief in just world, resilience and religiosity are negatively and significantly correlated with PTD (psychological distress and PTSD), and there is rather a significant positive correlation between PTG and PTD.

Largely, these findings are in consonance with the literature especially on how risk factors predict PTD and protective factors predict PTG (Ogle et al., 2017; Gilbert et al., 2009). It was also observed that high levels of distress correspond with high level of growth among victims of adversities.

The qualitative findings also found that victims perceive the causes of the disaster to include engineering failures and anti-environmental behaviours. Their experiences include biographical disruption such as disfigurement, death and loss of property, and psychological impacts such as anxiety, behavioural changes and mood effects. Participants' adjustment

experiences, that is resources that enabled them to deal with the effects of the disaster or otherwise, involve societal level intervention, family level intervention, spiritual support and post disaster vulnerability. To a large extent, the findings in study two were found to be consistent with the literature (e.g. Lindell & Prater, 2004; Frankenberg et al., 2008).

5.1.1 Point of Convergence: Quantitative and Qualitative Findings

The quantitative (study one) and qualitative (study two) studies lend support to each other in terms of their findings. There are at least two cardinal points at which the two studies converge. First, study one found that there are some risk factors that have the tendency to aggravate PTD among disaster victims. For example, people who have experienced other adversities prior to the current disaster are more likely to be distressed than those who did not. In the study two, it was evident that people who do not have the needed support after the disaster were more distressed. They called more on the government for support and feel abandoned. Study two also added that severity of physical impact can also serve as risk factor for PTD. These physical impacts includes injuries, both the loss of materials such as house, car, belongings, and loss of the lives of relations and friends

Secondly, it was observed that those who possess protective factors experienced PTG after the disaster. Social support as well as religiosity predicted PTG. Victims revealed same in the study two where most of them narrated how they were supported by friends and families and significant others. They also recounted their renewal of faith and trust in God and how they have become committed to church attendance now than before, believing that it was God who spared their lives.

Also, the two studies lend support to the positive association between PTG and PTD. The quantitative study produced a significant relationship between the two as well as victims indicating distress levels and growth in the qualitative study. Victims who said they are

suffering also mentioned that they have learned to appreciate life and drawn closer to their maker. They now value friends and have also realised that they must make the best in their lives so long as there are alive.

5.1.2 Point of Divergence: Study one and Study Two

In as much as the two studies converge on some points, there are two points of divergence that are worth noting. One of these points of divergence is that self-efficacy did not predict PTG in the study one. In the study two however, participants utilised their personal strengths where they indicated that disasters must happen but once they are alive, they must forge on. This is an indication that victims believe in their ability to strive despite challenges.

Another divergence is that whilst social support provides avenue for growth in study one, participants saw it as they being burden to families and friends in study two. This means that even though participants benefited from the support they received from others, they felt they were not supposed to be relying on others for their needs.

5.2 Contributions of the study

Generally, disaster research has thrived in the developed world leaving behind the developing countries. Few studies on disaster are available in Africa particularly Ghana. Meanwhile, the occurrence of disasters is on the rise. Again, it was noticed that a greater percentage of disaster researches have focused on the pathology that comes with disasters. The positive outcomes and factors that promote them have gained little attention. This study therefore attempted to combine the positive and negative outcomes of disasters and factors that underpin them within the Ghanaian context. The findings therefore contribute to knowledge and research in several ways some of which are presented below.

5.2.1 Contribution to Knowledge

How disaster victims cope in Ghana and their ordeal have not been clearly known. The researcher's personal conversation with authorities at the NADMO reveals that victims are not followed up on to ascertain their distress levels and how they are surviving. In fact, government relief ends a few days after the disaster occurs. This means that victims are often left to their own fate regardless of whether they have the ability to thrive or not. This study reveals significant information about what victims go through years after disaster encounters. Importantly, it was revealed that support for victims is crucial. This means that government must have a comprehensive programme to see victims to the full length of their struggle in order to better equip them for life afterwards.

This study is the first of a kind in Ghana to be conducted years after a disaster. It is also the first to combine both protective and risk factors in a single study in Ghana. This will help with the understanding of what factors are helpful or otherwise after disasters occur. It also utilised a mixed method that sheds more light on the subject matter.

Again, the study will help individuals understand what they experience after they encounter disaster and adopt best approaches to deal with the impacts thereafter. For example, people may learn from this study that isolation from society and being individualistic does not help in times of adversity. It provides first-hand information to victims regarding their expectations in distress so as to be ready for any eventualities.

5.2.2 Contributions to Research

This study has offered support to the literature on how disaster victims cope in various jurisdictions. Ghana and Africa have produced little information to disaster research over the years. This study makes a significant addition to the research findings in the literature.

The study is among the few that have combined both risk and protective factors in a single study. This makes it possible to compare the findings for an informed understanding.

Adopting the mixed methods is also significant in disaster research as most studies in the past tend to relied on only one method. The findings from this current method are complementary and shed more light on the information provided.

The study also added to the findings that PTD and PTG are positively related. The relation between the two conditions have been illusive over the years and requires further studies to provide more information. This study supports the position that even when people are distressed after experiencing adversities, they are able to grow and make meaning of their experiences and life in general.

5.2.3 Theoretical Contributions and Implications

The salutogenic outcome of disasters is described by the OV theory as an innate tendency of human beings to grow regardless of challenges. The theory was clear on the fact that when conducive ground is provided people benefit from adversities. This was supported in by the findings of the study. People felt they have developed stronger faith and now appreciate life more than before. These impressions of growth are promoted by protective factors as found in the study.

The pathogenic effect of disasters has also been supported. This is significant for the theory of shattered assumptions and the emotional processing theory. For example, when victims perceived that they have become burden for others, they may further dread the adversity and effects and become more distressed. This may occur several years after the event in the form of PTSD, indicating poor assimilation of the event into their existing assumptions.

The findings of this study could be used to advance the stance of the OV theory in order to assist victims grow since protection factors may be available but effort must be made to harness them. Example, victims must make conscious effort to seek assistance, society must be proactive in supporting victims and government must deliver right and prompt assistance for victims.

5.3 Practical Implications

5.3.1 Implications for Clinical Practice

These findings reveal some implications for clinical practice especially in Ghana. Firstly, it was observed that an intervention centre was set up immediately after the disaster. Participants were supposed to go to the centre for psychological support. In the first place, victims revealed that at the time the intervention was going on, they were too busy putting their lives back in order. For example, they needed to figure out where to sleep, how to benefit from relief aid and for those who lost their relation, they needed to find the bodies. This means that the timing for interventions must be appropriate in order not to cut off victims who need the support most. In addition, the location of the intervention centre must be carefully considered. If it is too far, a victim who lost everything may not be able to travel to the centre. Intervention centres must be within the closest vicinity in order to attract victims

Duration of interventions programmes is another significant factor in clinical practice towards disaster victims. Some victims develop psychological challenges years after the traumatic event. However, barely a week after the disaster, no intervention activities went on in Ghana. One participant for example mentioned the inadequate number of psychologists in Ghana. It is necessary to conduct follow ups on victims, track their wellbeing over years and place them on the needed support until they are capable of being

on their own. Mental health first aid and long-term intervention programmes are required for disaster victims.

Also, hospitals that treat victims must endeavour to make psychological or mental health support a must for them. Appropriate referrals should be made and follow ups must be properly conducted. These will safeguard victims and protect them against distresses.

5.3.2 Policy Implications

Policy on disaster management in Ghana is too physical and short-lived. There is little budget for disaster interventions. Mental health component is missing in the management of disaster related effects. Government needs to redesign disaster policy in the country. For instance, there must be a psychiatric and psychological component for disaster related interventions.

The collection and disbursement of support items from society must be coordinated. Individuals who wish to support victims must be made aware of points of collect. Disbursement must be transparent and free of corruption. People usually accuse rescue or relief workers of diverting relief items and supporting non-affected people. A comprehensive and implementable programme must be adopted to deal with the situation.

Finally, information dissemination during disasters must be properly controlled. Victims indicated that there was too much information for them to manage. There must be training for reporters and community leaders on how they relay information to a population that is bedevilled with a disaster. This will reduce panic and will create order in how victims are assisted.

5.3.3 Implications for Disaster Management in Ghana

Disaster management in Ghana requires more than the provision of relief to victims. There is the need for sensitisation on the impact of disasters and what victims should expect from government. The general public must also be informed about the various support systems available when adversities strike.

Clearly, the current disaster management model being used in Ghana does not resolve the needs of victims. A comprehensive model must be adopted which will make some critical service providers an integral part of the decision making and implementation process.

For mental health practitioners, intervention models need to be developed for emergencies. Practitioners need to be educated on what to expect and to do in such critical times. Ad hoc programmes for victims may not be enough and may rather distress victims the more.

5.4 Limitations of the Study

There are some limitations associated with the current study. One of these limitations is that the best design would have been a longitudinal design. This is because, it would have been beneficial to follow the victims over a long enough period of time to understand the dynamics of their challenges and how the various factors played out. Since victim may develop symptoms of distress several years after and some shortly after disaster encounters, a longitudinal approach would have helped with more information to this effect by providing baseline data for further comparison.

Also, the study excluded children that is victims below the age of 18. This means that there is still a population of victims whose information is missing in the knowledge about experiences after disaster in Ghana. Children form a significant unit of the disaster population. They are also deemed vulnerable. Therefore, they need to be studied in this regard.

Finally, most victims who participated in this study felt they needed to participant in order that their voices would be heard by government so as to propel authorities to come to their aid. To some extent, this would have resulted in the exaggeration of some of the responses provided. Even though it was clearly explained to participants before the start of the study, there is the tendency that participant would magnify their responses for potential benefit from authorities.

5.5 Recommendations for Future Research

First, it is recommended that future researches include children in order to understand how they process and deal with the challenges of disaster experience. In addition to this, future researches should also identify more groups that are most vulnerable in order to inform policy decisions regarding disaster management.

Secondly, it is recommended that future studies employ a longitudinal design in order to ascertain the changes that occur across time among disaster victims. In addition, future studies could also adopt a cohort design in order to compare victims with non-victims establish differences in distress levels and factors that influence distress and growth among the two groups.

Finally, it must be recommended that shorter instruments should be used on such populations as longer ones tend to stress them and this may affect their responses. Apart from the length of the instruments, their context-specific validity must be considered as some items tend to be alien to participants and require replacement.

5.6 Conclusions

In conclusion, this study investigated the role of risk and protective factors in post disaster adaptation using the mixed method approach. A population of flood/fire disaster victims

was used with 336 sample selected, 13 of which participated in both the quantitative and qualitative studies.

The findings of this study show that victims of disasters experience significant impacts, both physical and psychological, over a long period of time. There are risk factors that may aggravate their situation for victims. Meanwhile, there are also protective factors that can be utilised to cope with the effects. Since it was revealed that people who experience distress after disasters also sometimes experience growth, protective factors that promote growth must be prioritised for such victims. Unfortunately, there are significant policy and practice gaps in the management of disaster victims in Ghana. This requires national and clinical attention to support victims appropriately.

With the right interventions, victims of disasters may experience reduced levels or shorter durations of distress. This is because, the intervention would use protective factors and resources and these have proven to a large extent to moderate how risk factors impact on distress levels. If these interventions are well planned and executed, they help eliminate the short-lived attention/interest given to disaster victims in the country.

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APPENDICES

Appendix A: Ethical Clearance

UNIVERSITY OF GHANA
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)
P. O. Box LG 74, Legon, Accra, Ghana

My Ref. No.....

15th December, 2017

Mr. Emmanuel Dziwornu
Department of Psychology
University of Ghana
Legon

Dear Mr. Dziwornu,

ECH 084/17-18: DISASTER AND POSTTRAUMATIC DISTRESS: RISK AND PROTECTIVE FACTORS

This is to advise you that the above reference study has been presented to the Ethics Committee for the Humanities for a full board review and the following actions taken subject to the conditions and explanation provided below:

Expiry Date:	12/12/18
On Agenda for:	Initial Submission
Date of Submission:	13/11/17
ECH Action:	Approved
Reporting:	Bi-Annually

UG/ISSER/ECH VALID UNTIL 12 DEC 2018 APPROVED DOCUMENT

Please accept my congratulations.

Yours Sincerely,

Rev. Prof. J. O. Y. Mante
ECH Chair

CC: Dr. Maxwell Asumeng, Department of Psychology, University of Ghana.

Tel: +233-303933866 Email: ech@ug.edu.gh | ech@isser.edu.gh

Appendix B: Consent Form

UNIVERSITY OF GHANA

Official Use only
Protocol number

Ethics Committee for Humanities (ECH)

PROTOCOL CONSENT FORM

Section A- BACKGROUND INFORMATION

Title of Study:	**DISASTER AND POSTTRAUMATIC ADAPTATION: RISK AND PROTECTIVE FACTORS**
Student Investigator:	Emmanuel Dziwornu
Certified Protocol Number	

Section B– CONSENT TO PARTICIPATE IN RESEARCH

General Information about Research

This study aims to explore the kinds of protective factors that mitigate against post disaster psychological challenges among natural disaster victims in Ghana. The study will also establish the forms and levels of post disaster distresses and the associated risk factors among disaster victims. You will be required to spend 45minutes of your time to respond to some questionnaires in English. Participants are required to answer all items on the questionnaires. There is the allowance for participants to return the completed questionnaires in within two days. Clarity will be provided if the need be. If selected for the interview component of the study, participants will be required to spend an extra 30minutes for a one-on-one interaction/interview with the researcher on the lived experiences of disaster victims.

Benefits/Risk of the study

This study does not present any direct risks or benefits to participants. However, in terms of risks, participants may be required to recall some experiences that may be discomforting. In this case, there is the opportunity to contact the researcher for appropriate referral or assistance. The benefit from this study may be indirect where findings will inform mental health treatment modules in Ghana and policy decisions.

Confidentiality

Any and all information obtained from you during the study will be confidential. Your privacy will be protected at all times. You will not be identified individually in any way as a result of your participation in this research. By this, you will not be required to provide your name. Your responses to the questionnaires shall not be made available to any other person(s) except the results of the written report.

Compensation

There is no form of compensation for the time spent in this study. However, participants have the opportunity to inquire about available support for challenges they face as a result of their traumatic experiences. Participants may also request for the findings of the study by contacting the principal investigator through the contacts provided below.

Withdrawal from Study

Your participation in this study is entirely voluntary. You may refuse to participate in this research. Such refusal will not have any negative consequences for you. If you begin to participate in the research, you may at any time, for any reason, discontinue your participation without any negative consequences. If your response to the questionnaires is incomplete, your participation will be revoked.

Contact for Additional Information

Please feel free to ask any questions about anything that seems unclear to you and to consider this research and consent form carefully before you sign. You may also call the student researcher (Emmanuel Dziwornu) on ***0276090802*** or email emmanuel.dziwornu@yahoo.com for clarifications. If you have any questions about your rights as a research participant in this study you may contact the Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

Section C- VOLUNTEER AGREEMENT

"I have read or have had someone read all of the above, asked questions, received answers regarding participation in this study, and am willing to give consent to participate in this study. I will not have waived any of my rights by signing this consent form. Upon signing this consent form, I will receive a copy for my personal records."

_____

Name of Volunteer

_____ _____

Signature or mark of volunteer Date

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

_____

Name of witness

_____ _____

Signature of witness Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

_____

Name of Person who Obtained Consent

_____ _____

Signature of Person Who Obtained Consent Date

Appendix C: Questionnaire

Bio-Data

1. Please indicate your Gender	Male Female	[ ] [ ]
2. Please indicate your highest educational achievement/level	Basic Secondary Tertiary Other (please specify)	[ ] [ ] [ ] _____
3. What is your marital status please?	Single Married Divorced Separated Cohabiting	[ ] [ ] [ ] [ ] [ ]
4. What is your religion?	Christian Islam Traditional Other (please specify)	[ ] [ ] [ ] _____
5. Please indicate your occupation	Please specify	_____
6. Please for how long have you been living in this community? (please specify duration)	_____	
7. Did you receive any form of professional intervention concerning your disaster experience?	Yes No	[ ] [ ]
8. ***If Yes to question 7 above,*** please specify source of intervention	_____	
9. ***If Yes to question 7 above,*** for how long did you receive the above intervention?	_____	
10. Could you please provide your age?	_____	

Assumptive Worldview Scale (AWS)

Please respond to each of the following statements regarding your general beliefs about the world according to the following scale:

1-Strongly Disagree 2-Disagree 3-Slightly Disagree 4-Slightly Agree 5-Agree 6-Strongly Agree

1	Misfortune is least likely to strike worthy, decent people.	**1**	**2**	**3**	**4**	**5**	**6**
2	People are naturally unfriendly and unkind.	**1**	**2**	**3**	**4**	**5**	**6**
3	Bad events are distributed to people at random.	**1**	**2**	**3**	**4**	**5**	**6**
4	Human nature is basically good.	**1**	**2**	**3**	**4**	**5**	**6**
5	The good things that happen in this world far outnumber the bad.	**1**	**2**	**3**	**4**	**5**	**6**
6	The course of our lives is largely determined by chance.	**1**	**2**	**3**	**4**	**5**	**6**
7	Generally, people deserve what they get in this world.	**1**	**2**	**3**	**4**	**5**	**6**
8	I often think I am no good at all.	**1**	**2**	**3**	**4**	**5**	**6**
9	There is more good than evil in the world.	**1**	**2**	**3**	**4**	**5**	**6**
10	I am basically a lucky person.	**1**	**2**	**3**	**4**	**5**	**6**
11	People's misfortunes result from mistakes that they have made.	**1**	**2**	**3**	**4**	**5**	**6**
12	People don't really care what happens to the next person.	**1**	**2**	**3**	**4**	**5**	**6**
13	I usually behave in ways that are likely to maximize good results for me.	**1**	**2**	**3**	**4**	**5**	**6**
14	People will experience good fortune if they themselves are good.	**1**	**2**	**3**	**4**	**5**	**6**
15	Life is too full of uncertainties that are determined by chance.	**1**	**2**	**3**	**4**	**5**	**6**
16	When I think about it, I consider myself very lucky.	**1**	**2**	**3**	**4**	**5**	**6**
17	I almost always make an effort to prevent bad things from happening to me.	**1**	**2**	**3**	**4**	**5**	**6**
18	I have a low opinion of myself.	**1**	**2**	**3**	**4**	**5**	**6**
19	By and large, good people get what they deserve in this world.	**1**	**2**	**3**	**4**	**5**	**6**
20	Through our actions we can prevent bad things from happening to us.	**1**	**2**	**3**	**4**	**5**	**6**
21	Looking at my life, I realize that chance events have worked out well for me.	**1**	**2**	**3**	**4**	**5**	**6**
22	If people took preventative actions, most misfortune could be avoided.	**1**	**2**	**3**	**4**	**5**	**6**
23	I take the actions necessary to protect myself from misfortune.	**1**	**2**	**3**	**4**	**5**	**6**
24	In general, life is mostly a gamble.	**1**	**2**	**3**	**4**	**5**	**6**
25	The world is a good place.	**1**	**2**	**3**	**4**	**5**	**6**
26	People are basically kind and helpful.	**1**	**2**	**3**	**4**	**5**	**6**
27	I usually behave so as to bring about the greatest good for me.	**1**	**2**	**3**	**4**	**5**	**6**
28	I am very satisfied with the kind of person I am.	**1**	**2**	**3**	**4**	**5**	**6**
29	When bad things happen, it is typically because people have not taken the necessary actions to protect themselves.	**1**	**2**	**3**	**4**	**5**	**6**
30	If you look closely enough, you will see that the world is full of goodness.	**1**	**2**	**3**	**4**	**5**	**6**
31	I have reason to be ashamed of my personal character.	**1**	**2**	**3**	**4**	**5**	**6**
32	I am luckier than most people.	**1**	**2**	**3**	**4**	**5**	**6**

Self-Construal Scale

This is a questionnaire that measures a variety of feelings and behaviors in various situations. Listed below are a number of statements. Read each one as if it referred to you. Beside each statement tick the number that best matches your agreement or disagreement. Please respond to each statement using the scale below.

1=Strongly Disagree
2=Disagree
3=Somewhat Disagree
4=Don't Agree or Disagree
5=Agree Somewhat
6=Agree
7=Strongly Agree

1	I enjoy being unique and different from others in many respects	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2	I can talk openly with a person who I meet for the first time, even when this person is much older than I am	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	Even when I strongly disagree with group members, I avoid an argument	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4	I have respect for the authority figures with whom I interact	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5	I respect people who are modest about themselves	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6	I will sacrifice myself interest for the benefit of the group I am in	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7	I'd rather say "No" directly, than risk being misunderstood	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8	Having a lively imagination is important to me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9	I should take into consideration my parents' advice when making education/career plans	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10	I prefer to be direct and forthright when dealing with people I've just met	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11	I am comfortable with being singled out for praise or rewards	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12	If my brother or sister fails, I feel responsible	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13	I often have the feeling that my relationships with others are more important than my own accomplishments	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14	Speaking up during a class (or a meeting) is not a problem for me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15	I would offer my seat in a bus to my professor (or my boss)	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16	I act the same way no matter who I am with	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17	My happiness depends on the happiness of those around me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18	I value being in good health above everything	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19	I will stay in a group if they need me, even when I am not happy with the group	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20	Being able to take care of myself is a primary concern for me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
21	It is important to me to respect decisions made by the group	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22	My personal identity, independent of others, is very important to me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
23	It is important for me to maintain harmony within my group	**1**	**2**	**3**	**4**	**5**	**6**	**7**
24	I act the same way at home that I do at school (or work)	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Big Five Personality Scale

Please describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Indicate for each statement whether it is

1. Very Inaccurate
2. Moderately Inaccurate
3. Neither Accurate Nor Inaccurate
4. Moderately Accurate
5. Very Accurate

1	I am the life of the party	1	2	3	4	5
2	I feel little concern for others	1	2	3	4	5
3	I am always prepared	1	2	3	4	5
4	I get stressed out easily	1	2	3	4	5
5	I have a rich vocabulary	1	2	3	4	5
6	I don't talk a lot	1	2	3	4	5
7	I am interested in people	1	2	3	4	5
8	I leave my belongings around	1	2	3	4	5
9	I am relaxed most of the time	1	2	3	4	5
10	I have difficulty understanding abstract ideas	1	2	3	4	5
11	I feel comfortable around people	1	2	3	4	5
12	I insult people	1	2	3	4	5
13	I pay attention to details	1	2	3	4	5
14	I worry about things	1	2	3	4	5
15	I have a vivid imagination	1	2	3	4	5
16	I keep in the background	1	2	3	4	5
17	I sympathize with others' feelings	1	2	3	4	5
18	I make a mess of things	1	2	3	4	5
19	I seldom feel blue	1	2	3	4	5
20	I am not interested in abstract ideas	1	2	3	4	5
21	I start conversations	1	2	3	4	5
22	I am not interested in other people's problems	1	2	3	4	5
23	I get chores done right away	1	2	3	4	5
24	I am easily disturbed	1	2	3	4	5
25	I have excellent ideas	1	2	3	4	5
26	I have little to say	1	2	3	4	5
27	I have a soft heart	1	2	3	4	5
28	I often forget to put things back in their proper place	1	2	3	4	5
29	I get upset easily	1	2	3	4	5
30	I do not have a good imagination	1	2	3	4	5
31	I talk to a lot of different people at parties	1	2	3	4	5

32	I am not really interested in others	1	2	3	4	5
33	I like order	1	2	3	4	5
34	I change my mood a lot	1	2	3	4	5
35	I am quick to understand things	1	2	3	4	5
36	I don't like to draw attention to myself	1	2	3	4	5
37	I take time out for others	1	2	3	4	5
38	I shirk my duties	1	2	3	4	5
39	I have frequent mood swings	1	2	3	4	5
40	I use difficult words	1	2	3	4	5
41	I don't mind being the center of attention	1	2	3	4	5
42	I feel others' emotions	1	2	3	4	5
43	I follow a schedule	1	2	3	4	5
44	I get irritated easily	1	2	3	4	5
45	I spend time reflecting on things	1	2	3	4	5
46	I am quiet around strangers	1	2	3	4	5
47	I make people feel at ease	1	2	3	4	5
48	I am exacting in my work	1	2	3	4	5
49	I often feel blue	1	2	3	4	5
50	I am full of ideas	1	2	3	4	5

Symptom Checklist-90

Below is a list of problems and complaints that people sometimes have. Please read each one carefully. After you have done so, select one of the numbered descriptors that best describes HOW MUCH THAT PROBLEM HAS BOTHERED OR DISTRESSED YOU DURING THE PAST WEEK, INCLUDING TODAY. Circle the number in the space to the right of the problem and do not skip any items. Use the following key to guide how you respond:

Circle 0 if your answer is **NOT AT ALL**
Circle 1 if **A LITTLE BIT**
Circle 2 if **MODERATELY**
Circle 3 if **QUITE A BIT**
Circle 4 if **EXTREMELY**

Please read the following example before beginning:

***Example*: In the previous week, how much were you bothered by:**
Backaches 0 (1) 2 3 4
In this case, the respondent experienced backaches a little bit (1).
Please proceed with the questionnaire.

How much were you bothered by:

1.	Headaches	**0**	**1**	**2**	**3**	**4**
2.	Nervousness or shakiness inside	**0**	**1**	**2**	**3**	**4**
3.	Unwanted thoughts, words, or ideas that won't leave your mind	**0**	**1**	**2**	**3**	**4**
4.	Faintness or dizziness	**0**	**1**	**2**	**3**	**4**
5.	Loss of sexual interest or pleasure	**0**	**1**	**2**	**3**	**4**
6.	Feeling critical of others	**0**	**1**	**2**	**3**	**4**
7.	The idea that someone else can control your thoughts	**0**	**1**	**2**	**3**	**4**
8.	Feeling others are to blame for most of your troubles	**0**	**1**	**2**	**3**	**4**
9.	Trouble remembering things	**0**	**1**	**2**	**3**	**4**
10.	Worried about sloppiness or carelessness	**0**	**1**	**2**	**3**	**4**
11.	Feeling easily annoyed or irritated	**0**	**1**	**2**	**3**	**4**
12.	Pains in heart or chest	**0**	**1**	**2**	**3**	**4**
13.	Feeling afraid in open spaces or on the streets	**0**	**1**	**2**	**3**	**4**
14.	Feeling low in energy or slowed down	**0**	**1**	**2**	**3**	**4**
15.	Thoughts of ending your life	**0**	**1**	**2**	**3**	**4**
16.	Hearing voices that other people do not hear	**0**	**1**	**2**	**3**	**4**
17.	Trembling	**0**	**1**	**2**	**3**	**4**
18.	Feeling that most people cannot be trusted	**0**	**1**	**2**	**3**	**4**
19.	Poor appetite	**0**	**1**	**2**	**3**	**4**
20.	Crying easily	**0**	**1**	**2**	**3**	**4**
21.	Feeling shy or uneasy with the opposite sex	**0**	**1**	**2**	**3**	**4**

22.	Feeling of being trapped or caught	**0**	**1**	**2**	**3**	**4**
23.	Suddenly scared for no reason	**0**	**1**	**2**	**3**	**4**
24.	Temper outbursts that you could not control	**0**	**1**	**2**	**3**	**4**
25.	Feeling afraid to go out of your house alone	**0**	**1**	**2**	**3**	**4**
26.	Blaming yourself for things	**0**	**1**	**2**	**3**	**4**
27.	Pains in lower back	**0**	**1**	**2**	**3**	**4**
28.	Feeling blocked in getting things done	**0**	**1**	**2**	**3**	**4**
29.	Feeling lonely	**0**	**1**	**2**	**3**	**4**
30.	Feeling blue	**0**	**1**	**2**	**3**	**4**
31.	Worrying too much about things	**0**	**1**	**2**	**3**	**4**
32.	Feeling no interest in things	**0**	**1**	**2**	**3**	**4**
33.	Feeling fearful	**0**	**1**	**2**	**3**	**4**
34.	Your feelings being easily hurt	**0**	**1**	**2**	**3**	**4**
35.	Other people being aware of your private thoughts	**0**	**1**	**2**	**3**	**4**
36.	Feeling others do not understand you or are unsympathetic	**0**	**1**	**2**	**3**	**4**
37.	Feeling that people are unfriendly or dislike you	**0**	**1**	**2**	**3**	**4**
38.	Having to do things very slowly to insure correctness	**0**	**1**	**2**	**3**	**4**
39.	Heart pounding or racing	**0**	**1**	**2**	**3**	**4**
40.	Nausea or upset stomach	**0**	**1**	**2**	**3**	**4**
41.	Feeling inferior to others	**0**	**1**	**2**	**3**	**4**
42.	Soreness of your muscles	**0**	**1**	**2**	**3**	**4**
43.	Feeling that you are watched or talked about by others	**0**	**1**	**2**	**3**	**4**
44.	Trouble falling asleep	**0**	**1**	**2**	**3**	**4**
45.	Having to check and double-check what you do	**0**	**1**	**2**	**3**	**4**
46.	Difficulty making decisions	**0**	**1**	**2**	**3**	**4**
47.	Feeling afraid to travel on buses, subways, trains	**0**	**1**	**2**	**3**	**4**
48.	Trouble getting your breath	**0**	**1**	**2**	**3**	**4**
49.	Hot or cold spells	**0**	**1**	**2**	**3**	**4**
50.	Having to avoid certain things, places, or activities because they frighten you	**0**	**1**	**2**	**3**	**4**
51.	Your mind going blank	**0**	**1**	**2**	**3**	**4**
52.	Numbness or tingling in parts of your body	**0**	**1**	**2**	**3**	**4**

53.	A lump in your throat	**0**	**1**	**2**	**3**	**4**
54.	Feeling hopeless about the future	**0**	**1**	**2**	**3**	**4**
55.	Trouble concentrating	**0**	**1**	**2**	**3**	**4**
56.	Feeling weak in parts of your body	**0**	**1**	**2**	**3**	**4**
57.	Feeling tense or keyed up	**0**	**1**	**2**	**3**	**4**
58.	Heavy feelings in your arms or legs	**0**	**1**	**2**	**3**	**4**
59.	Thoughts of death or dying	**0**	**1**	**2**	**3**	**4**
60.	Overeating	**0**	**1**	**2**	**3**	**4**
61.	Feeling uneasy when people are watching or talking about you	**0**	**1**	**2**	**3**	**4**
62.	Having thoughts that are not your own	**0**	**1**	**2**	**3**	**4**
63.	Having urges to beat, injure, or harm someone	**0**	**1**	**2**	**3**	**4**
64.	Awakening in the early morning	**0**	**1**	**2**	**3**	**4**
65.	Having to repeat the same actions such as touching, counting, washing	**0**	**1**	**2**	**3**	**4**
66.	Sleep that is restless or disturbed	**0**	**1**	**2**	**3**	**4**
67.	Having urges to break or smash things	**0**	**1**	**2**	**3**	**4**
68.	Having ideas or beliefs that others do not share	**0**	**1**	**2**	**3**	**4**
69.	Feeling very self-conscious with others	**0**	**1**	**2**	**3**	**4**
70.	Feeling uneasy in crowds, such as shopping or at a movie	**0**	**1**	**2**	**3**	**4**
71.	Feeling everything is an effort	**0**	**1**	**2**	**3**	**4**
72.	Spells of terror or panic	**0**	**1**	**2**	**3**	**4**
73.	Feeling uncomfortable about eating or drinking in public	**0**	**1**	**2**	**3**	**4**
74.	Getting into frequent arguments	**0**	**1**	**2**	**3**	**4**
75.	Feeling nervous when you are left alone	**0**	**1**	**2**	**3**	**4**
76.	Others not giving you proper credit for your achievements	**0**	**1**	**2**	**3**	**4**
77.	Feeling lonely even when you are with people	**0**	**1**	**2**	**3**	**4**
78.	Feeling so restless you couldn't sit still	**0**	**1**	**2**	**3**	**4**
79.	Feelings of worthlessness	**0**	**1**	**2**	**3**	**4**
80.	Feeling that familiar things are strange or unreal	**0**	**1**	**2**	**3**	**4**
81.	Shouting or throwing things	**0**	**1**	**2**	**3**	**4**
82.	Feeling afraid you will faint in public	**0**	**1**	**2**	**3**	**4**
83.	Feeling that people will take advantage of you if you let them	**0**	**1**	**2**	**3**	**4**

84.	Having thoughts about sex that bother you a lot	**0**	**1**	**2**	**3**	**4**
85.	The idea that you should be punished for your sins	**0**	**1**	**2**	**3**	**4**
86.	Feeling pushed to get things done	**0**	**1**	**2**	**3**	**4**
87.	The idea that something serious is wrong with your body	**0**	**1**	**2**	**3**	**4**
88.	Never feeling close to another person	**0**	**1**	**2**	**3**	**4**
89.	Feelings of guilt	**0**	**1**	**2**	**3**	**4**
90.	The idea that something is wrong with your mind	**0**	**1**	**2**	**3**	**4**

Post Traumatic Growth Inventory

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

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

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

Posttraumatic Stress Disorder Checklist-Specific

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences flood as the experience of flood disasters. Please read each one carefully, circle the number that corresponds how much you have been bothered by that problem in the last month.

Not at all (1) A little bit (2) Moderately (3) Quite a bit (4) Extremely (5)

1	Repeated, disturbing memories, thoughts, or images of the flood disaster?	**1**	**2**	**3**	**4**	**5**
2	Repeated, disturbing dreams of the flood disaster?	**1**	**2**	**3**	**4**	**5**
3	Suddenly acting or feeling as if the flood disaster were happening again (as if you were reliving it)?	**1**	**2**	**3**	**4**	**5**
4	Feeling very upset when something reminded you of the flood disaster?	**1**	**2**	**3**	**4**	**5**
5	Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of the flood disaster?	**1**	**2**	**3**	**4**	**5**
6	Avoid thinking about or talking about the flood disaster or avoid having feelings related to it?	**1**	**2**	**3**	**4**	**5**
7	Avoid activities or situations because they remind you of the flood disaster?	**1**	**2**	**3**	**4**	**5**
8	Trouble remembering important parts of the flood disaster?	**1**	**2**	**3**	**4**	**5**
9	Loss of interest in things that you used to enjoy?	**1**	**2**	**3**	**4**	**5**
10	Feeling distant or cut off from other people?	**1**	**2**	**3**	**4**	**5**
11	Feeling emotionally numb or being unable to have loving feelings for those close to you?	**1**	**2**	**3**	**4**	**5**
12	Feeling as if your future will somehow be cut short?	**1**	**2**	**3**	**4**	**5**
13	Trouble falling or staying asleep?	**1**	**2**	**3**	**4**	**5**
14	Feeling irritable or having angry outbursts?	**1**	**2**	**3**	**4**	**5**
15	Having difficulty concentrating?	**1**	**2**	**3**	**4**	**5**
16	Being “super alert” or watchful on guard?	**1**	**2**	**3**	**4**	**5**
17	Feeling jumpy or easily startled?	**1**	**2**	**3**	**4**	**5**

Multidimensional Scale of Perceived Social Support

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

Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

1	There is a special person who is around when I am in need.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2	There is a special person with whom I can share my joys and sorrows.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	My family really tries to help me.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4	I get the emotional help and support I need from my family.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5	I have a special person who is a real source of comfort to me.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6	My friends really try to help me.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7	I can count on my friends when things go wrong.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8	I can talk about my problems with my family.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9	I have friends with whom I can share my joys and sorrows.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10	There is a special person in my life who cares about my feelings.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11	My family is willing to help me make decisions.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12	I can talk about my problems with my friends.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

General Self Efficacy Scale

Below are a number of statements describing how you may feel about yourself. Please respond by using the rating scale below. Be as honest as possible.

1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

1	I can always manage to solve difficult problems if I try hard enough	**1**	**2**	**3**	**4**
2	If someone opposes me, I can find the means and ways to get what I want	**1**	**2**	**3**	**4**
3	It is easy for me to stick to my aims and accomplish my goals	**1**	**2**	**3**	**4**
4	I am confident that I could deal efficiently with unexpected events	**1**	**2**	**3**	**4**
5	Thanks to my resourcefulness, I know how to handle unforeseen situations	**1**	**2**	**3**	**4**
6	I can solve most problems if I invest the necessary effort	**1**	**2**	**3**	**4**
7	I can remain calm when facing difficulties because I can rely on my coping abilities	**1**	**2**	**3**	**4**
8	When I am confronted with a problem, I can usually find several solutions	**1**	**2**	**3**	**4**
9	If I am in trouble, I can usually think of a solution	**1**	**2**	**3**	**4**
10	I can usually handle whatever comes my way	**1**	**2**	**3**	**4**

Global Belief in Just World Scale

The following statements describe how just people think the world is. Please indicate the extent to which you agree or disagree with the statement using the rating scale below.

1-Strongly Disagree
2-Disagree
3-Slightly Disagree
4-Slightly Agree
5-Agree
6-Strongly Agree

1	I feel that people get what they are entitled to have	**1**	**2**	**3**	**4**	**5**	**6**
2	I feel that a person's efforts are noticed and rewarded	**1**	**2**	**3**	**4**	**5**	**6**
3	I feel that people earn the rewards and punishments they get	**1**	**2**	**3**	**4**	**5**	**6**
4	I feel that people who meet with misfortune have brought it on themselves	**1**	**2**	**3**	**4**	**5**	**6**
5	I feel that people get what they deserve	**1**	**2**	**3**	**4**	**5**	**6**
6	I feel that rewards and punishments are fairly given	**1**	**2**	**3**	**4**	**5**	**6**
7	I basically feel that the world is a fair place	**1**	**2**	**3**	**4**	**5**	**6**

Wagnild and Young's Resilience Scale

Please read the following statements and indicate the extent to which you agree or disagree with them using the rating scale provided below

1 = Disagree strongly
2 = Disagree moderately
3 = Disagree a little
4 = Neither agree nor disagree
5 = Agree a little
6 = Agree moderately
7 = Agree strongly

1	When I make plans, I follow through with them.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2	I usually manage one way or another	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	I am able to depend on myself more than anyone else	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4	Keeping interested in things is important to me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5	I can be on my own if I have to	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6	I feel proud that I have accomplished things in life	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7	I usually take things in stride	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8	I am friends with myself	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9	I feel that I can handle many things at a time	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10	I am determined	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11	I seldom wonder what the point of it all is	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12	I take things one day at a time	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13	I can get through difficult times because I've experienced difficulty before	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14	I have self-discipline	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15	I keep interested in things	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16	I can usually find something to laugh about	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17	My belief in myself gets me through hard times	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18	In an emergency, I'm someone people can generally rely on	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19	I can usually look at a situation in a number of ways.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20	Sometimes I make myself do things whether I want to or not	**1**	**2**	**3**	**4**	**5**	**6**	**7**
21	My life has meaning	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22	I do not dwell on things that I can't do anything about	**1**	**2**	**3**	**4**	**5**	**6**	**7**
23	When I'm in a difficult situation, I can usually find my way out of it	**1**	**2**	**3**	**4**	**5**	**6**	**7**
24	I have enough energy to do what I have to do	**1**	**2**	**3**	**4**	**5**	**6**	**7**
25	It's okay if there are people who don't like me	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Santa Clara Strength of Religious Faith Questionnaire

Using the following rating scale, please indicate your degree of agreement or otherwise with the statements below concerning your religious faith.

1=strongly disagree
2=disagree
3=agree
4=strongly agree

1	My religious faith is extremely important to me.	**1**	**2**	**3**	**4**
2	I pray daily.	**1**	**2**	**3**	**4**
3	I look to my faith as a source of inspiration.	**1**	**2**	**3**	**4**
4	I look to my faith as providing meaning and purpose in my life.	**1**	**2**	**3**	**4**
5	I consider myself active in my faith or church.	**1**	**2**	**3**	**4**
6	My faith is an important part of who I am as a person.	**1**	**2**	**3**	**4**
7	My relationship with God is very important to me.	**1**	**2**	**3**	**4**
8	I enjoy being around others who share my faith.	**1**	**2**	**3**	**4**
9	I look to my faith as a source of comfort.	**1**	**2**	**3**	**4**
10	My faith impacts many of my decisions.	**1**	**2**	**3**	**4**

Trauma History Questionnaire

The following is a series of questions about serious or traumatic life events. The questionnaire is divided into questions covering crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences. For each event, please indicate (circle) whether it happened or not and, if it did, the number of times and your approximate age when it happened (give your best guess if you are not sure).

Crime-Related Events		**Circle one**		**If you circled yes, please indicate**	
				Number of times	**Approximate age(s)**
1	Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	No	Yes		
2	Has anyone ever attempted to rob you or actually robbed you (i.e., stolen your personal belongings)?	No	Yes		
3	Has anyone ever attempted to or succeeded in breaking into your home when you were not there?	No	Yes		
4	Has anyone ever attempted to or succeed in breaking into your home while you were there?	No	Yes		
General Disaster and Trauma		**Circle one**		**If you circled yes, please indicate**	
				Number of times	**Approximate age(s)**
5	Have you ever had a serious accident at work, in a car, or somewhere else? (**If yes**, please specify below) _____	No	Yes		
6	Have you ever experienced a natural disaster such as a tornado, hurricane, flood or major earthquake, etc., where you felt you or your loved ones were in danger of death or injury? (**If yes**, please specify below) _____	No	Yes		
7	Have you ever experienced a "man-made" disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? (**If yes**, please specify below) _____	No	Yes		
8	Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health?	No	Yes		

9	Have you ever been in any other situation in which you were seriously injured? (**If yes**, please specify below) _____	No	Yes		
10	Have you ever been in any other situation in which you feared you might be killed or seriously injured? (**If yes**, please specify below) _____	No	Yes		
11	Have you ever seen someone seriously injured or killed? (**If yes**, please specify who below) _____	No	Yes		
12	Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason? (**If yes**, please specify below) _____	No	Yes		
13	Have you ever had a close friend or family member murdered, or killed by a drunk driver? (**If yes**, please specify relationship [e.g., mother, grandson, etc.] below) _____	No	Yes		
14	Have you ever had a spouse, romantic partner, or child die? (**If yes**, please specify relationship below) _____	No	Yes		
15	Have you ever had a serious or life-threatening illness? (**If yes**, please specify below) _____	No	Yes		
16	Have you ever received news of a serious injury, life-threatening illness, or unexpected death of someone close to you? (**If yes**, please indicate below) _____	No	Yes		
17	Have you ever had to engage in combat while in military service in an official or unofficial war zone? (**If yes**, please indicate where below) _____	No	Yes		

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

Appendix D: Interview guide for Qualitative Study

Greeting
Please, in order that I do not forget any part of our conversation, I will like to record the interview. Do I have your permission to switch on the recorder please?
[Switch on the recorder]
[Remember to number interview]
As I said earlier, my name is Emmanuel Dziwornu, a student from the University of Ghana, Legon. I will like to have an interview with you in relation to the same research you filled the questionnaire for ***(title: Disaster and Posttraumatic Distress: Risk and Protective Factors).*** Please feel free to ask for explanation if something is not clear to you.
Bio-data
Please how old are you?
Are you married or not?
Kindly tell me your level of educational
Please, what job do you do?

Area of interest	**Guiding question**	**Follow ups/prompters**
Account of the disaster experienced	Please tell me what you recall or remember from the 2015 flood disaster	• Where were you when it all started? • Did you receive any warning signs prior to the flood? Weather forecast, NADMO cautions, AMA warning, brief floods? • When you realized that there was flood what did you do? Called for help, struggled with it alone, run for your life? • Who were you with during the flood?
	What does this disaster mean to you?	• What do you think explains this disaster? • Who in your opinion should take a/the blame for it? Self, government, neighbours? • Were you expecting it probably because of the area you live? If you do, which precautions did you try and why did you still have to encounter the flood?
Impact of the disaster on victim	Please tell me what effects the disaster had on you	• How did the disaster affect you physically? ▪ Injuries ▪ Death of relative/friend ▪ Loss of valuables, capital ▪ Loss of job, business, shop • How did the disaster affect your psychological health? ▪ Fear/anxiety, panic ▪ Sadness/depression ▪ Emotional hurt/pain

		▪ Poor sleep ▪ Concentration ▪ Eating problems ▪ Family/marital problems/divorce • What would you perceive as positive from the flood? ▪ become stronger in faith? ▪ see life more positive or value life now? ▪ think better about life now? • How would you compare yourself now to yourself before the flood? ▪ Financially, health-wise, interpersonally, spiritually
How client survived the disaster experience	How have you manage with the effects of the disaster all this while?	• What personal resources would you say helped the most in dealing with the impact of the disaster? • In what ways were your family members helpful in managing with the disaster? • What forms of support did you receive from society (friends, strangers and neigbours)? • Did you receive any form of professional intervention? Pastors/imams, psychologists/counselors, family elders? Was it available, accessible, affordable? • What government aids did you receive? ▪ Was the aid timely, appropriate, sufficient?
Conclusion	What else do you have to say?	• What more must you do to cope with the situation? • What help do you need currently regarding the flood? • What do you know about psychological support systems in Ghana? • Do you have any advice for government and individual citizens about such disasters?