

**THE EXPRESSION OF PERSONALITY AMONG ADOLESCENTS EXPOSED TO  
INTERPERSONAL VIOLENCE**

by

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**This thesis is dedicated to all the adolescents exposed to interpersonal violence and their parents. May it bring relieve to those in need.**

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### PSALM 18: 32; 35

**‘It is God who arms me with strength, and makes my way perfect. He makes my feet  
like the feet of deer, and sets me on my high places.**

**You have also given me the shield of Your salvation; Your right hand has held me up,  
Your gentleness has made me great. You enlarged my path under me, so my feet did  
not slip’**

## DECLARATION

I declare that THE EXPRESSION OF PERSONALITY AMONG ADOLESCENTS EXPOSED TO INTERPERSONAL VIOLENCE is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

.....  
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.....  
DATE

## **THE EXPRESSION OF PERSONALITY AMONG ADOLESCENTS EXPOSED TO INTERPERSONAL VIOLENCE**

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### **SUMMARY**

The level of crime in South Africa as reflected by crime statistics affects a high number of adolescents. Trauma and stress associated with interpersonal violence can adversely affect the neurobiology of the individual, since social, emotional and cognitive influences interact in multifaceted ways with neurobiological systems to affect every-day adaptive functioning. This study was embarked upon to determine the difference in the expression of personality between adolescents exposed to community related interpersonal violence and those not exposed to such violence. The 183 research participants were selected from a group of 335 grade 12 learners from a single secondary school in a middle class community. The participants were placed into two sample groups by means of purposive sampling as follows: Sample 1 consisted of all the research participants that reported exposure to community related interpersonal violence during the past 5 years on the self-reporting questionnaire (n = 93). The research participants that did not report exposure to such violence formed Sample 2 (n = 90).

Reflecting on the adolescent's emotional, adaptive functioning and referring to high levels of anxiety and feelings of worthlessness, certain factors of the 16PF questionnaire were predicted to show a statistical significant difference after exposure to community related interpersonal violence after a period of 3 to 5 years. To assess the differences in personality profiles of adolescents exposed to community related interpersonal violence and those not exposed to violence, a MANOVA was used in analysing 16PF results. There were statistically significant differences between the two groups on Factor G (rule consciousness), Factor I (emotional sensitivity) and Factor Q4 (anxiety). This indicated that

adolescents exposed to incidents of community related interpersonal violence are inclined to experience more tension, are emotional volatile, depressed and anxious. They tend to be more sensitive to environmental stressors and are likely to give up easily.

The group exposed to interpersonal violence (Sample 1) experienced higher levels of PTSD as assessed with the PSD Questionnaire than the group that was not exposed to interpersonal violence (sample 2). The personality profiles of three groups (Sample 1 with high PTSD, Sample 1 with low PTSD and Sample 2) were compared by means of a MANOVA to test whether adolescents who experience high levels of PTSD express their personality different from others. The results identify differences in the expression of personality between adolescents of Sample 1 experiencing higher levels of PTSD and the adolescents who did not experience community related interpersonal violence (sample 2) on Factors G- (Self-indulgent and disregards obligations to people), I + ( Perception might be emotionally influenced) and Q4 + (Elevated levels of anxiety).

The coping style (positive or negative coping) of adolescents exposed to community related interpersonal violence was assessed using the Kidcope. This was done to examine the possible influence of coping on the development of posttraumatic stress and differences in the expression of personality. There were no correlations between positive and negative coping and the level of PTSD symptoms and the 16PF. The research could therefore not identify coping as a mediating variable in the development of PTSD and differences in the expression of personality. However, research is required to evaluate coping closer to the time of the actual event.

The results of this research are a clear indication that the experience of community-related violence has serious implications for the well-being and development of the personality of adolescents. Violence-exposed adolescents may experience symptoms characteristic of PTSD, including significant difficulty regulating one's emotions and behaviour impacting on their social, cognitive, physiological and emotional functioning.

The original target group for this study was the middle class income population and suburb with relatively good security. The sample was drawn from a typical middleclass environment and adolescents from communities with less protection may present different results if sampled for similar research.

**Keywords:** interpersonal violence, post-traumatic stress disorder, personality, temperament, coping

In order to simplify the reading task the masculine gender is used within the text. This type of referencing should not be seen as a form of gender discrimination, since all references implicitly include the female gender, except if indicated otherwise.

## TABLE OF CONTENTS

Page

### CHAPTER ONE

#### INTRODUCTION TO THE STUDY

1.1	INTRODUCTION	1
1.2	MOTIVATION OF THE STUDY	1
1.2.1	Interpersonal violence	4
1.3	RATIONALE OF THE STUDY	7
1.4	PROBLEM STATEMENT	8
1.5	CONCEPTUAL FRAMEWORK	9
1.6	DEFINITIONS OF KEY CONCEPTS	9
1.6.1	Community related interpersonal violence	10
1.6.2	Personality	10
1.6.3	Expression of personality	11
1.6.4	Temperament	11
1.6.5	Adolescent	12
1.6.6	Neurobiology	12
1.6.7	Stress	12
1.6.8	Hypothalamic-pituitary-adrenal axis	13
1.6.9	Stress response	13
1.6.10	Acute stress disorder	14
1.6.11	Posttraumatic stress disorder (PTSD)	14
1.6.12	Coping	15
1.6.13	Coping style	15



1.7	RESEARCH DESIGN AND DATA COLLECTION METHODS	16
1.8	DEVISIONS OF CHAPTERS	16
1.9	CONCLUSION	17

## CHAPTER TWO

### LITERATURE REVIEW: THE ADOLESCENT AND EXPOSURE TO VIOLENCE

2.1	INTRODUCTION	18
2.2	THE ADOLESCENT	18
2.2.1	Definition of the Adolescent	18
2.2.2	Exposure to Interpersonal violence and the impact thereof	20
2.2.3	Impact of Interpersonal violence on specific domains	21
2.3	THEORETICAL EXPLANATIONS OF REACTIONS TO TRAUMA	33
2.3.1	Developmental theories	33
2.3.1.1	<i>Psychological view – Erik Erikson (1902 – 1980)</i>	33
2.3.1.2	<i>Cognitive view – Jean Piaget (1896 – 1980)</i>	35
2.3.1.3	<i>Ecological-transactional perspective</i>	37
2.4	PHYSIOLOGICAL IMPACT OF INTERPERSONAL VIOLENCE	38
2.4.1	Definition of Stress	39
2.4.2	Sympathetic and parasympathetic systems	41
2.4.2.1	<i>The hypothalamic-pituitary-adrenergic (HPA) axis</i>	41
2.4.2.2	<i>The Hypothalamic-Pituitary-Adrenal Stress Response</i>	42
2.4.3	Vulnerabilities and stress in the brain	45
2.5	POST-TRAUMATIC STRESS DISORDER	46
2.5.1	The definition of PTSD and traumatic events	46
2.5.2	Trauma and emotional reactivity to daily life stress	48

2.6	CONCLUSION	49
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### **CHAPTER THREE**

#### **LITERATURE REVIEW (II): PERSONALITY AND COPING**

3.1	INTRODUCTION	51
3.2	PERSONALITY	51
3.3	EFFECTS OF VIOLENCE EXPOSURE ON ADOLESCENCE	52
3.4	PERSONALITY AND TEMPERAMENT	54
3.5	DEVELOPMENT OF PERSONALITY OF THE ADOLESCENT AN THE IMPACT OF INTERPERSONAL VIOLENCE	58
	3.5.1 Developmental factors that must be taken in to account when evaluating the adolescent	59
3.6	MEASUREMENT OF PERSONALITY	59
	3.6.1 The Sixteen Personality factor Questionnaire (16 PF)	62
	3.6.2 Research on personality and reaction to exposure of violence	67
3.7	COPING	73
	3.7.1 The Kidcope Questionnaire	75
	3.7.2 Coping and the adolescent	77
	3.7.3 Coping and Personality	78
3.8	CONCLUSION	81

## **CHAPTER FOUR**

### **THE EMPIRICAL STUDY**

4.1	INTRODUCTION	83
4.2	AIM OF THE STUDY	83
4.3	HYPOTHESES OF THE STUDY	84
4.4	THEORETICAL FRAMEWORK	86
4.5	RESEARCH METHODOLOGY	87
	4.5.1 Research design	87
	4.5.2 Sampling method	88
	4.5.3 Data collection strategies	90
	4.5.3.1 <i>The 16 Personality Factor Questionnaire: further information</i>	90
	4.5.3.2 <i>KIDCOPE</i> questionnaire	95
	4.5.3.3 <i>The Post-traumatic Diagnostic Scale (PDS)</i> questionnaire	96
	4.5.3.4 <i>Self reporting Questionnaire</i>	98
	4.5.3 Data analysis	100
4.6	VALIDATING THE RESEARCH	101
4.7	ETHICAL CONSIDERATIONS	103
4.8	CONCLUSION	104

## **CHAPTER FIVE**

### **FINDINGS OF THE EMPIRICAL STUDY**

5.1	INTRODUCTION	105
5.2	THE CHARACTERISTICS OF THE PARTICIPANTS	105

5.3	HYPOTHESIS 1	107
5.3.1	Descriptive statistics of the 16 PF Questionnaire Standard Score	107
5.3.2	Multivariate analysis	110
5.3.2.1	<i>Box's Test of Equality of covariance matrices</i>	110
5.3.3	Multivariate analysis of variance (MANOVA)	112
5.3.4	MANOVA on selected factors	115
5.3.4.1	<i>Test of Between-subject effects for the 16PF Questionnaire</i>	116
5.3.5	Concluding remark	117
5.4	HYPOTHESIS 2	117
5.4.1	Reliability statistics for the PTSD questionnaire	119
5.4.2	Descriptive statistics for the PTSD	120
5.4.3	MANOVA of the 16PF items across 3 groups with different levels of PDS scores	122
5.4.4	Box's Test of Equality of Covariance Matrices	123
5.4.5	Multivariate tests	124
5.4.6	Concluding remark	128
5.5	HYPOTHESIS 3	128
5.5.1	Reliability statistics for the KIDCOPE	129
5.5.2	Descriptive statistics of the KIDCOPE	131
5.5.3	Correlation statistics for the KIDCOPE, 16PF and PDS Questionnaire	132
5.5.4	Concluding remark	136
5.6	CONCLUSION	137

## **CHAPTER SIX**

### **DEDUCTIONS, CONCLUSIONS AND RECOMMENDATIONS**

6.1	INTRODUCTION	138
6.2	FINDINGS RELATED TO HYPOTHESIS 1: DIFFERENCE IN PERSONALITY	139
6.2.1	Factor I: Sensitivity: Feeling versus Thinking – contrasting modes of evaluating experience	140
6.2.2	Factor G: Rule – Consciousness: The content and action of moral value	142
6.2.3	Factor Q4: Tension: Tense versus relaxed temperaments	143
6.2.4	Deductions related to Hypothesis 1: Difference in Personality	145
6.3	FINDINGS RELATED TO HYPOTHESIS 2: PERSONALITY AND PTSD SCORES	146
6.3.1	Deductions related to Hypothesis 2: Personality and PTSD Scores	148
6.4	FINDINGS RELATED TO HYPOTHESIS 3: PERSONALITY AND COPING STRATEGIES	149
6.4.1	Deductions related to Hypothesis 3: Personality and Coping strategies	152
6.5	AGGREGATE FINDINGS	153
6.6	LIMITATIONS TO THE STUDY	153
6.7	RECOMMENDATIONS	155
6.7.1	Primary school intervention	156
6.7.2	Primary mental health	156
6.7.3	Further research	157
6.8	CONCLUSION	158
	LIST OF REFERENCES	161

**LIST OF APPENDIXES**

**LIST OF FIGURES**

**LIST OF TABLES**

## **LIST OF APPENDIXES**

**Appendix A: Ethics and Research statement**

**Appendix B: Consent Department of Education**

**Appendix C: Consent - The Principal**

**Appendix D: Consent Parent and Adolescent**

**Appendix E: Self-reporting Questionnaire**

## LIST OF FIGURES

Page

Figure 1.1 Typology of interpersonal violence

3

Figure 5.1 Mean scores of the 16 PF traits

110



<b>LIST OF TABLES</b>	<b>Page</b>
Table 2.1 Risk factors	29
Table 2.2 Erikson's description of the adolescent stages	34
Table 2.3 Piaget's description of the formal operational stages	36
Table 3.1 Important Personality models	60
Table 3.2 Cloninger's seven factor personality model	61
Table 3.3 The 16 Personality Factor primary traits	64
Table 3.4 The 16 Personality traits	66
Table 4.1 Research process	87
Table 4.2 Summary of Bipolar Dimensions of Personality (16 Primary Factors)	91
Table 4.3 Types of Validity	102
Table 5.1 Characteristics of the participants	106
Table 5.2 Type of violence exposed to (n = 93)	106
Table 5.3 Descriptive Statistics of the 16 PF Questionnaire	108
Table 5.4 Box's Test of Equality of covariance matrices	111
Table 5.5 Levene's Test of Equality of Error variances	111
Table 5.6 Multivariate tests	112
Table 5.7 Mauchly's Test of Sphericity	113
Table 5.8 Tests of Between-Subjects Effects	113
Table 5.9 Tests of Within-Subjects Effects	114
Table 5.10 Multivariate Tests	115
Table 5.11 Tests of Between-subjects effects	116
Table 5.12 Reliability analysis for the PDS	119
Table 5.13 Frequency of Posttraumatic Stress Disorder Symptoms	119
Table 5.14 Descriptive statistics for the PDS questionnaire	120

Table 5.15 Descriptive Statistics of 16PF scores for 3 groups	122
Table 5.16 Box's test of equality of covariance matrices	123
Table 5.17 Levene's Test of Equality of Error Variances	123
Table 5.18 Multivariate tests	124
Table 5.19 Mauchly's test of Sphericity	124
Table 5.20 Test of between subjects Effects	125
Table 5.21 Pairwise comparisons	126
Table 5.22 Reliability statistics for the KIDCOPE	129
Table 5.23 Descriptive statistics	130
Table 5.24 Descriptive statistics of coping strategies used	130
Table 5.25 Descriptive statistics of Helpfulness of coping strategies	131
Table 5.26 Correlations	133
Table 6.1 Summary of Factor I	139
Table 6.2 Summary of factor G	141
Table 6.3 Summary of factor Q4	142

**APPENDIX A**

**ETHICS AND RESEARCH STATEMENT**

**APPENDIX B**

**CONSENT**

**DEPARTMENT OF EDUCATION**

**APPENDIX C**

**CONSENT  
THE PRINCIPAL**

**APPENDIX D**

**CONSENT**

**PARENT AND ADOLESCENT**

**APPENDIX E**

**SELF-REPORTING  
QUESTIONNAIRE**

**INTERPERSONAL VIOLENCE**

## **CHAPTER ONE**

### **INTRODUCTION TO THE STUDY**

#### **1.1 INTRODUCTION**

This introductory chapter explains the rationale for and the purpose of the study. It contains a discussion of the conceptual framework and the research design. The concepts used are also clarified as background to the study.

#### **1.2 MOTIVATION OF THE RESEARCH**

During a psychology internship at a high school in Johannesburg, the researcher was tasked to use group therapy to resolve the difficulties of adolescents who had faced incidents of interpersonal violence. The group therapy concerned the honing of coping skills following traumatic events. Observations of adolescents attending the group sessions revealed that the percentage of adolescents that had been victims of interpersonal violence, such as hi-jacking and robbery were overwhelming and disturbing.

These adolescents had difficulty communicating to people around them. They tried to explain what was happening to them, but it seemed to be beyond the grasp of those around them. Problems presented during these group sessions entailed the following:

- problems controlling anger or occasional violent outbursts,
- impaired memory,
- hypersensitivity (when remarks are perceived as critical obsessiveness),
- aches and pains with no obvious cause,
- feelings of shame or guilt,
- low self-esteem, low self-confidence and/or nervousness and
- emotional "numbness".



These symptoms show resemblance to documented post-traumatic reaction (Fincham, Altes, Stein & Seedat, 2009; Horner, 2013). This led the researcher to investigate the concepts *traumatic reaction* and *post-traumatic stress disorder* (PTSD) to gain a deeper understanding of the presenting symptoms. The investigation confirmed that an alarmingly large percentage of adolescents in the specific school indeed showed symptoms of PTSD. This resulted in this research to explore the implications of interpersonal violence in the lives of adolescents.

PTSD is not a uni-dimensional phenomenon, as a number of variables directly affect individuals' biological and psychological responses to stress. Wilson (as cited in Wilson & Keane, 2004) postulates that trauma affects all aspects of human wellbeing, whether it be physical, psychological, social or interpersonal.

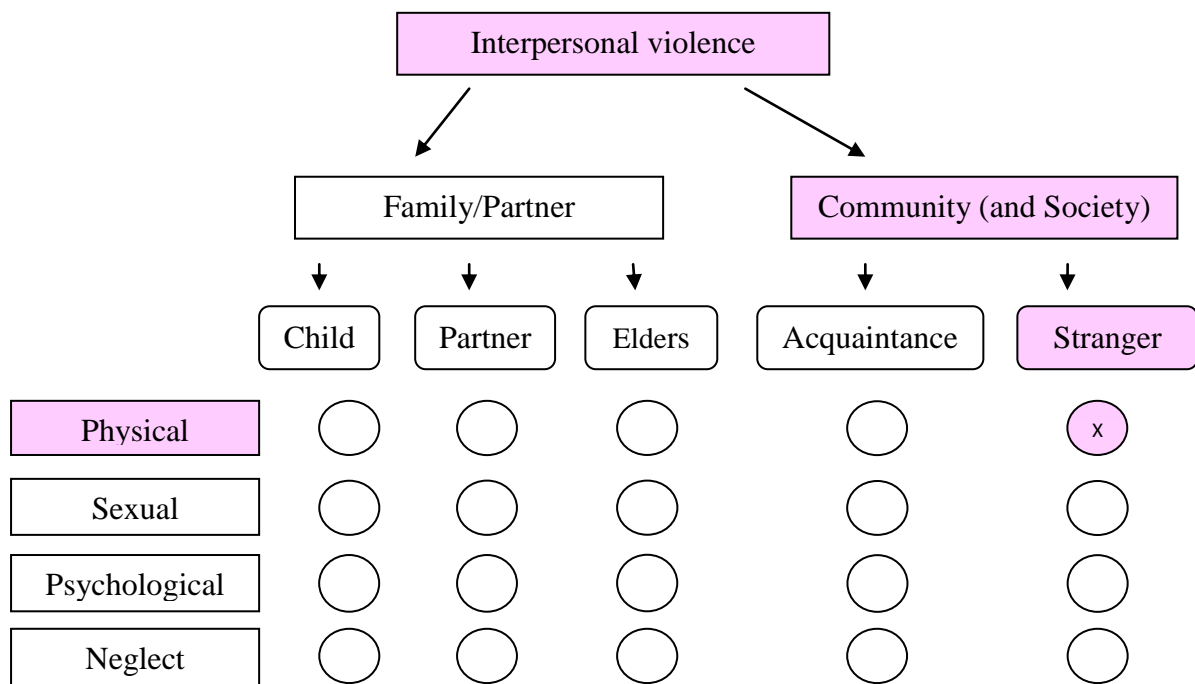
The reason for a high number of adolescents at a single school being affected by interpersonal violence does not primarily lie with the school or the location of the school in the city, but is rooted in the level of crime in South Africa as reflected by crime statistics. Findings indicated that more than a third of the South African population had been exposed to some form of violence by 2008 (Kaminer, Grimsrud, Myer & Stein, 2008). South Africa had 59 935 deaths due to injury in 2000, which is an overall death rate of 157.8 per 100 000 of the population (Seedat, van Niekerk, Jeweks, Sulfla & Ratele, 2009). Nearly half of South Africa's deaths due to injury are caused by interpersonal violence, four and a half times more than the proportion worldwide (Seedat, et al., 2009). The key crime trends for the period 2013/2014 depicted a murder rate of 32.2 per 100 000, about five times higher than the global average of 6.9 murders per 100 000. Violent property crime was 225 per 100 000 of the population, public robberies were 133 per 100 000 and house robberies where people are attacked by armed gangs while they are in their homes were 37 per 100 000. Various crimes increased the past year, for example vehicle hijacking increased by 5.4%, public robberies by 4.4% and house robberies by 7.1% the past year (Institute for Security Studies and Africa Check, 2014).

A study of Cape Town adolescents found levels of exposure to community violence as to be exceptionally elevated and to be associated with psychological distress (O'Donnell, Roberts & Schwab-Stone, 2011). In the capital of South Africa, Pretoria, more than two-thirds of university students reported experiencing a traumatic event, often in the form of witnessing violence (O'Donnell et al., 2011). Therefore, exposure of adolescents to interpersonal

violence in their communities is a serious problem because of the number of adolescents who experience violence and the documented toll of violence on the adolescent's physical, emotional and academic adjustment (Margolin, Vickerman, Oliver, Gordis, 2010).

The World Report on Violence and Health (WRVH) defines violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation" (WHO, 2011). The WRVH presents a typology of violence that can be a constructive way to comprehend the contexts in which violence occurs and the interactions between types of violence. This typology differentiates four modes in which violence may be imposed: physical; sexual; and psychological attack; and neglect.

Figure 1.1 Typology of Interpersonal violence



(Source: Global Campaign for Violence prevention)

For the purpose of this research community related interpersonal violence is defined as physical violence that occurs in the community by a stranger or strangers resulting in, injury,

death or psychological harm. In our definition it does not include domestic physical violence, maltreatment, or other forms of violence such as sexual violence, child abuse and neglect. The reason for this demarcation of the research lies in the fact that the single (though composite in itself) aspect of interpersonal violence which is highlighted in figure 1.1 overshadowed all others in revelations and discussions during the group therapy sessions mentioned above. It must also be mentioned that, in this research, “violence in the community” cannot be interpreted as if perpetrators generally came from the same geographic area or group of people as the victims. In this regard “community” can be expressed as society and includes violence, by aliens from other or distant regions that may well include illegal immigrants as well. Such violence may or may not form part of organised crime.

### **1.2.1 Interpersonal violence**

Interpersonal violence experienced in childhood and adolescence are associated with numerous psychosocial problems including attachment problems, speech, language and social interactions, delays in emotion processing and intellectual and behavioural difficulties, substance abuse and delinquency (Cisler, Begle, Amstadter, Resnick, Danielson, Saunders & Kilpatrick, 2012; Perkins & Graham-Bermann, 2012). It coincides with critical periods in language and social development and can impede the development of neural circuits underlying fundamental mechanisms of affective and cognitive development (Perkins & Graham-Bermann, 2012). Exposure to interpersonal violence has also been associated with low self-esteem, feelings of separation anxiety and feelings of relational insecurity (Lynch, 2003). Research examining the effects of interpersonal violence on children and adolescents currently documents links between exposure to violence and childhood problems to identifying mechanisms that influence children’s vulnerability to the stresses of violence exposure. Although the literature clearly identifies interpersonal violence exposure as a crucial risk associated with wide-ranging adjustment difficulties in adolescence, it also depicts considerable diversity in the functioning of adolescence that faces this stressor (Margolin, 2005).

Central to adolescent development is the process of personality development. Personality development is a process that starts in childhood and is subject to a variety of endogenous and exogenous factors. Personality traits are not immune to experiences (Shiner & Caspi, 2003). Personality could be conceptualized as a configuration of cognitions, emotions and customs activated when situations excite their expression and determine the individual's unique adjustment to the world (Triandis & Suh, 2002). To broaden the definition of personality it is further described as the dynamic organization within the person of the psychological and physical systems that motivate that person's patterns of actions, thoughts and emotional state (Carver & Connor-Smith, 2010). Personality is formed by both genetic and environmental influences (Triandis & Suh, 2002). Behavioural genetic studies have established that individual differences in temperament (measured even during the first few years of life), are only partly hereditary and are influenced significantly by unique and traumatic environmental events (Shiner & Caspi, 2003).

Exposure to interpersonal violence may therefore bring about certain changes to the personality structure and alter the adaptive functioning of the adolescent exposed to interpersonal violence. The effect of violence is equally determined by the interaction between the nature of the violence exposure and the developmental abilities of the adolescent (Margolin, 2005). The concept 'adaptive functioning' refers to how effectively individuals cope with common life demands and how well they meet the standards of personal independence expected of someone of their particular age group, socio-cultural background and community setting (DSM-IV-TR, 2000). Considering that in early childhood one of the fundamental developmental tasks is the development of social interactions with others, it would make sense that exposure to violence would disturb that process and make adolescents more susceptible to developing externalizing (anxiety, depression, PTSD) behaviours (Perkins & Graham-Bermann, 2012) such as deficits in social competence.

Interpersonal violence exposure creates a highly stressful environment for adolescents. Such environments may lead to traumatic stress reaction, post-traumatic stress symptoms, including altered psychological, biological, neurological and cognitive functioning. These symptoms are not only important consequences themselves, but can be pathways toward other developmental difficulties, including compromised academic functioning, substance

abuse, dating violence and personality disorders (Margolin, 2005). Stress of a nature, extent, or duration that is outside the adaptive resources of the adolescent may be related with a perception of loss of control, dysphoria and chronic adversative behavioural and physical consequences (Charmandari, Tsigos & Chrousos, 2005). Studies examining stress and coping have shown that daily stress has a primary role in the development and maintenance of psychological difficulties. Research in this area has pointed to the compounded effects of multiple stressors on adolescent's coping and adjustment (White, Bruce, Farrell & Kliewer, 1998). Cognitive appraisal and coping are of importance in adaptive psychological and biological responses to trauma (Olf, Langeland & Gersons, 2005).

The manner in which adolescents cope with traumatic stress is not stagnant. Coping efforts are continuing and dynamic, adjusting to contextual factors and varying over time (Morris & Rao, 2013). Coping should be seen as a process. Understanding coping in relation to any one type of stressor must take into account how coping with that stressor may alter over time (Olf et al., 2005). Though several people show immense resilience after violence exposure, exposure to violence in the home and community is a predecessor to the development of externalizing (attention deficit hyperactivity disorder, conduct disorder, oppositional defiant disorder) and internalizing (depression, PTSD, anxiety) psychological problems in some, with the degree of exposure influencing the degree of the problem (Perkins & Graham-Bermann, 2012). The purposeful significance of temperament might be greatest in its influence on responses to stress and different aspects of temperament may facilitate some types of coping and stress responses and obstruct others (Compas, Connor-Smith & Jaser, 2004). Thus, personality does influence coping in various ways (Carver & Connor-Smith, 2012). Context may also influence the manifestation of personality, piloting relations between personality and coping to vary across areas of stress. Personality may influence coping flexibility and the ability to alter coping to situational demands (Carver & Connor-Smith, 2010).

Therefore, interpersonal violence is investigated with the aim of creating a context for the current study, by exploring how exposure to community related interpersonal violence can affect personality development of the adolescent.

### 1.3 RATIONALE OF THE STUDY

Crime is among the most difficult challenges facing South Africa. The country's crime rates are among the highest in the world and no South African is insulated from its effects (Demombynes & Ozler, 2005). It is evident that South Africa has among the highest burdens of interpersonal violence injury in the world (Norman, Schneider, Bradshaw, Jewkes, Abrahams, Matzopoulos & Vos, 2010). The experience of violence is considered to have a negative impact on various aspects of personal functioning, such as cognitive, emotional, social and behavioural functioning. Concerns about exposure to public interpersonal violence focus not only on the physical trauma, but also on the psychological trauma caused by such exposure (Rosenthal & Wilson, 2006). Infringement through violence of these domains might have a negative effect on the distinctive developmental processes and tasks that the adolescent has to accomplish. The nature of the impact is dependent on the timing, type, as well as the duration of the exposure to violence (Margolin & Gordis, 2004). Investigation of inner-city high-school students found that adolescents residing in communities with elevated incidences of violence are at higher risk for negative effects, including risk factors of poverty, discrimination and compromised education (Schiavone, 2009). Aviles et al. (2005) postulated that violence interferes with a child's normal development, placing him/her at greater risk for emotional distress. Considering the high incidence of interpersonal violence within our society, it follows that quite a number of children and adolescents might be at risk due to the harmful consequences brought about by exposure to adverse environmental circumstances, while others might develop some unhealthy defence mechanisms, protecting them from the impact (Rosenthal & Wilson, 2006).

Children and adolescents exposed to violence often present with behavioural difficulty (Cummings, Simpson & Wilson, 1993), such as anger and depression. They are also more likely to demonstrate deficits in standardised test scores such as a low self-esteem, poor interpersonal skills, a low intelligence quotient (IQ) (Belkin, 2000) as well as lower grades in school. In addition, exposure to interpersonal violence may result in post-traumatic stress disorder (Aviles, Anderson & Davila, 2005). The stress, anxiety and fear generated by exposure to violence may interfere with significant normal developmental tasks such as the development of trust, sense of safety, emotional regulation, explorations of the environment and ability to form social relationships (Salzinger, 2002).

A number of earlier studies have focused on physical and sexual abuse of children as the only source of interpersonal violence. However, within the last decade researchers have started to consider the impact of sustained public violence on children and adolescents (Veenema, 2001). The researcher therefore postulates that the trauma and stress associated with interpersonal public violence adversely affect the neurobiology of the individual, since social, emotional and cognitive influences interact in multifaceted ways together with neurobiological systems to affect every day adaptive functioning.

#### **1.4 PROBLEM STATEMENT**

The spectrum of public violence is extremely diverse in nature (Veenema, 2001). Little is known about the effects of the experience of interpersonal violence on the personality functioning of adolescents. Interpersonal violence experienced in adolescence is nevertheless related to numerous psychosocial problems (attachment problems, speech, language and social interactions, delays in emotion processing and intellectual and behaviour problems) (Perkins & Graham-Bermann, 2012). Because all of these aspects are vital in the personality development of adolescents, interpersonal violence may affect the expression of personality in adolescence. Considering that personality formation occurs over time and is subject to a number of factors that interact reciprocally, this research aims at exploring and describing the difference of expression of personality between adolescents exposed to community related interpersonal violence and adolescents not exposed to community related interpersonal violence.

The **aim of this study**, as will be formalised in chapter four (section 4.2), is to determine if there is a difference in the expression of personality between adolescents exposed to community related interpersonal violence and those not exposed to community related interpersonal violence. Additionally, the expression of personality of adolescents who experience symptoms of PTSD after violence exposure will be compared with those not exposed to violence. The role of coping ability will also be explored in the expression of personality after exposure to violence.

When being exposed to incidents of interpersonal violence, the expectation is that certain primary personality factors will reflect such changes, particularly those primary factors that are highly sensitive to environmental experience that have an impact on the hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis and sympathetic-adrenal-medullary system are critical in promoting adaptive responses to stress, anxiety or fear, thus contributing to the regulation of the stress response (De Kloet, Vermetten, Gouze, Kavelaars, Heijnen & Westenberg, 2006).

## **1.5 CONCEPTUAL FRAMEWORK**

Social-emotional functioning and certain personality traits direct the way in which adolescents apply themselves within a variety of contexts, including interpersonal (social) and academic contexts. This link initiated an investigation of the foundations of human emotion and directed the researcher to the field of neurobiology in the understanding of human cognitive behaviour as well as emotions. Affective Neuroscience forms the paradigmatic conceptual bridge needed for this research, since this approach can yield clear empirical predictions in both directions - from neuroscience to social science and vice versa and it serves as an intellectual highway for productive interaction between the psychosocial and neurobiological sciences (Panksepp, 1998). This paradigmatic conceptual bridge might facilitate an in-depth understanding of the impact of interpersonal violence on the personality functioning of the adolescent. A detailed discussion will follow in Chapter 4.

## **1.6 DEFINITIONS OF KEY CONCEPTS**

Key concepts inherent to this study are introduced below as an introduction to the empirical study. These concepts will be re-examined and discussed in depth in subsequent chapters.



### **1.6.1 Community related interpersonal violence**

This concept refers to violence that is interpersonal in nature; occurring outside the house (non-domestic); is non-sexual; involves ‘commonplace’ events such as hijacks, robbery and threats of physical assault and is experienced directly rather than vicariously (seeing on TV/films, hearing, reading about violence from others) (Rosenthal & Wilson, 2006). According to Mathews, Dempsey & Overstreet (2009) exposure to community related interpersonal violence may occur through personal victimization, as well as witnessing events such as assaults, robberies and murders within one’s neighbourhood. Matzopoulos, Bowman, Mathews and Myers (2010, p. 62) defined violence as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in, injury, death, psychological harm, mal-development or deprivation”. (In this research adolescents who were not personally injured or threatened when they witnessed community related interpersonal violence, were excluded from the research as will be described in chapter four, section 4.4.3.)

According to the WRVH interpersonal violence refers to violence between individuals. It is divided into family and intimate partner violence and community violence. The latter is broken down into acquaintance and stranger violence and includes youth violence; assault by strangers; violence associated to property crimes; and violence in workplaces (retrieved from <http://www.who.int/violenceprevention/approach/definition/en>).

### **1.6.2 Personality**

The concept personality is universally used as a global descriptive label for a person’s observable behaviour and his/her subjectively reportable inner experience (Kaplan & Sadock, 2003). According to Shiner and Caspi (2003, p.2) personality refers more inclusively to people’s predisposition to conduct themselves, think and feel in certain consistent ways. According to the multidimensional trait approach the term ‘personality’ refers to a set of

perceptions, inner experiences and behavioural traits that a person may possess, which are temporally stable and show little variance in time (Goekoop, Goekoop & Scholte, 2012). Personality is a response function that maps personality traits to measured (manifest) personality (Borghans, Golsteyn, Heckman & Humphries, 2011).

There is a debate in the literature whether personality is a stable construct or whether personality changes over time due to experiences (Klein, Kotov & Bufferd, 2011; Roberts, 2006). This research explores whether and to which extent personality may be influenced by certain traumatic experiences of an adolescent.

### **1.6.3 Expression of personality**

It is easier to quantify personality traits at the hand of situational information. People are more likely to replicate the same behaviour if faced with similar circumstances. In attempting to predict behaviour, it is therefore advantageous to consider how beneficial circumstances were when information was gathered and to compare it to the circumstances for which the predictions are intended (Saucier, Bel-Bahar & Fernandez, 2007). Personality variables are dynamic predictors of behaviour, particularly when behaviour is accumulated across different situations and over time (McAdams & Olson, 2009).

### **1.6.4 Temperament**

Similarly, Zentner and Bates (2008) noted that “...temperament has many faces, including neurobiological substrates, endophenotypes and overt behaviour patterns” (p. 29). Henderson and Wachs (2007) indicate that “while temperament may provide the foundation for the later emergence of personality, temperament per se does not include complex processes such as attributions, self-concept, or conscious self-presentation, concerns that are central to the expression of personality” (p. 398). The traditional definition of temperament refers to the biologically-based foundation of personality. This perspective suggests a consecutive

relationship, with temperament as the affective, activation and attentional core around which more complicated personality traits develop over time (De Pauw & Mervielde, 2010).

### **1.6.5 Adolescent**

Adolescence (ages 11–18) is characterized by profound psychological, social, as well as biological developmental changes (Sinha, Cnaan & Gelles, 2007). The psychological onset is characterized by acceleration of cognitive development along with consolidation of personality formation. Socially, adolescence is a period of intensified preparation for the pending role of young adulthood (Kaplan & Sadock, 2003). The biological onset of adolescence is signalled by expeditious acceleration of skeletal growth along with the beginnings of physical sexual development (Kaplan & Sadock, 2003). It is further known as a developmental period of strength along with resilience (Dahl, 2004).

### **1.6.6 Neurobiology**

The concept *neurobiology* refers to the study of “...a diversity of coherently operating brain systems which can generate psychologically meaningful classes of adaptive behavioural tendencies” (Panksepp, 1998, p.12). In addition, the concept *neurobiology* also refers to the study of neural pathways and related electrophysiological and neurochemical activities (Young, 1996).

### **1.6.7 Stress**

The concept stress is defined as a transaction between a person and the environment that (reflects) the person’s appraisal of the challenges posed by the situation and available coping resources, along with the psychological responses to those perceived challenges (Bishop

1994). Several researchers make use of some variation of Hans Selye's definition that 'stress is the non-specific response of the body to any demand made upon it' (Kalat, 2001, p. 342). Stress is an individual's normative response to a physical, psychological, or emotional peril (Galván & Rahdar, 2013).

### **1.6.8 Hypothalamic-pituitary-adrenal axis**

The Hypothalamic-pituitary-adrenal (HPA) axis signifies the main neuroendocrine stress response system that operates to adapt the organism to change in demand and thereby sustains stability and health (Heim, Newport, Mletzko, Miller & Nemeroff, 2008). The activated HPA axis not only regulates body peripheral functions such as metabolism and immunity, but has determinant effects on the brain (Pariante & Lightman, 2008). Considering the important role of the HPA in regulating stress and brain functioning, it can be understood why problems with the HPA axis has been blamed for psychiatric disorders and events of major depression (Pariante & Lightman, 2008). There are several levels at which the HPA axis is regulated and the stress response can be affected. Acute responses to stress are required in order to preserve homeostasis in the organism. Nevertheless, chronic stress or dysregulation of this system can lead to cell death, mood and affective disorders and other diseases (Bale & Vale, 2006).

### **1.6.9 Stress Response**

The body's response to absolute stressors is adaptive in nature. Life-threatening situations constitute absolute stressors in that, due to their aversive nature, a suitable stress response is essential for one's survival and/or well-being (Lupien, Maheu, Tu, Fiocco & Schramek, 2007). The stress response is mediated by the stress system, partially located in the central nervous system and partially in peripheral organs (Chrousos, 2009). Responses to stress are characterized by two sets of processes:

- Automatic process including physiological arousal, emotional arousal, intrusive thoughts and automatic biases in attention, impulsive responses and involuntary escape behaviour.
- Controlled process reflected in coping that is defined as “conscious volitional efforts to regulate emotion, cognition, behaviour, physiology and the environment in response to stressful events or circumstances” (Compas, Connor-Smith & Jaser, 2004, p.26).

### **1.6.10 Acute stress disorder**

The diagnosis of acute stress disorder (ASD) was introduced to describe preliminary trauma responses that predict chronic PTSD (Harvey & Bryant, 2002).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) defines a disorder that is similar to PTSD called Acute Stress Disorder, which occurs prior to PTSD (within 4 weeks of the event) and remits within 2 days to 4 weeks. If symptoms, however, continue after the mentioned time, a diagnosis of PTSD is justified (Kaplan & Sadock, 2003). Acute stress disorder differs from PTSD in being overtly formulated as a dissociative response to trauma requiring at least three of a possible five dissociation symptoms (Brewin, Andrews, Rose & Kirk, 1999; Meiser Stedman, Yule, Smith, Gluckman & Dalgleish, 2005).

### **1.6.11 Post traumatic stress disorder**

Post-traumatic stress disorder (PTSD) is an expression for the psychological consequences of exposure to, or confrontation with, stressful experiences, which involve authentic or threatened death, significant physical injury or a threat to physical integrity, which the person found vastly traumatic (Forbes, 2001). According to Kaplan and Sadock (2003), the term PTSD refers to a syndrome that develops after a person sees, hears, or is involved in an extreme traumatic event. The reaction to this experience manifests as fear and helplessness,

persistently reliving the event, as well as attempts at avoiding reminders of the incident. Other symptoms are depression, anxiety as well as cognitive difficulties such as poor concentration. In order to make the diagnosis, the symptoms mentioned, must last for more than a month after the traumatic event and have to significantly affect crucial areas of life such as family, work and school (Kaplan & Sadock, 2003).

### **1.6.12 Coping**

Coping refers to adaptively altering cognitive, emotional and behavioural efforts to deal with psychological stress (DeLongis & Holtzman, 2005; Seiffge-Krenke, Aunola & Nurmi, 2009). Skinner and Zimmer-Gembeck (2007) defines coping as “regulation under stress” (p.119). According to Seiffge-Krenke et al. (2009) coping is an active, focused process by which an individual react to stimuli evaluating as demanding or exceeding his/her resources. Lazarus and Folkman (1984)’s classic work divide ways of coping into two broad categories: problem-focused coping and emotion-focused coping. In problem-focused coping the focus is on action to solve the problem, while emotion-focused coping is on dealing with the emotions in situations that cannot be changed. Coping is defined as action-oriented and intrapsychic efforts to manage the demands created by stressful events (Taylor & Stanton, 2007).

### **1.6.13 Coping style**

Coping style, are more heavily laden with behavioural descriptions and give relatively less weight to the adequacy of coping or to the emotional and cognitive correlates of coping. The term coping styles generally is applied to behaviours that are observed when a person is distressed (Beutler, Moos & Lane, 2003). These behaviours are thought to be manifest with some degree of regularity and predictability and they are thought to distinguish one individual from another when distress is evoked. While most measures of coping style include some description of the nature of the subject’s cognition, they tend to have interpersonal behaviours that are related to how adequately one’s coping efforts serve to help the person reduce levels of distress (Beutler, et al., 2003).

## 1.7 RESEARCH DESIGN AND DATA COLLECTION METHODS

The research design and data collection methods will be motivated and presented in chapter four.

By way of introduction, it can be mentioned here that the study use a quantitative, descriptive survey design comparing two groups by means of standardised questionnaires and a self-reporting questionnaire. The following questionnaires were included: The 16 Personality Factor questionnaire (16PF) (Cattell), The KIDCOPE questionnaire (Spirito, Stark & William, 1988) and The Post-traumatic Diagnostic Scale (PDS) (Foa, Cashman, Jaycox & Perry, 1997).

The descriptive survey design has been selected for this study to obtain information from various cases in the sample population and allows for focusing on the characteristics under consideration (Maree, 2007).

Purposive samples were selected from a cohort of all Grade 12 learners registered at a public school in Gauteng. This method is used in special situations where sampling is done with a specific purpose in mind, in this study identifying adolescents exposed to interpersonal violence (Maree, 2007). Two groups were identified based on their response to a self-report questionnaire. The two groups are compared in terms of personality, PTSD and coping.

## 1.8 DIVISIONS OF CHAPTERS

**Chapter one** consists of the introduction and actualisation of the research problem, the problem statement, the research hypothesis, as well as an overview of the research design.

**Chapter two and three** offers an in-depth literature review on the impact of stress on the personality functioning of the adolescent, in support of the research hypotheses. This includes the biological basis underlying one's post-trauma adaptive functioning. The

literature will shed light on whether exposure to incidents of interpersonal violence affect the expression of personality and whether there is a biologically mediated basis to how personality is expressed following exposure to incidents of interpersonal violence. The post-trauma adaptive functioning of child trauma victims is analysed in order to reflect on the adaptive functioning of adolescents exposed to incidents of interpersonal violence.

**Chapter four** offers a comprehensive description of the relevant research methodology used within the study as well as procedures to conduct research ethically.

**Chapter five** describes the findings derived from the empirical study. The research questions are answered.

**Chapter six** weighs the research findings, deductions and conclusions in the context of relevant literature. Recommendations are made regarding possible intervention strategies to optimize the affected adolescent's post-traumatic adaptive functioning. Shortcomings inherent to the design will be pointed out. Further research options are suggested.

## 1.9 CONCLUSION

Chapter one introduced the research process and provided a brief discussion of the chapters to follow. As stated, the next two chapters will present a comprehensive literature review of the subject matter that relates to this study, including adolescents, the effect of the experience of interpersonal violence and post-traumatic stress disorder.



## CHAPTER TWO

### LITERATURE REVIEW (I): THE ADOLESCENT AND EXPOSURE TO VIOLENCE

*“A trauma-induced sense of discontinuity can [have] a disrupting influence on the adolescent’s [ability to integrate] past, present and future expectations into a lasting sense of identity”*

*(Davis & Siegel, 2000, p.141).*

#### 2.1 INTRODUCTION

The literature review will be divided into two chapters. This chapter explains the term adolescence, the developmental theories, traumatic stress and posttraumatic stress disorder. The role trauma, with specific reference to interpersonal violence plays regarding personality and the adaptive functioning thereof will be illustrated. To examine how trauma or stress can give rise to maladaptive functioning, it is necessary to study the mechanisms employed by a person to adapt to stressful stimuli. Ways, in which these initially protective adaptations can sometimes go astray with detrimental consequences, will also be considered (Vanlallie, 2002).

#### 2.2 THE ADOLESCENT

##### 2.2.1 Definition of Adolescence

The progress from adolescence to adulthood is regarded as one of the most tumultuous periods in the course of life (Roberts, Caspi & Moffitt, 2001). Dahl (2004) defines adolescence as “that awkward period in humans between sexual maturation and the attainment of adult roles and responsibilities” (p.140). This definition is indeed useful, because it captures the physical and biological changes related to puberty and combines it with the rapid personal building of social skills in the same life cycle (Cohen, Tottenham &

Casey, 2013). It embraces the transition from the social status of a child (who requires adult monitoring) to that of an adult (responsible for own behaviour). It also involves transition in social roles interposed with a multitude of pubertal changes in body and brain (Dahl, 2004).

To understand the purpose of this study, it is important to remember that puberty represents a period of synaptic reorganisation. During puberty the brain will therefore probably be extremely sensitive to experiential input in the realms of executive functioning and social cognition (Blakemore & Choudhury, 2006; Panksepp, 1998; Yehuda, 2000). Adolescents are particularly vulnerable to psychological harm because of their unique developmental phase (Veenema & Schroeder-Bruce, 2002). During this period, brain, behavioural and hormonal systems undergo heightened remodelling (Hollis, Isgor & Kabbaj, 2013). Developmental level and developmental age may influence an adolescent's exposure to risk and his/her perception and understanding of trauma, coping styles, memory of a traumatic event, susceptibility to parental distress, adaptation, self-concept and social skills (Hizli, Taskintuna, Isikli, Kilic & Zileli, 2009).

Recent research has drawn attention to the remarkable development exhibited by the adolescent brain. Relatively little is, however, known about the effect of stress on the brain during this crucial stage of maturation when entire neuronal networks are pruned, behaviours are tuned toward novelty and hormones fluctuate (Eiland & Romeo, 2013). With so many changes occurring on several levels at different rates, it is easy to imagine how external influences like stress and trauma caused by interpersonal violence could dramatically alter the course of personal development (Hollis et al., 2013).

The adolescent phase is generally characterized as a period of stress. Additional unduly stressful events during adolescence may exacerbate this to set in motion a self-perpetuating cycle where stress and psychological symptoms contribute to each other (Murberg & Bru, 2005). Experiencing stress has a significant function in adolescent development (Hollis et al., 2013; Murberg & Bru, 2005). It is therefore crucial for researchers to gain insight into stress perception and coping mechanisms during the phase from early to late adolescence. The influence of developmental stage and situational factors on these factors needs to be understood (Seiffge-Krenke, Aunola & Nurmi, 2009). Some consequences of exposure to traumatic events, such as improved values, deepening of meaningful attachment and enhanced learning and memory, are positive (Lowry, Sleet, Duncan, Powell & Kolbe, 1995).

Negative effects of violence, such as emotional distress and mental illness, however, tend to override any positive effects and compromise the health and well-being of the adolescent (Osuch & Engel, 2004). Exposure to violence can therefore have pervasive and profound detrimental effects on the development of the adolescent (Davis & Siegel, 2000).

### **2.2.2 Exposure to interpersonal violence and the impact thereof**

In South Africa, children and adolescents are being exposed to more frequent and intense levels of community related interpersonal violence (e.g., hijack, robbery, assault) than two decades ago (Shields, Nadasen & Pierce, 2008). South Africa, although not at war, faces an unprecedented burden of morbidity and mortality arising from violence and injury. The country's overall violent death rate is nearly five times the global average (Seedat et al., 2009).

The bulk of existing research on adolescents and community violence in South Africa seems to bear a political emphasis. Apart from that, research on youth and violence in South Africa has focused on gang-related activities and has been rather silent on the impact of community based interpersonal violence on youth that are not involved in such activities (Shields et al., 2008). Some applicable knowledge can nevertheless be gained from existing publications, both from South Africa and further afield. Studies of violence pertaining to sexual and physical abuse of children and adolescents in the United States are available (Veenema, 2001). Studies addressing the impact of community related interpersonal violence on adolescents have only been conducted quite recently and there is a notable absence of such literature from South-Africa, especially pertaining to adolescents that fell victim to, or has witnessed or otherwise experienced violent, traumatic events such as hijack, robbery, shooting, murder, or physical assault (Veenema, 2001).

Early exposure to violence is not without consequences. It has been shown to be related to PTSD symptoms for adolescents (Agaibi & Wilson, 2005; Davies & Flannery, 1998; Veenema, 2001). It has been estimated that PTSD develops in 30% of adolescents who have survived a major trauma (Hizli, Taskintuna, Isikli, Kilic & Zileli, 2009). Exposure to interpersonal violence bears consequences caused by the trauma itself, but these

consequences are modified by the adolescent's reaction to the trauma (Gil & Caspi, 2006). Specifically, violence-exposed children and adolescents may experience symptoms characteristic of PTSD, including significant difficulty regulating one's emotions and behaviour (Mathews et al., 2009). Such symptoms may contribute to decreased concentration and may interrupt the process of learning. Further, due to emotional distress that occurs when adolescents experience intrusive thoughts, some of them may try to avoid reminders of exposure to interpersonal violence (such as travelling to school, or the context of the school itself). This may result in increased school absences (Matthews, Dempsey & Overstreet, 2009).

### **2.2.3 Impact of interpersonal violence on specific domains**

Although the relationship between PTSD and impaired functioning has been conclusively established (Donnelly & Amaya-Jackson, 2002; Margolin et al., 2010), diminutive research exists to investigate the particular nature of this relationship. The influence of PTSD on the quality of life of adolescents has not been studied to the extent that its impact on specific domains, such as interpersonal functioning, is well understood (Beck, Grant, Clapp & Palyo, 2009). Cumulative evidence nevertheless demonstrates that trauma can have a lasting impact on manifold domains of functioning, including adaptive and interpersonal functioning, emotion regulation, cognition and memory and neuroendocrine function (Gerson & Rappaport, 2013).

The understanding of age-specific responses to traumatic events, as well as symptoms of stress reaction and PTSD, requires knowledge regarding normal developmental behaviour and normal reactions to stress. Measuring instruments to ascertain which stress levels are optimal drivers in the context of development, would further such understanding (Salmon & Bryant, 2002). According to Davis and Siegel (2000) PTSD may be a much more prevalent disorder of childhood than was once thought. Adolescents exposed to sudden, unpredicted violence (such as community related interpersonal violence) appear to be more vulnerable than adolescents not exposed to violence and are therefore more at risk to develop emotional, behavioural, physiological, cognitive and social difficulties (Perry, Pollard, Blakley, Baker & Vigilante, 1995). Several authors have indeed suggested specific age-related diagnostic

criteria for PTSD, as adolescents at each developmental stage exhibit specific symptom clusters. An adolescent's cognitive appraisal of potentially stressful experiences will be largely dependent on his or her understanding of that experience. Pynoos in Davis and Siegel (2000) postulates that, as children get older, changes in their interaction with their social environment tend to increase their risk of exposure to stressors.

### ***2.2.3.1 Psychological impact***

Adolescents exposed to chronic violence may develop a sense of learned helplessness, which may seriously affect their mood and their development of a sense of efficacy and self-control. They could experience difficulty in developing a healthy sense of initiative. Early exposure may also critically damage an adolescent's sense of future orientation and hope. One of the most disconcerting admissions from adolescents surviving interpersonal violence is that they have little hope of living very long (Davies & Flannery, 1998). Much of their behaviour is focused on living in the 'here and now'. This behaviour is driven by a need for immediate gratification, all laced with a sense of hopelessness regarding their future (Davies & Flannery, 1998).

Salzinger, Feldman, Stockhammer and Hood (2002) point towards the serious implications for critical superordinate developmental concepts such as adolescent's comprehension of the social world, health related beliefs and moral development. Research concludes that the stress, anxiety and fear generated by exposure to violence interfere with significant normal developmental tasks such as the development of trust, sense of safety, emotional regulation, explorations of the environment and the ability to construct social relationships (Salzinger et al., 2002). Furthermore, consequences of childhood exposure to interpersonal violence include social avoidance, impairments in self-efficacy, attachment, sleep patterns and affect regulation, sense of foreshortened future as well as a lack of life opportunities (Davis & Siegel, 2000; Mathews, Dempsey & Overstreet, 2009). The judgement concerning an adolescent's sense of foreshortened future must be made in the context of the perception of the future held by non-traumatized adolescents at a similar developmental stage; limited knowledge pertaining to age-specific symptoms in PTSD is known (Salmon & Bryant, 2002).

The potential difficulties in affect regulation (the control over one's reactions) for adolescents exposed to or victimized by violence have to be taken into consideration. The fostering of affect regulation is an important development task, especially where it concerns learning how to regulate aggressive impulses. Affect regulation requires distinguishing between various emotional states (recognizing when someone is angry or frustrated) and regulates appropriate acquired social behaviour (Davies & Flannery, 1998). Sleep disturbances, nightmares and increased anxiety, as a consequence of exposure to violence, are common for children of all ages (Davies & Flannery, 1998).

### ***2.2.3.2 Behavioural impact***

Exposure to violence may trigger the development of behavioural difficulties, such as involvement in teenage delinquent peer associations such as gangs, which often provide the context for early antisocial behaviour and acts of violence (Seedat et al., 2009). Ogawa (2001) suggests the loss of a sense of security, repetitive behaviour, trauma-specific fear (fear towards an exclusive stimulus highly associated with the traumatic event) and futurelessness as other general symptoms and consequences in traumatized adolescents. Osuch and Engel (2004) indicate that short term as well as long lasting adverse effects may ensue. Adolescent exposure to violence may, indeed, alter adaptive functioning and resilience for the duration of the person's life. Additionally, Henrich, Schwab-Stone, Fanti, Jones and Ruchkin (2004) suggest that depressive symptoms and disruptive behaviour explain the adverse relationship between community violence exposure and academic achievement. Heightened vulnerability to risk taking adolescence might be due to a complex interaction of sensation seeking in the context of relatively immature behavioural control abilities distinctive of this phase of development (Casey, Duhoux & Cohen, 2010).

There is a difference between the effects of traumatic stress on proximal (such as neglect, childhood abuse, trauma) and distal (indirect stressors such as social class) development in adolescents (Agaibi & Wilson, 2005). In terms of proximal developmental effects skills, along with competencies that have been recently acquired by the adolescent, might be disrupted (Davis & Siegel, 2000).

Avoidance behaviours related to trauma could interfere with adolescents' achievements and with their development towards autonomy. Distal developmental effects resulting from childhood trauma can affect personality development through changing their perceptions of danger, their representations of self and others, as well as their regulation of cognitions and affect. Additionally, exposure to stressful experiences in adulthood might serve to reactivate negative self-attributions (Davis & Siegel, 2000). Furthermore, posttraumatic 'acting out' can include absence from school, early sexual debut and delinquency (Levers, 2012). Substance abuse is often a way of coping and self-medicating in an effort to counterbalance self-depressed mood and could lead to difficulties in brain development (Levers, 2012).

### ***2.2.3.3 Cognitive implications***

If traumatic stress due to interpersonal violence damages the developing brain and impairs the ability for adolescents to learn, this could have important public health and education implications (Carrion & Wong, 2012). It may impact an adolescent's ability to perform efficiently at school. Research posit that the effects of exposure to violence on school functioning are associated with decreased academic performance (Mathews, Dempsey & Overstreet, 2009). School-aged children exposed to violence might experience symptoms such as intensified anxiety, irritability, dissociation, distractibility and depression. All of these symptoms could impair children's ability to study (Davies & Flannery, 1998). Full-scale IQ deficits as well as lower reading ability have been found in adolescents with interpersonal violence exposure (Perkins et al., 2012). Studies have shown that adolescents exposed to traumatic stress are more likely to have declining school performance, lower reading achievement, decreased verbal IQ and more days of school absence. They are therefore at greater risk to develop learning and behavioural disorders than adolescents not exposed to interpersonal violence (Carrion & Wong, 2012). Furthermore, maladaptive stress modifies cognitive behaviour via modulation of structural and functional brain networks and could lead to psychiatric disorders (Galván & Rahdar, 2013).

#### ***2.2.3.4 Neurological implications***

The adolescent brain is a work in progress. Anatomical changes in the molecular, cellular and structural composition of the brain occur during adolescence and are reflected in functional modifications in ways that are both progressive and regressive (Spear, 2009). Research suggested that adolescence is a phase of functional activation of fundamental motivational and emotional systems at a time when prefrontal cortical systems (controlling rational decisions and actions) are not fully mature (Casey, Duhoux & Cohen, 2010). Exposure to violence appears to bear a causal relationship to dysfunctional development in brain volumes. The developmental age at which the exposure takes place, as well as the intensity, duration and length of exposure, determines at what subsequent point within normative development, the exposure will influence the brain and what structures and functions will be most impacted (Perkins & Graham-Bermann, 2012).

Adolescents sometimes show greater physiological and neural responses to emotional and stressful stimuli than adults (Spear, 2009). Adolescents differ notably from adults in their brain reward neuro-circuitry and in the way they process and respond to rewarding or aversive stimuli (Spear, 2009). Violence exposed adolescents' exhibit neurological changes that may contribute to trouble with learning because of inattention or deficits in executive functioning (Perkins & Graham-Bermann, 2012). Exposure to trauma in these formative years may also affect maturation of the central nervous system along with the neuroendocrine system (Dyregrov & Yule, 2006). The diverse neurologic effects that result may produce the different outcomes of traumatic stress and each affected brain area could lead to different symptoms (Gerson & Rappaport, 2013).

Adolescents often strongly relate to increased sensation seeking, risk-taking and reckless behaviour. These tendencies of sensation seeking and risk-taking behaviour may precipitate actions with negative mental health consequences (Dahl, 2004). Part of the vulnerability (and opportunity) associated with adolescence could be linked to a series of biologically based changes in neural systems of emotion as well as motivation. It contributes to what appears to be a natural increase in predisposition towards risk taking, sensation seeking and several emotional or motivational changes during pubertal maturation (Dahl, 2004).



These findings suggest that pre-adolescents and adolescents might, in their quest for excitement, find themselves in situations where they are more exposed to community related interpersonal violence, for example hijackings, assault and armed robbery. The long-term effects of community related interpersonal violence on adolescents remain relatively unexplored. It is not certain how such experiences influence the expression of personality in the short, medium and long term. This study focuses on this vital matter in order to develop a better understanding of the complexities of the consequences of being exposed to community related interpersonal violence.

#### **2.2.4 Reaction to interpersonal violence**

The study of factors that place adolescents at risk for the development of PTSD and related afflictions is an area of concentrated research. Epidemiological data indicate that adolescence is the developmental period with the highest risk of exposure to numerous types of potentially traumatic events (PTEs), including interpersonal violence, accidents, injuries and traumatic network events such as PTEs occurring to loved ones (McLaughlin, Koenen, Hill, Petukhova, Sampson, Zaslavsky & Kessler, 2013). It appears that the presence of psychopathology in adolescents as well as families prior to trauma exposure is an influential risk factor (Donnelly & Amaya-Jackson, 2002). An adolescent's characteristics such as subjective perception of a threat to life, coping style, history of traumatic exposures, gender, age and general level of anxiety are furthermore suggested to play a role in the development of PTSD (Hizli, Taskintuna, Isikli, Kilic & Zileli, 2009). The compartmentalisation of literature on exposure to marital aggression, parent-to-child aggression and community violence has limited our overall understanding of the impact of violence on the adolescent (Margolin, Vickerman, Oliver & Gordis, 2010). Direct comparisons linking specific violence exposure types with specific outcomes are relatively rare (Margolin et al., 2010). Studies of violence exposure in adolescents have failed to differentiate levels of violence such as being a victim of versus being a witness to violence (Hertweck, Ziegler & Logsdon, 2010). Examining different forms of exposure to violence and their consequences, as experienced by adolescents, is an important research challenge (Wright, Fagan & Pinchevsky, 2013).

Adolescents' reactions to traumatic experiences such as interpersonal violence can last for many years and can be very disabling. The construct of PTSD with its tripartite grouping of symptoms (re-experiencing the trauma, avoidance reactions, increased arousal) as operationalized in DSM-V is of value in guiding clinicians however it does not fully reflect the complex reactions of adolescents (Friedman, Resick, Bryant & Brewin, 2011). Similarity between adolescence and adult reactions does not warrant a conclusion that adolescent and adult PTSD is identical conditions. PTSD will be manifested differently across different stages of childhood, a time of rapid and uneven change in many areas of functioning (Salmon & Bryant, 2002). The behavioural presentation of an adolescent experiencing PTSD or symptoms of PTSD may include problems with verbalization and extremes of disconnections (no close relationships) or false connections (perceiving close relationships where none exist) (Veenema & Schroeder-Bruce, 2002).

In determining the impact of trauma on the adolescent, it is essential to considering the mediating processes. These include:

- The developmental level of the adolescent being traumatized;
- Biological factors in the trauma experience;
- The social and emotional context (quality of attachment, family involvement and community and cultural support) in which the effects of trauma are contained.

The influence of neurobiology in PTSD entails three interconnected areas:

- Maturation and reorganization of brain structures as well as their function and influence;
- Physiological processes such as neuro-endocrine and neurotransmitter influences along with fluctuations;
- Individual personality vulnerability and resilience expressed in emotional regulation, cognition and the influence of these on behaviour (Becker, Daley, Gadpaille, Green, 2003).

The aforementioned neurobiological components are in a dynamic interplay with the socio-cultural context in which the adolescent finds him- or herself (Herbert, Goodyer, Grossman,

Hastings, De Kloet, Lightman et al., 2006). The response to trauma will therefore be influenced by the adolescent's developmental level as well as attachment relationships, prior trauma exposure, type of trauma, along with coping strategies surrounding the trauma. As for the developmental stage, adolescents react on the basis of their previous experiences as well as the meaning of the trauma to their current life situations. Compared with younger children, adolescents might have more control over their responses. They can anticipate or pre-assign meaning to stressful events. The threshold (or intensity) of the reaction is set by preceding experience and is then triggered by the later event. This threshold is a biologically and emotionally determined response (Becker, et al., 2003).

The term traumatic stress is the most commonly used in the recent scientific literature. It reflects a comprehensive understanding of traumatic experience as a subset of stress. To understand the effects of trauma on an individual's immediate and subsequent psychological functioning, a deep insight into adolescent responses are required (Donnelly, Kovacova & Osofsky, 2005). It is the subjective psychological experience that is the critical aspect of psychic trauma. It could perhaps be said that trauma is in the eye of the beholder (or victim); trauma wield its effects through the prism of meaning (Becker, et al., 2003).

### **2.2.5 Neurobiological factors**

Researchers found that chronic, non-traumatic stress does not give rise to the same biochemical changes and symptomatology that life threatening stress gives rise to.

Neurobiological alterations of the hypothalamic-pituitary-adrenergic axis (HPA-axis) in PTSD (as will be discussed later on) include:

- Cortisol levels dropping to below the normal range;
- Increased glucocorticoid receptor sensitivity;
- Stronger negative feedback inhibition; and
- The HPA system becomes progressively more sensitised (Giarratano, 2004).

Risk factors for developing PTSD are presented below:

Table 2.1 Risk Factors

<b>Pre-trauma vulnerability</b>	
<b>Biological/genetic risk factors</b>	Family history of mental disorders; Gender (females more than two times as likely to be affected); Lower intelligence.
<b>Personality traits</b>	Neuroticism; Introversion; Prior mental disorders; Pre-existing anxiety.
<b>Previous traumatic life events</b>	Early traumatisation (e.g. child abuse); Exposure to similar trauma (e.g. interpersonal violence).
<b>Parenting/rearing environment</b>	Negative parenting behaviour; Early separation from parents; Changing family patterns; Parental poverty and Lower education; Socio-economic factors (poor housing and school conditions).

(Source: David & Siegel, 2000, Elswood, Hahn, Olatunji & Williams, 2009, Giarratano, 2004).

Other factors that should be assessed in order to enhance adaptation and identify increased risk in the adolescent include school history, coping style, problem-solving ability, peer relationships and a positive relationship with a competent adult (Becker, et al, 2003). It has also been postulated that parental reactions to the traumatic event can influence, as well as predict an adolescent's reaction to the trauma. For example, if the adolescent's parents are extremely distressed after a traumatic event, the adolescent may be more likely to develop PTSD and other stress related symptoms (Becker, et al, 2003).

### **2.2.6 Risk factors**

Knowledge of the existence of risk factors is of limited value, unless the relative causal significance of the risk factors is also known (Fonagy, 2004). Exposure to interpersonal violence has become a recognized risk factor for untoward socio-emotional development of children and adolescents, but research results on the effects of interpersonal violence affecting adolescents are scarce nevertheless (Linares, Heeren, Bronfman, Zuckerman, Augustyn & Tronick, 2001).

Whether any of the neuro-endocrine alterations observed in PTSD are temporary or stable, may depend on particular risk factors and their interactions with environmental events (Yehuda, 2006). Literature indicates that negative, traumatic childhood events are one of many risk factors for psychopathology in adulthood; whether such events go on to produce long-term consequences depends on the interactions with other risk and protective factors during development (Balbernie, 2001; Caspi, Roberts & Shiner, 2005; Davis & Siegel, 2000; Paris, 1998; Yehuda, 2006).

Several converging processes determine such variability in the responses to stressors. These include the neural circuits that are activated by physiological and psychological stressors, as well as the influences of genetics, prior experience and ongoing life events (Cicchetti & Rogosch, 2009). Factors that may either protect individuals from or make them more vulnerable to develop PTSD are:

- pre-traumatic (CNS responsivity, cultural background, development, coping skills, exposure to previous trauma),
- peri-traumatic (severity as well as type of stressor, behavioural and subjective response during traumatic exposure) and
- posttraumatic (social support, secondary stressors, recovery environment,) (Agaibi & Wilson, 2005; Weisaeth, 1998). Elswood et al. (2009) notes that rumination (tendency to think repetitively and passively about negative emotions and negative events) has also received some support as a vulnerability risk factor (such as anxiety, traumatic stress, coping style, developmental level and personal characteristics) (Agaibi & Wilson, 2005), for the development of depression and PTSD. Studies of risk factors have focused on factors that emphasize or reduce the disposition to psychopathology or increase salutary outcomes. Vulnerability has been seen as an inclination toward negative outcomes, especially after exposure to traumatic stressors (Agaibi & Wilson, 2005).

The age of the adolescent at the time of the trauma can affect the presentation of symptoms and the likelihood of the development of PTSD. Adolescents depend largely on their own and on their peers' appraisal of traumatic events, unlike younger children (Becker, et al, 2003). Rather than focusing on escape and protection from the trauma, adolescents are more likely to struggle with their own decision making about what interventions might have altered the event's outcome. Trauma during adolescence may well disturb the developmental trajectory of the child. Regression to earlier developmental stages may occur (Becker, et al, 2003).

Salzinger, Feldman, Stockhammer and Hood (2002) indicate several risk factors for adolescents regarding exposure to interpersonal violence:

- Neighbourhood or community contextual factors;
- Family contextual factors;
- Parenting and quality of relationship between children and parents;
- Relationships with peers;

- Personal characteristics.

At present, there is a scarcity of data related to the role and interaction of risk factors, as well as protective factors (the ability to moderate emotions, cope with stressors and manifest positive responsiveness to stressors) (Agaibi & Wilson, 2005), in the development of PTSD in children and adolescents. Risk factors, such as the type of traumatic event, having experienced direct physical harm, proximity to the perceived threat and the extent of the exposure to trauma, can be used to predict the development of PTSD (Hizli et al., 2009).

### **2.2.7 Individual characteristics of the adolescent**

Certain adolescents seem more vulnerable to the effects of stress than others and are therefore more at risk of experiencing psychosomatic ill health (including cognitive difficulties and sleep problems) (Andersson Arntén, Jansson & Archer, 2008). Locus of control (sense of efficacy and determination) (Agaibi & Wilson, 2005) could play a deciding role together in the development and continuance of PTSD. Lack of personal efficacy may lead to chronic PTSD. Adolescents with an internal locus of control tend to exhibit less PTSD and psychopathology and have better overall adjustment than adolescents with an external locus of control (Agaibi & Wilson, 2005). Additionally, the level of anxiety (or a child's tendency to experience anxiety or negative emotionality) has also been linked to the development of severe PTSD in children (Davis & Siegel, 2000).

It is critical to be aware that learning disorders (such as reading/writing difficulties) may be exacerbated by trauma, or may preclude a child from processing a trauma such as interpersonal violence successfully (Davis & Siegel, 2000). Furthermore, adolescents who experience and/or witness violence in home, school and community are at higher risk for developing aggressive acting-out behaviour (Veenema, 2001). This risk is strongly influenced by the school and neighbourhood environments and observed activities in these environments that may be independent of the family and the school itself.

## **2.3 THEORETICAL EXPLANATION OF REACTION TO TRAUMA**

Research on youth violence exposure is usually epidemiologic, requiring a theoretical foundation (Patton, Woolley & Hong, 2012). Special attention should therefore be given to developmental theories and the biological underpinnings of trauma as explanatory models for the reaction of the adolescent to exposure to interpersonal violence.

### **2.3.1 Developmental theories**

The previous paragraphs gave a synoptic overview regarding the impact of interpersonal violence on the overall functioning of the adolescent. The development of personality and brain structures in conjunction with social, emotional and cognitive functioning of the adolescent should be considered in order to understand the impact interpersonal violence has on the adolescent's ability to function effectively.

Psychological developmental theories are important tools for organising and interpreting a wide range of developmental information. They are used to explain, predict and analyse such information critically and with some accuracy (Hook, Watts & Cockcroft, 2002). In this study it is important to employ the correct developmental theories to deepen insight into the age-related reaction of the adolescent after exposure to interpersonal violence. This is explained in the following section.

#### ***2.3.1.1 Psychosocial View – Erik Erikson***

Erikson proposed that human psychosocial development can be understood as working through a series of psychosocial crises that are connected to specific ages (Dunkel, Kim & Papini, 2012). Erikson proposed expectable changes in personality development over the life span based on a set of eight psychosocial crisis stages (Crawford, Cohen, Johnson, Sneed, & Brook, 2004). Complimentary pairs of positive and negative ego attributes represent the



eight crisis stages that are determined by a permutation of biological, psychological and sociocultural strengths (Crawford et al., 2004).

Healthy psychosocial development is attained when individuals steer through these challenges and in turn develop a series of psychosocial strengths (Dunkel et al., 2012). A sense of self is accomplished by balancing the intrapersonal, interpersonal and greater social settings (Schiavone, 2009). For Erikson, the developmental crises are not a catastrophe, but a turning point of increased vulnerability as well as enhanced potential. The more the individual resolves crises successfully, the healthier his or her development will be (Santrock, 1992). Erikson sees people as problem solvers who move in the direction of constructive and progressive resolutions of life's problems. Every individual faces a unique set of problems to overcome as developmental challenges (Hook et al., 2002).

According to Erikson's theory, each stage of the life cycle has its own psychopathological outcome if it is not mastered successfully (Kaplan & Sadock, 2003). Healthy development has long been related with security, trust, safety and freedom to explore and mastering the environment (Schiavone, 2009). Successful solution of developmental crises provides the foundation for successful solution of subsequent crises, a process Erikson described as the epigenetic unfolding of personality (Crawford et al., 2004). Therefore, experiences such as interpersonal violence play a salient role in identity formation and personality moulding towards adulthood (Levers, 2012).

The abovementioned has to be taken into account when analysing the influence interpersonal violence has on the adolescent. In table 2.3 the developmental phase associated with adolescence is described.

Table 2.2 Erikson's description of the adolescent stage.

Erikson's stages	Developmental period	Characteristics
<b>Identity versus identity confusion</b>	Adolescence (10 to 20 years)	Finding out who they are, what they are all about, where they are going in life. An important dimension is the exploration of alternative solutions to roles.  Strength: Fidelity

(Adapted from: Santrock, 1992)

Emotionally, according to Erikson (Crawford et al., 2004), the adolescent is in the stage of identity acquisition versus role confusion (egocentricity), a time of crucial developmental transformations and life choices involving the renegotiating of autonomy and connectedness with the family, the development of sex-role identity and intimate relationship with others. The ability of adolescents to solve the developmental crisis of identity formation influences their capability to meet new challenges and opportunities in young adulthood (Crawford et al., 2004). A more recurrent reaction of traumatized adolescents is premature closing of identity formation or entrance into adulthood. At the extreme, dissociative identity disorder could be a result of early trauma exposure to interpersonal violence (Levers, 2012). Identity consolidation materializes as the cornerstone of the ability to do well and forms the foundation of self-acceptance and self-esteem. If an adolescent is thriving, it is probably in response to successful identity consolidation (Crawford et al., 2004). The adolescent matures a self-role within the general context of the lived experiences of relationships and events, however, the psychological and emotional demands required to understand and adjust to experiencing violence may be extremely challenging (Schiavone, 2009). The exposure to interpersonal violence would be disturbing and may lead to a greater probability of hostile reactions.

### **2.3.1.2 Cognitive View – Jean Piaget (1896 – 1980)**

Jean Piaget (1972) proposed that cognitive growth in general involves a process of adaptation to the environment. Adolescent's thinking is thus an adaptation to the psychological environment (Hala, 1997). All experience is filtered through the adolescent's current level of understanding. Thus, views of reality are dependent on the existing cognitive structures. As the mind develops, thinking becomes more in line with reality (Hala, 1997). The cognitive style of the adolescent may affect symptomatology (Levers, 2012). The highest level of cognitive development takes place during the stage of adolescence which Piaget named *formal operations*, as shown in table 2.4 (Piaget, 1972).

Piaget stressed that individuals actively construct their own cognitive world. Information is not just poured into the mind from the environment. Jean Piaget explained that cognitive development is the collective result of environmental influences and the maturation of the brain and nervous system (Piaget, 1972). Cognition is a collective term for the cognitive processes involved in acquiring, organising, manipulating and using knowledge. These processes are not directly observable. Cognitive development refers to the ways in which people acquire a variety of cognitive abilities and shape them over time (Hook et al., 2002).

Table 2.3 Piaget's description of the formal operational phase

Stages	Ages	Description
<b>Formal operational</b>	11 to 15 years	The adolescent reasons in more abstract, logical and idealistic ways.

(Adapted from: Santrock, 1992, p.56)

Adolescents develop formal operational thought, enabling them to reason hypothetically, make judgements about future events and develop the capacity for reflexive thinking (Piaget, 1972). From the outset, biology and experience blend to produce learned behaviour. Adolescents' thinking, during the stage of formal operations, may appear overly abstract. Adolescent turmoil may result from a normal adolescent's coming to grips with newly acquired abilities to deal with the unlimited possibilities of the surrounding world (Sadock & Sadock, 2005). Development of abstract reasoning skills and the ability to be aware of the consequences of threats increases adolescents' ability to worry and engage in catastrophic thinking (Salmon & Bryant, 2002). The latter has important consequences for daily functioning after exposure to interpersonal violence. Adolescents therefore would be more vulnerable than children of other age groups. As children develop and grow older, their coping repertoire improves rapidly and alters from primarily behavioural to more cognitive actions, coping skills are supported by increased cortical functioning, enhancing both the adolescent's self-control when facing a stressful situation and the capability to plan effective coping options (Holen, Lervag, Waaktaar & Ystgaard, 2010).

According to Piaget and Erikson's developmental theories, in the aftermath of a significant traumatic event, the adolescent's traumatic response might include aggression, angry outbursts, safety concerns, school avoidance, depression, decline in school performance as well as rebellion at home, risk-taking behaviours, distorted understanding of danger, injury and death and emergence of adult psychopathology (Veenema & Schroeder-Bruce, 2002).

### ***2.3.1.3 Ecological-transactional perspective***

According to the ecological theory, interpersonal violence can have a far-reaching and devastating effect on the development of the adolescent through multiple simultaneous channels of exposure (Boxer & Sloan-Power, 2013). Bronfenbrenner's ecological theory of development emphasizes the constantly changing reciprocal nature of relations among individuals, the immediate settings in which they live and the larger context in which both individuals and settings are embedded (Proctor, 2006; Williams & Nelson-Cardell, 2012). Bronfenbrenner reformulated his original model to attend to a bio-ecological approach to the study of lives. This model attended to the interplay of four components: (1) the interactions of proximal environment often called proximal processes, (2) the characteristics of the individual, (3) the social context of the person and (4) the change over time (Williams & Nelson-Gardell, 2012).

The empirical value of an ecological perspective is to explain the effects of exposure to violence (Proctor, 2006; Salzinger, Fieldman, Stockhammer & Hood, 2002). Cicchetti and Lynch's ecological-transactional model was among the first to propose an ecological-transactional model to explain published findings regarding child maltreatment, domestic violence and exposure to community violence (Proctor, 2006; Salzinger et al., 2002). The model holds that an adolescent will be affected differently by exposure to violence in his or her family, community or society respectively (Schlack, Ravens-Siebrer & Petermann, 2013). It highlights the contextual factors from the different ecological spheres that tend to either exacerbate or ameliorate the negative impact of violence on adolescents (Proctor, 2006; Schlack et al., 2013; Williams et al., 2012). The present study also draws on the ecological and transactional model.

Developmental theory suggests that, throughout childhood, adjustment can be defined as children's successful negotiation of central tasks to be completed during each developmental stage (Wenar & Kerig, 2000). According to the ecological-transactional model, individual development takes place within an interactive environment that may comprise the macrosystem, exosystem and microsystem of culture, neighbourhood and family respectively (Proctor, 2006). The model provides a useful framework for studying the effect of community violence on adolescents. For adolescents growing up in violent urban neighbourhoods, community violence represents an enduring distal stressor within the exosystem. As a distal stressor, it may influence behaviour and relationships within adolescent's proximal family context as well. For adolescents who witness and are victimized by violent acts, it represents a proximal stressor of varying duration. Parenting and family characteristics may influence the degree to which distal stressors are likely to be experienced as proximal stressors by children. Potential dimensions of interest at the microsystem level with regard to violence in the exosystem include the quality of parenting and parent-child relationships, marital and family dynamics and parents' emotional, psychological and cognitive resources (Proctor, 2006).

## **2.4 PHYSIOLOGICAL IMPACT OF INTERPERSONAL VIOLENCE**

Despite the fact that this research does not entail the measuring of physiological activities, neuro-anatomical, neuro-physiological and neuro-chemical processes can be used to understand the effect of traumatic experiences on major systems of the adolescent brain, thus clarifying the constructs mentioned in Chapter one.

Exposure to interpersonal violence has pervasive and profound effects on the neurobiological reactions of the adolescent. These neurobiological reactions can explain subsequent behaviour. Exposure to interpersonal violence threatens an individual's well-being, thereby activating a neurobiological stress response (Carrion & Wong, 2012). The relative immaturity of the adolescent brain might make it especially sensitive to stress-induced dysfunctions. This can have immediate and lasting consequences on mental health (Eiland & Romeo, 2013). Deliberating the stress response is vital, as enhanced acute stress may

intensify risky decision making in adolescence, while altered neurodevelopment during adolescence may also hinder coping in the presence of stress during adulthood (Galván & Radhar, 2013).

Stress responses may explain both the emotional and physical experiences after exposure to interpersonal violence (Diseth, 2005). Stress has protective effects in the short run, yet has damaging effects over longer periods (McEwen, 2000). A development neuro-psychopathological perspective dictates that, “to understand neuropsychological development is to confront the fact that the brain is mutable, such that it’s structural organisation reflects the history of the organism” (Panksepp, 1998, p.318).

Stress has wide ranging effects on the adolescent and lasting effects on brain circuits and systems (Bremner, 2006; Vermetten & Bremner, 2002). Trauma may therefore have psychopathological as well as developmental consequences (De Bellis, Keshavan, Clark, Casey, Giedd, Boring, Frustaci & Ryan, 1999). Evidence suggests that exposure to stress during the adolescent stage of development could significantly affect both the structure and function of the brain and create morbidities that could last well into adulthood (Eiland & Romeo, 2013). There is no longer any doubt that the violence, both through physical or psychological trauma, interrupts the process of normal child development and more than doubles the risk for development of PTSD and depression (Perkins & Graham-Bermann, 2012).

#### **2.4.1 Definition of stress**

Ising and Holsboer (2006) define stress as a state of disturbed homeostasis evoking a multiplicity of somatic and mental adaptive reactions, which are abridged as stress response intending to reconstitute the initial homeostasis or allostasis. According to Galván and Radhar (2013) stress is ‘an organism’s normative reaction to a physical, psychological, or emotional hazard’ (p.223). Stress has several physiological, metabolic and behavioural consequences (Dedovic, D’Aguiar & Pruessner, 2009). Recent studies regarding the consequences of stress demonstrate multiple impairments in attention, working memory, new learning and executive function. The abovementioned deficits have been related to the stress

hormone, cortisol and brain volume. Cognitive deficits are one of the core symptoms in mood disorders as well as anxiety disorders such as PTSD. Memory impairments are related to stress-induced hippocampal damage concurrently with changes in cortisol levels (Van Stegeren, 2009).

Bremner (2006) postulates that stress induces changes in memory are related to alterations in hippocampal structure, in part related to elevated glucocorticoid levels. Furthermore, the hippocampus determines emotional responses and may play a larger role in behaviour than previously thought. During a traumatic event, such as exposure to interpersonal violence, the thalamus also sends information to the hippocampus (where conscious memories, facts and details associated with the experience are processed). The neuronal deficits may explain symptoms of avoidance and numbing in adolescents with PTSD, such as an inability to recall facts and details of the trauma, fragmentation of various aspects of a memory, dissociative experiences, or total amnesia for the trauma (Weiss, 2007). According to classical conditioning theory, traumatic events operate as unconditioned stimuli and intense fear, helplessness and horror encompass the unconditioned responses. The commencement and conservation of PTSD is related to the development of conditioned fear responses (re-experiencing the trauma and hyper-arousal symptoms) to conditioned stimuli (reminders of the traumatic event) (Morris & Rao, 2013). Each affected brain area can lead to different symptoms. These include memory deficits, disinhibition of anxiety and dissociation (hippocampus, cingulate and prefrontal cortices); hyperarousal and aggressive behaviour (amygdala); deficits in integration of language and emotion (corpus callosum); and poor modulation of attention and emotions (cerebellar vermis) (Gerson & Rappaport, 2012).

The stress response is a physiological coping response and involves the hypothalamic-pituitary-adrenergic (HPA) axis, the sympathetic nervous system, the neurotransmitter system and the immune system (Bremner, 2006; Glaser, 2000; Morris & Rao, 2013). The HPA axis denotes the main neuroendocrine stress response system that serves to modify the individual to alteration in demand and thereby sustains stability and health (Heim et al., 2008). There are individual variations in the response to stress which are based on differences in temperament along with prior experiences (Glaser, 2000). Evidence proposes that exposure to trauma influences HPA-axis functioning and results in continual modifications in stress responsivity later in life (Bevans, Cerbone & Overstreet, 2009).

## **2.4.2 Sympathetic and parasympathetic systems**

### **2.4.2.1 *The hypothalamic-pituitary-adrenergic axis***

One of the most interesting observations in PTSD and stress reaction has concerned the relative contributions of the sympathetic adrenal medullary as well as the hypothalamic-pituitary-adrenergic axis (HPA-axis) to the regulation of the response to stress in PTSD (both with respect to the focal trauma from which PTSD may have arisen) and the reaction to provocations in those already exposed (Yehuda, 2006). Corticotropin-releasing factor (CRF) is a family of neuropeptides which have a variety of physiological effects on stress and anxiety. Early adverse experience would lead to sensitization of central stress response systems, affect CRF, cause heightened neuroendocrine, autonomic and behavioural reaction to stress and disturb the dynamics of the HPA axis (Heim et al., 2008). These changes would reduce an individual's threshold to develop depression in relation to subsequent stress (Heim et al., 2008).

Given the earliest conceptions of the stress response, studies of the HPA function has occupied a fundamental position in psycho-endocrine research (Kaplan & Sadock, 2003). Corticotropin-releasing hormone (CRH), Adrenocorticotrophic hormone (ACTH) and cortisol levels all increase in reaction to a variety of physical and psychic stresses and serve as prime factors in sustaining homeostasis and developing adaptive responses to novel or challenging stimuli (Kaplan & Sadock, 2003). The structural organization of a human brain reflects the individuals' developmental history uniquely (Cicchetti & Rogosch, 2009).

Several studies have indicated the involvement of the HPA axis in PTSD (Bremner, 2006; Herbert, Goodyer, Grossman, Hastings, De Kloet, Lightman et al., 2006; Yehuda, 2006) PTSD sufferers display decreased resting glucocorticoid levels in plasma, decreased glucocorticoid response to stress and decreased urinary cortisol excretions (Panksepp, 1998, Bremner, 2006). The number of lymphocyte glucocorticoid has increased proportionally to the severity of PTSD symptoms and the patients displayed increased sensitivity to low-dose dexamethasone, indicating increased sensitivity of the glucocorticoid receptors on the pituitary gland (Panksepp, 1998, Bremner, 2006). Additionally, the ACTH response is blunted to CRF. This could also be explained by hyper-responsivity of the pituitary gland to cortisol (Hageman, Andersen & Jergensen, 2001).



Cerebrospinal fluid concentrations of CRF appear to be higher in PTSD patients. CRF activates the adrenergic component of the stress response through a direct action in the locus coeruleus and a high CRF concentration may contribute to heightened sympathetic tonus in PTSD (Hageman et al., 2001). CRF neurons incorporate information relevant to stress not only at the hypothalamic paraventricular nucleus (PVN), which moulds the fundamental factor of the HPA axis, but also in many other areas of the brain, generating autonomic and behavioural responses that parallel signs of stress, depression and anxiety (Heim et al., 2008). Dysregulation of CRF in stress responsivity could lead to the commencement of anxiety-like behaviours and depression (Bale & Vale, 2003).

Adolescents who have been exposed to interpersonal violence may experience dysregulation of the HPA-axis, the stress response system. Emerging research additionally suggests that different types of dysregulation of the HPA-axis may correspond to different types of behavioural problems in children and adolescents (Margolin & Gordis, 2004).

#### ***2.4.2.2 The Hypothalamic-Pituitary-Adrenal Stress Response***

The stress response systems involve an intricate, integrated network of central neural and peripheral neuroendocrine responses created to prepare the individual for challenge or threat (Ellis, Jackson & Boyce, 2006). Synchronized functional interactions between the HPA-axis and sympathetic-adrenal-medullary system are vital in encouraging adaptive responses to stress, anxiety, or fear (De Kloet et al., 2005). During a stress response, CRF initiates the HPA-axis, acting at CRFR1 on anterior pituitary corticotropes to stimulate the release of ACTH (Bale & Vale, 2003). ACTH then enters the blood stream and performs at receptors in the adrenal gland cortex to arouse the synthesis and releases of glucocorticoids (Bale & Vale, 2003). A variety of neuro-emotional influences converge on cells of the paraventricular nucleus (PVN) of the hypothalamus, which contain CRF (Suchecki, Nelson, Van Oers & Levine, 1995). The stress response thus consists of an alarm phase (the pituitary-adrenal stress response system), as well as a resistance phase (the sympatho-adrenal stress response system).

The pituitary-adrenal response is instigated by CRF from the PVN of the hypothalamus, which can trigger ACTH release from the pituitary gland (Panksepp, 1998). ACTH, which is released into the bloodstream, seeks out target tissue in the adrenal cortex, where it triggers the release of cortisol. Cortisol helps promote energy utilization in the body as more bodily resources need to be used in stressful situations. The most important function of cortisol is indeed to manage and contain the body's biological stress response by stimulating the termination of the neural defensive reactions that have been activated by stress (Yehuda, 2006). This peripheral system is aroused in response to essentially all emotional stressors. The central CRF pathways within the brain help organize and coordinate various negative emotional responses. Exposure to interpersonal violence is related to higher basal cortisol levels, greater flattening of the cortisol diurnal rhythm and a slower growth in cortisol over the course of development. The timing of the adolescent's exposure to violence is particularly critical in changes in cortisol response to later stress (Perkins & Graham-Bermann, 2012).

Cortisol also feeds back to brain tissue, where there are specific receptors for the steroid hormone, especially in the hippocampus (which controls cognitive processing), as well as on the CRF neurons of the PVN (Yehuda, 2006). Cortisol normally exerts an inhibitory effect on the PVN cells and thereby regulates the intensity of the stress response. This HPA-axis may be permanently altered, resulting in its feedback mechanism malfunctioning so that stress responses do not diminish normally once a stressful episode is over (Yehuda, 2006). Violence exposure causes decreases in self-regulatory behaviour tied to problems in executive functioning, the ability to plan, organize and synthesize information. The relation between self-regulation, psychopathology and academic learning may mediate the development of academic problems after interpersonal violence exposure (Perkins & Graham-Bermann, 2012).

The release of cortisol onto hippocampal tissues is intended to stimulate cognitive strategies to cope with stressors, but the effect of this feedback mechanism is limited (Panksepp, 1998). There is a limit to the cortisol that can be tolerated by the neurons that contain the cortisol receptors. Excessive levels cause the metabolic resources of hippocampal neurons to become depleted and brain cells to die prematurely (Friedman, Charney & Deutch, 1995; McCubbin, Kaufmann & Nemeroff 1991; Sprott, Huber, Warner & Williams 1993). Since brain cells are

not replaced, this can pose a serious problem for subsequent cognitive abilities (Panksepp 1998). Acute stress can furthermore impair short-term memory by increasing cortisol secretion, thereby suppressing memory-mediated mechanisms in the hippocampus and temporal lobe. Chronic stress can kill hippocampal neurons and brain imaging studies have shown hippocampal atrophy in patients suffering from PTSD (VanItallie, 2002). Such atrophy causes long-term memory deficits as it combines a selective loss of hippocampal neurons and other structural and functional changes of the hippocampus (Yehuda, 2002). Hence, the hippocampus undergoes a variety of structural and functional changes in response to stress. A stress damaged hippocampus loses the ability to remember and perform optimally, therefore hampering the ability to cope (McEwen, 2000).

A second major characteristic of the stress response is via a neural pathway arising from the hypothalamus and descending to the spinal cord which, via sympathetic efferent nerves, activates the release of adrenaline (epinephrine) and noradrenaline (norepinephrine) from the adrenal medulla. Adrenaline (epinephrine) and noradrenaline (norepinephrine) from the adrenal medulla help to break down liver glycogen rapidly and make abundant blood sugar available for the stressed individual. Practically all visceral organs and many other brain and immune responses are recruited during stress (Friedman et al., 1995). This visceral, or enteric, nervous system that is critical for elaborating organ responses during stress (McCubbin et al., 1991) consists of an endogenous plexus of nerves that line the gastrointestinal system and other organs. These organs are rich in various neuropeptides, which have some influence back into the brain via refferent neural and humoral routes. The brain itself contains many similar neural systems spread throughout the limbic system and related brain areas that govern the central integration of emotional responsivity (Panksepp, 1998).

These systems include a multifaceted, highly interactive repertoire of central and peripheral stress responses, which together mobilize neurobiological and behavioural resources in defence of the individual's integrity and well-being. Though these neurobiological responses are protective and vital in intensely stressful conditions, they can convert themselves pathogenic when constantly triggered under conditions of overwhelming stress and difficulty (Ellis, Jackson & Boyce, 2006).

### 2.4.3 Vulnerabilities and stress in the brain

When cortisol is produced following *stress*, it stimulates the metabolism and enhances the blood level of glucose to create a surge of energy. As a result, it affects cognitive and emotional functions and dampens the fear response to stress. Therefore, the more severe or prolonged the original trauma, the more sensitive the response and the lower the threshold of stimulus needed to retrigger it (Balbernie, 2001). These surges of cortisol then cause cell loss in the hippocampus, inhibit learning and deplete memory. They also oxidize the regions in the cortex and limbic system which are responsible for emotions and attachment (Balbernie, 2001).

Adolescents with posttraumatic stress disorder (PTSD) demonstrate a broad range of problems with memory, (including gaps of memory), problems regarding declarative memory, attentional biases to trauma-related information, as well as intrusive memories (Bremner, 2006). Adolescent stress could directly impact behaviour by actions on the developing adolescent brain, leading to long-term changes in brain functioning, or indirectly by influencing the developing HPG and HPA axes (Brown & Spencer, 2013).

Stress results in chronic and acute changes in neuro-chemical systems and specific brain regions (which result in long-term changes in brain circuits) involved in the stress response (Bremner, 2006). Trauma acts as a threat to the adolescent's well-being, thereby activating a neurobiological stress response (Carrion & Wong, 2012).

Bremner (2006) hypothesizes that stress-induced hippocampal dysfunction may cause several symptoms of PTSD that are related to memory dysregulation. This includes both explicit memory deficits as well as fragmentation of memory in abuse survivors.

Summarised evidence indicates a significant correlation between sustained stress, excess cortisol and damage to the hippocampus (Glaser, 2000). The hippocampus is integrally concerned with memory (Glaser, 2000) and plays an essential role in new learning and memory formation (Carrion & Wong, 2012). Adolescent stress has also been reported to have long-term, negative impacts on spatial cognition (Brown & Spencer, 2013). Whereas the left hippocampus is believed to play a more important role in verbal memory, the right side is more involved with visual memory (Glaser, 2000). Exposure to elevated levels of

cortisol may causes atrophy of hippocampal dendrites, which is reversible when the exposure is brief. However, prolonged elevated levels of cortisol lead to hippocampal cell death, probably due to increased neuronal vulnerability to glutamate toxicity (Glaser, 2000). Clinical studies have shown alterations in memory function following trauma as well as changes in a circuit of brain areas that mediate alterations in memory (Bremner, 2006). In studies involving rodents, the number of damaged cells in the hippocampus because of corticosterone exposure (the animal analogy to cortisol in humans), was associated with the magnitude of deficits in learning (Carrion & Wong, 2012). A sustained stress response is capable of killing certain brain cells. Because brain cells are not replaced, this can pose a serious problem during subsequent cognitive challenges (Panksepp, 1998). Specific brain areas that play an important role in mediating the biological stress response are simultaneously involved in processes of learning and memory and are preferentially affected by stress, including hippocampus, amygdala, hypothalamus, medial prefrontal and cingulate (Vermetten & Bremner, 2002).

The specific role of the amygdala in emotional processing can be summarized as follows: the amygdala activates during exposure to aversive stimuli from various sensory modalities; amygdala responses are modulated by the arousal level or current motivational value or stimuli and the activation of the amygdala is associated with several other processes including attention and memory (Van Stegeren, 2009). The research supports the hypothesis that prolonged stress could alter brain functioning resulting in modification of personality development and social, cognitive and affective functioning.

## **2.5 POST-TRAUMATIC STRESS DISORDER**

### **2.5.1 The definition of PTSD and traumatic events**

The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM V)* originally defined a traumatic event as ‘a psychologically distressing event that is outside the range of normal experience’ (Friedman et al., 2011). The most recent edition of this manual,

omits the criterion of being outside normal experience, but lists events that may be ‘extreme traumatic stressors’ (experiencing, witnessing, or learning about death, injury, serious harm). It also includes ‘first-hand repeated or extreme exposure to aversive details of the traumatic event (not through media, pictures, television or movies unless work-related)’ (Wakefield, 2013, p. 145).

The disorders caused by such experiences incorporate both immediate (Acute Stress Syndrome) and long-term (Posttraumatic Stress Disorder) dysfunctions and differentiate between adverse reactions to less severe stressors (Adjustment Disorders) (Suedfeld, 1997). The diagnosis of PTSD in children and adolescents is approximately isomorphic to that of the core adult criteria (Dyregrov & Yule, 2006).

Traumatic events are defined as experiences that involve death, serious injury, or threat of death. It includes experiences in which an individual perceives a serious threat to the life or wellbeing of oneself or someone else and during which the adolescent feels a sense of intense fear or helplessness (Neigh, Ritschel, Kilpela, Harrell & Bourke, 2013).

The consequences of this exposure are manifested in three symptom clusters required for a PTSD diagnosis:

- 1) involuntary re-experiencing of the trauma/intrusion, (e.g., flashbacks, nightmares and intrusive thoughts),
- 2) avoidance of reminders and numbing of responsivity, (e.g., avoiding thoughts, feelings, not being able to have loving feelings, activities and stimuli in general of the traumatic event/diminished responsiveness to the external world, ‘emotional anaesthesia’), and
- 3) increased arousal/hyperarousal (e.g., difficulty sleeping or concentrating, anxiety, hypervigilance, exaggerated startle response, irritability and anger) (Hageman, Andersen & Jergensen, 2001; Neigh et al., 2013; Ozer & Weiss, 2004),
- 4) duration of the disturbance is at least 1 month, thus persistent negative alterations in mood and cognition (Wakefield, 2013).

Adolescent's exposure to interpersonal violence, as witnesses or victims, has been associated with a comprehensive variety of negative psychosocial consequences, including symptoms of PTSD and internalized anguish (Proctor, 2006). Recent findings postulate that these

symptoms might contribute to adolescents' inadequate performance on schoolwork and tests (Mathews et al., 2009).

### **2.5.2 Trauma and emotional reactivity to daily life stress**

Research findings confirm that the effects of childhood trauma are likely to have a severe and enduring impact on cognition, emotion, as well as behaviour, which could last into adult life (Glaser, Van Os, Portegijs & Myin-Germeys, 2006). Trauma could bring about lasting alterations in a variety of brain regions, especially regions that form part of the limbic system. The central nervous system involves an astonishing range of structures that influence and control an individual's response to traumatic stress. Traumatic experiences may alter certain brain structures, as well as the ways in which the brain responds to subsequent stressors (Weiss, 2007). In addition, the individual's age at the time of trauma may be a crucial predictor of posttraumatic long term adjustment later in life, since the impact appears to be more destructive when exposed to trauma at a younger age. Violence exposure appears to be related to dysfunctional development in brain volumes (smaller brain volumes in areas related to cognition and emotion processing), white matter development (less white matter cohesion) and regional brain function (altered lateralization of brain function) (Perkins & Graham-Bermann, 2012). The timing, duration and length of exposure determine at which time within normative development, violence exposure influences the brain most severely and what structures and functions are most impacted (Perkins & Graham-Bermann, 2012). There is growing evidence for "critical windows" of vulnerability to traumatic stress in brain development (Gerson & Rappaport, 2013). From infancy to adolescence, different brain regions undergo bursts of myelination, synapse formation, pruning and neural networking (Gerson & Rappaport, 2013). These periods of activity are sensitive to disruption by stress hormones such as cortisol that can suppress glial cell division, dendritic branching and synaptogenesis and lead to neuronal loss. Epigenetic effects (silencing of genes by methylation) in crucial brain regions during these critical periods can also produce lasting changes in function and stress response. Critical brain areas such as the hippocampus, amygdala, cerebellar vermis, corpus callosum and cerebral cortex appear to be particularly

vulnerable, with differential sensitivity over the course of development (Gerson & Rappaport, 2013).

Traumatized individuals recurrently react with stronger negative emotions when facing small stresses (Glaser, et al., 2006). These findings suggest compromised frustration tolerance, which might be expressed in adolescents' personal functioning.

Trauma at different stages in life will most probably have diverse effects on brain development, suggesting differences in the effects of trauma on neurobiology, depending on the stage of development at which the trauma occurs (Bremner, 2006). Exposure to interpersonal violence has a negative impact on the neuro-endocrine system and brain development during critical periods of the normal developmental trajectory (Perkins & Graham-Bermann, 2012). This disruption leads to vulnerabilities in systems necessary for cognitive and emotion processing (Perkins & Graham-Bermann, 2012).

These findings confirm that the impact of trauma seems to be more detrimental when exposure occurs at a young age (Glaser, et al., 2006), thereby significantly impacting on the formation of emergent personality traits. Hence, although these research findings suggest that childhood trauma might have a lasting effect on the formation of personality traits, the very nature of these effects has not been established yet. One of the traits that are consistently associated with childhood trauma is neuroticism. This personality trait reflects vulnerability to stress, instability or anxiety proneness. High neuroticism predisposes an individual to react with greater negative emotion (anxiety, depressive mood, anger, irritability) to stressful circumstances (Glaser, et al., 2006). Based on some of the findings it is expected that adolescents that were exposed to interpersonal violence might reveal some specific personality functioning and which might affect their everyday functioning.

## **2.6 CONCLUSION**

Beneficial to the emphasis of this research is the comprehension of definition of interpersonal violence, the development of the adolescent and the underlying brain structures involved in the process, impacting on the personality functioning of the adolescent. Exposure to



interpersonal violence affects the affective, cognitive, behavioural and neurological functioning of the adolescent negatively. This was discussed above and serves as the first part of the literature review.

Findings imply that interpersonal violence might result in altered regulation of hormone levels, which might significantly change adolescents' subsequent personality functioning after being exposed to interpersonal violence. Developmental theories give an enhanced insight into the reaction of the adolescent after exposure to interpersonal violence; explaining the observed responses.

**Chapter three** will offer an extension of the literature study to investigate the reaction of the impact of interpersonal violence on the temperament and personality of the adolescent. The role of coping in the process of adaptation will also be addressed.

## CHAPTER THREE

### LITERATURE REVIEW (II): PERSONALITY AND COPING

#### 3.1 INTRODUCTION

This chapter presents the second part of the literature review. It starts off by exploring the concept of *human personality* and the effect of violence on the personality of adolescents. It then proceeds to explain how temperament and personality conjoins and interacts to affect human behaviour and re-examines the effect of violence from that perspective.

It then explains the advances of psychology in measuring and describing personality and deals with the concept of *coping*.

#### 3.2 PERSONALITY

According to Kato, Zweig, Barzilai and Atzman (2012), personality refers to a stable set of cognitive, motivational, social and emotional traits and behavioural patterns, which is influenced by familial history, genetic predisposition, environment and sociocultural factors.

Personality is one of psychology's fundamental constructs. This does not mean that personality is either tangible, completely understood, easy to describe correctly or constant for any individual (De Haan, 2011). To the contrary, personality is best described in terms of the complex evolving pattern of underlying traits. These traits reflect near constancies in the general affective level and behaviour of individuals and comprise an intricate system of structures and processes that underlie human affect and behaviour. Personality can therefore be described as "a multifaceted organization of trait dispositions" (Denollet, 2000).

Personality partly accounts for both the marked differences in behaviour that exist among individuals as well as the consistency of any given individual's behaviour over time and in changing contexts (Matteson, McGue & Iacono, 2013). Personality traits refer to an individual's tendency or propensity to behave, think and feel in specific fairly consistent

ways. According to Roberts, Caspi and Moffitt (2001) personality traits are organizational constructs which influence how individuals organize their behaviour to meet environmental demands and new developmental challenges.

Personality predicts important life outcomes, such as the quality of personal relationships, adaptation to life challenges, occupational success, societal involvement, happiness, health and mortality (McAdams & Olson, 2009).

This chapter will outline the potential consequences of the exposure to interpersonal violence on the development of the personality of the adolescent and the role of coping in the process of adaptation.

### **3.3 THE EFFECTS OF VIOLENCE EXPOSURE ON ADOLESCENTS**

Exposure of large numbers of adolescents to interpersonal violence in their communities is a societal dilemma, as witnessed by the documented toll of violence on the adolescent's physical, emotional and academic development (Margolin et al., 2010). Exposure to interpersonal violence has been continuously linked to a range of psychological problems experienced by adolescents including traumatic stress, anxiety, depression, substance use, aggressive and antisocial behaviour problems and academic under-performance (Boxer & Sloan-Power, 2013). In Agaibi and Wilson (2005) Hall and Wilson stated that traumatic stressors, like interpersonal violence, can potentially influence any or all of the factors of personality, while prodigiously traumatic life experiences can indubitably affect the quality of life and personality in several different ways.

A large proportion of South African adolescents experience high levels of trauma exposure and high levels of stress and are consequently vulnerable to the development of PTSD symptoms which often extend into adulthood (Finchama et al., 2009). Young people who are chronically exposed to community violence may become desensitized and suppress feelings of sadness or anxiety (Fowler, Tompsett, Braciszewski, Jacques-Tiura & Baltes, 2009). Previous studies involving South African samples found that 83% of adolescent participants reported the experience of at least one serious trauma in their lifetime. Their exposure to

violent trauma was significantly associated with PTSD symptoms (Finchama et al., 2009). Relative to other developmental periods, adolescence is characterized by risky decision-making, increased perceived stress and heightened reactivity to acute stress (Galván & Rahdar, 2013). Externalizing problems, such as deviant and aggressive behaviour, have been consistently associated with the consequence of exposure to community violence among children, adolescents and young adults in cross-sectional and longitudinal studies (Fowler et al., 2009).

The relationship between personality traits and trauma exposure has increasingly attracted the attention of researchers since 1980 (Lauterbach & Vrana, 2001), but not many have reported typical features displayed by traumatized youth at different developmental levels (Salmon & Bryant, 2002).

The experience of trauma may interrupt the development of interpersonal relationships, the achievement of developmental milestones such as language acquisition, security, self-regulation and trust as well as the development of coping skills (Veenema & Schroeder-Bruce, 2002). One has to take into consideration the symptoms recognized in adolescents who had exposure to violence throughout their lives. These adolescents are more likely than non-exposed adolescents to exhibit high levels of aggression and acting out (Donnelly et al., 2005). This is accompanied by anxiety, behaviour problems, truancy, school problems as well as revenge seeking. These traumatized adolescents often appear not to express feelings, with the resultant constrictions in emotional development (Donnelly et al., 2005). Furthermore, the experience of trauma has the potential to destroy trust. It might lead to the belief that the adolescent have been let down or betrayed by others. It is also associated with high levels of anger and a loss of belief in the good intentions of others (Brewin & Holmes, 2003). Exposure to community violence can lead to chronic hyper-arousal. The pervasiveness of violence in some communities is likely to lead to a communal sense of insecurity (Fowler et al., 2009).

Personality appears to be a key element because it is related to reactivity to emotional stimuli, individual differences in intensity to responses to emotional events and to the duration of emotional reactions (Garcia, 2010).

Several interpretations are possible regarding the relationship between personality variables and trauma exposure. Firstly, it is possible that exposure to trauma alters fundamental

aspects of personality or alternatively that these traits increase the likelihood of experiencing trauma (Lauterbach & Vrana, 2001). Secondly, it is also possible that there is a reciprocal relationship between personality traits and trauma exposure. Experiencing a traumatic event may produce elevated levels of these traits, which may, in turn, enhance the possibility of experiencing a subsequent traumatic event (Lauterbach & Vrana, 2001).

### **3.4 PERSONALITY AND TEMPERAMENT**

Temperament can be described as “biologically rooted individual differences in behaviour tendencies” that initially shape the responses of youth to (stressful) environmental stimulation and therefore determine successful adaptation or maladaptation (Muris, Meesters & Blijlevens, 2007). McAdams and Olson (2009) define temperament as the “early-in-life framework” out of which personality traits develop (p.5.4).

Temperamental traits are thus basic psychological reactions based upon underlying biological processes and social interchanges. Temperament provides the initial state from which social dispositions and personality develop (De Pauw, Mervielde & Van Leeuwen, 2010; Rothbart, 2011). Temperament is in part shaped by heredity (Specht, Egloff & Schumkle, 2012). Although temperament also develops over time and presents new traits, strong temperamental characteristics can be seen in the new-born and measured in the fetus (Rothbart, 2007). Individual differences in temperament constitute the earliest expression of personality and the substrate from which later personality develops (Cohen & Cicchetti, 2006). Two major temperamental control systems are fear (inhibiting approach and expressive tendencies) and initiative (promoting approach and expressive tendencies) (Cohen & Cicchetti, 2006).

Rueda and Rothbart (2009) states that temperament has foundations in underlying neural networks and in infancy temperament may be equivalent to personality. Later in development personality takes on cognitions about the self, others and the social and physical world (along with attitudes, values and cognitive coping strategies).

Mainly developmental models of temperament have accentuated behavioural consistencies that emerge early in life, that are recurrently but not completely emotional in nature and that

have a presumed biological basis (Shiner & Caspi, 2003). While temperament could provide the foundations for the later emergence of personality, temperament per se does not include multifaceted processes such as attributions, self-concept, or conscious self-presentation concerns that are fundamental to the expression of personality (Henderson & Wachs, 2007). Rather, the essential concepts in temperament concentrate around individual disparities in reactivity and self-regulation (Henderson & Wachs, 2007). Self-regulation includes processes modulating the reactivity (characteristics of individual's reaction to change), involving behavioural approach, avoidance, inhibition and attentional self-regulation (Cohen & Cicchetti, 2006).

Despite a large and growing body of work investigating models of temperamental characteristics, a comprehensive empirical understanding of how temperament and personality are interrelated has not been established (Tackett, Krueger, Iacono & McGue, 2008). Most researchers consent to the notion that temperament has a multidimensional nature and contains several dimensions of behaviour-influencing traits which configure the foundation for future developing personality (De Pauw & Mervielde, 2010).

Personality usually suggests a much broader range of individual differences than temperament does (Specht et al., 2012). Temperament may mediate or moderate the contribution of other factors (e.g., stress) in relation to psychopathology, or other factors (e.g., coping efforts) may mediate or moderate the role of temperament in the development of psychopathology (Compas, Connor-Smith & Jaser, 2004).

Temperamental differences may modify the impact that environments have on adolescents by influencing appraisals of situations, exposure to or vulnerability to particular types of stressors and whether and how individuals might respond to events (Ebata & Moos, 1994). Skinner and Zimmer-Gembeck (2007) postulates that highly inhibited adolescents tend to react to novelty with fearfulness and withdrawal. Some adolescents are predisposed to react to mild stressors with anger and frustration. This implies that children with high negative reactivity will be particularly susceptible to the disorganizing effects of stress. Although inhibited adolescents are quiet on the surface, they may essentially avoid interpersonal conflict through excessive control over self-expression (Denollet, 2000).

Adolescents who are more active, sociable and emotionally positive have been found to be more resistant to the effects of stress. This reflects the advantages which predispositions may

confer on coping (Skinner & Zimmer-Gembeck, 2007). Temperament has been identified as a potentially important factor in moderating the effects of stress during adolescence (Ebata & Moos, 1994). Examples of temperamental factors include characteristics such as emotional reaction (positive emotionality), introversion, extraversion, reactivity and self-regulation (Compas et al., 2004). Research suggests that temperamental differences in activity level and sociability differentiate resilient adolescents from those who develop vital problems in the face of stressful developmental circumstances. Resilient adolescents are able to elicit positive social responses from their environment (Ebata & Moos, 1994).

Adolescents, presenting with PTSD, display a loss of ability to concentrate. It impacts on their short-term memory functioning and causes interference in acquiring new information (learning) (Giarratano, 2004). Research revealed mild attention and anterograde memory impairment, specifically including difficulties with sustaining attention, working memory, initial acquisition of information as well as sensitivity to retroactive interference. Frontal-limbic system and hippocampus deficits are implicated in these information-processing difficulties. PTSD sufferers often have stimulus discrimination problems, which can lead to a loss of capacity to respond flexibly to their environment and could place adolescents at risk of being traumatized again (Giarratano, 2004).

When repeatedly exposed to stress, adolescents with lower self-esteem do not develop a protective stress response as effectively as those with higher self-esteem (Herbert et al., 2006). Exposure to violence may also trigger a non-normative development process, which may impact an adolescent's ability to self-regulate emotions (Patton et al., 2012). This trigger often occurs in direct response to coping with and surviving an unsafe environment (Patton et al., 2012).

During each phase of early development, the structure of personality and temperament is likely to be different, as new traits become apparent (Shiner & DeYoung, 2011). Despite these challenges, some progress has been made in identifying the structure of temperament and personality traits during each phase of life from early childhood through adulthood (Shiner & DeYoung, 2011). One important finding emerging from recent work on temperament and personality structure is that these individual differences are organized hierarchically across the lifespan. As discussed, adolescence represents a period of major changes and challenges in personality development and character formation. Adolescents

have to accomplish many different developmental challenges and adolescence represents an important period in the development of personality (Ammaniti, Fontana, Clarkin, Clarkin, Nicolais & Kernberg, 2012).

Externalizing behaviours and personality characteristics develop as children move from childhood to adolescence (De Haan, 2011). The assumption that personality can change or develop lies at the heart of the conceptualization of personality. Although personality was long thought of as being stable, there is increasing empirical evidence that personality changes meaningfully during all phases of life (De Haan, 2011). During adolescent development, healthy adolescents show a progressive integration of self-concept by constructing conceptual principles that coordinate the various and contrasting features of the self into a coherent system (Ammaniti et al., 2012).

Affect regulation represents a critical aspect in the assessment of personality and is a delicate index of healthy personality. Affect dysregulation is therefore seen as an unhealthy personality trait (Ammaniti et al., 2012). Initial emotional reactivity to possible threat (such as interpersonal violence), as indexed by elevated amygdala activity, is typical (normal) for adolescence. Failure of this response to subside over time with no further impending threats is atypical or maladaptive and might be indicative of risk for anxiety (Casey, DuHoux & Cohen, 2010). It may influence aberrant development of the prefrontal cortex which is responsible for planning and behavioural inhibition. This may predispose the adolescent to display the atypical maladaptive behaviour repeatedly later in life (Groothuis & Trillmich, 2011).

Behavioural development can be strongly influenced by environmental factors during early childhood. During later sensitive developmental periods like adolescence or first reproduction, consolidation may occur when the information gained earlier is confirmed or adjusted on the basis of new information. These later sensitive periods may provide a point of predictable instability in the life cycle when beneficial or detrimental remodelling of the personality is possible (Groothuis & Trillmich, 2011).



### **3.5 DEVELOPMENT OF PERSONALITY OF THE ADOLESCENT AND THE IMPACT OF INTERPERSONAL VIOLENCE**

This study investigates the effect of exposure to community related interpersonal violence on the personality expression of exposed adolescents. Research literature is clear that general exposure to violence is detrimental to adolescent's emotional and behavioural health, with documented correlations between exposure and personality-linked behaviours such as depression, anxiety, substance abuse, aggression, somatic difficulties, academic difficulties and post-traumatic stress (Boxer & Sloan-Power, 2013) Literature on the delimited field of this study is, however, quite restricted.

There is cumulative recognition that temperament and personality are not rigid sets of characteristics, but rather dynamic constructs that evolve over the lifetime and alter in response to maturation and life circumstances (Klein et al., 2011). Therefore, the process of personality formation is not completed during the adolescent period (Bozhovich, 2004). This period involves significant restructuring of the psychological structures that formed previously, as well as the appearance of new structures. Investigations implied that the physiological processes that occur during the adolescent period increase the emotional excitability of the adolescent (impulsivity, lack of stability) (Bozhovich, 2004). Children develop rapidly from manifesting only a minor number of emotions during early infancy to manifesting an expanded collection of emotions (Caspi et al., 2005). The emotion-based individual differences children can display change rapidly in scope and extent during these years (Caspi et al., 2005). Rapidly developments in motor skills, cognition and language make the taxonomy of early individual differences akin to pursuing a moving target (Caspi et al., 2005).

Theoretical approaches to temperament have often included strong self-regulative components; the latter has been seen as driven by individual differences in arousal and temporal emotional reactivity (Rothbart, Ellis & Posner in Vohs & Baumeister, 2011).

### **3.5.1 Developmental factors that must be taken into account when evaluating the adolescent**

Like personality traits, temperament traits are also modified by experience. Even if measured during early childhood, the differences in temperament between individuals are only partially hereditary and are already influenced by experience (Caspi et al., 2005). When trauma occurs during phases of rapid development, the brain's capacity to regulate impulse and emotion can be seriously impaired suggesting problematic implications for later social behaviour in the adolescent (Balbernie, 2001). It is clear that traumatic events have a compounding effect on the brain and brain abnormalities are likely to impact sensory processing and integration in a number of distinct ways, depending on the adolescent (Perkins & Graham-Bermann, 2012).

## **3.6 MEASUREMENT OF PERSONALITY**

The need to measure the personality traits of individuals equitably for scientific purposes poses a serious challenge to the discipline of Psychology. Developing trustworthy methods for such measurement requires exploring varying approaches of gathering data to test theoretical ideas and hypotheses. All data gathering demands strict adhere to psychometric measurement principles such as reliability, validity and standardization (Boyle, Matthews & Saklofske, 2008).

Modern personality assessment makes extensive use of direct, explicit methods such as self-report questionnaires and structured interviews. This allows the harvesting of data regarding introspectively accessible aspects of themselves which subjects are willing to disclose (Yovel & Friedman, 2013). Unfortunately, people do not always provide accurate information about themselves. Inaccurate information is sometimes provided intentionally, as explicit assessment methods are susceptible to a variety of self-report strategies (Yovel & Friedman, 2013). Despite their limitations, self-report instruments convey access to numerous unique

constructs associated with many different emotional, cognitive, behavioural and social aspects of the self (Yovel & Friedman, 2013).

The psychometric view of personality results from the study of individual differences in personality traits, which enables researchers to write specification equations for a variety of behaviours in terms of traits (Kline, 1993). These are essential for precise measurement of personality and are thus critical for the proper application of scientific measurement (Kline, 1993).

Various methods have been used to develop personality measures. They invariably quantify an individual's measured responses in terms of a selection of personality traits. The number and descriptors of these traits vary from method to method and will be presented in various tables below. Some of the methods are based on a clear theoretical model (Cloninger's model) and others have been developed from statistical analysis (such as factor-analysis) to group various characteristics.

An important and widely accepted contribution in personality measurement was made by a research team under the leadership of R.B. Cattell (Boyle et al., 2008). The team compiled a questionnaire and devised a method of deriving information regarding sixteen chosen "personality factors" or traits from responses to the questionnaire. This package became known as The 16PF (Cattell, 1989; Sells, Demaree & Donald, 1970). The 16PF scales and items played an important role in the development of other factor models (Cattell & Mead, 2008).

Table 3.1 gives an overview of the following important personality models:

- The 16PF (Cattell, 1989),
- NEO-PI-R (Costa & McCrae),
- Big Five (Goldberg) and
- P-E-N (Eysenck).

Table 3.1 Important personality models

<b>Some important personality models</b>			
<b>16PF (Cattell)</b>	<b>NEO-PI-R (Costa &amp; McCrae)</b>	<b>Big Five (Goldberg)</b>	<b>P-E-N model (Eysenck)</b>
Extraversion – Introversion	Extraversion	Surgency	Psychoticism (P)
Low anxiety – High anxiety	Neuroticism	Emotional stability	Extraversion (E)
Tough mindedness – receptivity	Openness	Intellect or culture	Neuroticism (N)
Independence – Accommodation	Agreeableness	Agreeableness	
Self-control – Lack of restraint	Conscientiousness	Conscientiousness or dependability	

Source: Cattell & Mead, 2008; Halverson, Kohnstramm & Martin, 1994.

The first-order primary trait definitions used in the 16PF were based on decades of scientific research combining a variety of independent studies. In contrast, the NEO-PI-R primary level personality facets were determined by consensus among a group of psychologists who selected what they felt should appear in each NEO domain (Cattell & Mead, 2008).

Cloninger has suggested a seven-factor model of normal and abnormal personality functioning (see table 3.2). The seven factors contain four fundamental temperaments, three of which are said to be related with particular neurotransmitters: novelty seeking (dopamine), harm avoidance (serotonin), reward dependence (norepinephrine) and persistence (Widiger, 2007). He proposes that there are three character dimensions of self-directedness, cooperativeness and self-transcendence that developed through a nonlinear interaction of temperament, family environment and life experiences (Widiger, 2007). Cloninger's theory aims to incorporate humanistic, existential theory with modern neurobiology. His seven-factor model supported a significant amount of research (Widiger, 2007).

Table 3.2 Cloninger's seven factor personality model

<b>Cloninger's seven factor personality model</b>	
<b>Four fundamental temperaments</b>	<b>Three character dimensions</b>
Novelty seeking (dopamine)	Self-directedness
Harm avoidance (serotonin)	Cooperativeness
Reward dependence (norepinephrine)	Self-transcendence
Persistence	

Source: Widiger, 2007.

Widiger (2007) expressed concerns regarding Cloninger's scale and attempts to authenticate the seven factor structure. Widiger found no support for the temperament and character distinction of the scale and concluded that current understanding of neurobiology appears to be paradoxical with the model and that the four temperaments do not appear to be well tied to the existing research on childhood temperaments (Widiger, 2007).

### 3.6.1 The Sixteen Personality factor questionnaire (16PF)

To motivate the further description of the 16PF here, it can be stated that the personality models mentioned above were each considered for use in this research, as they are generally regarded as the important scales. It was then found that the 16PF global scales have certain advantages over other factor models. 16PF excels in its comprehensiveness of coverage of personality dimensions, the orientation of the scales to functional measurement and the dealing with basic personality concepts that becomes increasingly relatable to an organized and integrated body of practical and theoretical knowledge in the clinical, educational, industrial and basic research fields (Cattell, Eber & Tatsuoka, 1970). The procedure used to develop the 16PF questionnaire allowed the data itself to determine the factors, whereas other systems were developed using methods that forced their factors to be uncorrelated, therefore

altering definitions. The 16PF is therefore unique in that its trait definitions were not forcefully restricted for reasons of statistical convenience (Cattell & Schuerger, 2003).

A study conducted by Goldberg (Grucza & Goldberg, 2007) compared several popular personality questionnaires in their ability to predict behavioural clusters. This research established that the 16PF dimensions had the highest predictive validity. The 16PF has been used extensively in empirical research and has provided a well-established theory of individual differences (Cattell & Mead, 2008). Unlike many obtainable personality measures, recent 16PF translations are culturally adapted, with local norms and reliability and validity information accessible in individual manuals (Cattell & Mead, 2008).

Bearing these factors in mind and considering the wide acceptance of the 16PF, the research effort that was expended in its creation and the various criticisms of the other scales combined with the availability of the 16PF, the researcher decided to conform and utilise the 16PF as one of the data collection strategies in this research. The provision of more detailed information regarding this scale is therefore required.

Factor-analysis, the identification and organisation of the basic elements of human ability, has been the compelling influence on the development of both intelligence and personality tests (Cattell & Schuerger, 2003). Cattell therefore concluded that factor-analysis could be used in discovering and measuring the fundamental dimensions of personality (Cattell & Mead, 2008). As a result, many of the trait descriptions of personality in the 16PF are in part derived from factor-analysis or the theoretical structure is sustained with the assistance of factor-analysis (Boyle et al., 2008).

The 16PF Questionnaire is consequently a multi-level measure of personality grounded on Cattell's factor-analytic theory. Cattell's model allows for a personality description at several levels but also contributes to an understanding of individual differences (Boyle et al., 2008).

Cattell and his colleagues first discovered the primary traits, which furnish the fundamental definition of individual personality differences. Primary traits reveal the fine details and nuances that make each person unique (Cattell, 1989; Cattell & Mead, 2008) (See Table 3.3). These particular primary traits are powerful in comprehending and foreseeing the intricacy of authentic behaviour (Cattell, 1989; Cattell & Mead, 2008; Sells et al., 1970).

Cattell's team methodically measured the most extensive variety of personality dimensions, believing that 'all aspects of human personality which are or have been of importance, interest, or utility have already become recorded in the substance of language' (Cattell & Mead, 2008, p. 136). They examined these traits in different populations, using three different methodologies: observation of natural, in-situ life behaviour or L-data (e.g. academic grades, number of traffic accidents, or social contacts); questionnaire or Q-data from the self-report domain; and objective behaviour measured in standardized, experimental settings or T-data (e.g. number of original solutions to problem presented, responses to frustrations) (Cattell, 1989; Cattell & Mead, 2008; Sells et al., 1970).

Eventually, this research resulted in the 16 unitary traits of the 16PF questionnaire shown in Table 3.3, which illustrates the primary factors scales of the 16PF. These scales give an overview of an individual's personality at a broad level of functioning, while the more specific primary scales provide an in-depth picture of the unique personality dynamics (Cattell & Mead, 2008).

Table 3.3 The 16 Personality Factor primary traits

<b>Descriptives of Low Range (1-3)</b>	<b>Primary Factors</b>	<b>Descriptives of High Range (8-10)</b>
Reserved, Interpersonal, Distant.	Warmth (A)  Affectothymia versus Sizothymia: The warm-cool social orientation	Warm, Participating, Attentive to others.
Concrete, Lower mental capacity	Reasoning (B)  The ability to discern relationships (Intelligence)	Abstract, Bright, Fast learner
Reactive, Affected by feelings	Emotional stability (C)  Adaptation to the environment	Emotionally stable, Adaptive, Mature
Deferential, Cooperative, Avoids conflicts	Dominance (E)  Control versus submissiveness in human relations	Dominant, Forceful, Assertive

Table 3.3 The 16 Personality Factor primary traits (continue)

Serious, Restrained, Careful	<b>Liveliness (F)</b> Exuberant versus sombre (serious) orientations	Enthusiastic, Spontaneous
Nonconforming	<b>Rule – Consciousness (G)</b> The content and action of moral values	Rule conscious, Dutiful
Shy, Timid, Threat-sensitive	<b>Social Boldness (H)</b> Courage versus timidity in human temperament	Socially bold, Venturesome, Thick-skinned
Tough, Objective, Unsentimental	<b>Sensitivity (I)</b> Feeling versus Thinking – contrasting modes of evaluating experience	Sensitive, Aesthetic, Tender-minded
Trusting, Unsuspecting, Accepting	<b>Vigilance (L)</b> Alienation versus Identification in social orientations	Vigilant, Suspicious, Sceptical, Wary
Practical, Grounded, Down-to-earth	<b>Abstractedness (M)</b> Intuition (instinct) versus sensing as contrasting perceptual modes	Abstracted, Imaginative, Idea-oriented.
Forthright, Genuine, Artless	<b>Privateness (N)</b> Self-presentation in social situations	Private, Discreet, Non-disclosing
Self-Assured, Unworried, Complacent.	<b>Apprehension (O)</b> Guilt proneness versus self-confidence and resilience	Apprehensive, Self-doubting, Worried
Traditional, Attached to familiar.	<b>Openness to Change (Q1)</b> Orientations towards change	Open to change, Experimenting
Group-oriented.	<b>Self-reliance (Q2)</b> Self-sufficiency (reliance on self) versus group dependency (reliance on others)	Self-reliant, Solitary, Individualistic



Table 3.3 The 16 Personality Factor primary traits (continue)

Tolerates Disorder, Flexible	Perfectionism (Q3) Investment in maintaining a socially approved self-image	Perfectionistic, Organized, Self-disciplined
Relaxed, Placid, Patient	Tension (Q4) Tense versus relaxed temperaments	Tense, High energy, Driven

Source: (Cattell & Mead, 2008, p. 138)

Cattell and his researchers factor-analysed the primary traits of the questionnaire in order to examine personality structure at an advanced level. From this the global factors or second-order factors, such as extraversion and neuroticism, developed. Table 3.4 illustrates the global scales of the 16PF, giving an overview of the primary factors included in the second-order factors (Cattell & Mead, 2008).

Table 3.4 The 16 Personality Factor traits

<b>16PF global factors and the primary trait make-up</b>	
<b>First-order (Primary Factors)</b>	<b>Second-order factors (Global Factors)</b>
(A) Warm – Reserved (F) Lively – Serious (H) Bold – Shy (N) Private – Forthright (Q2) Self-Reliant – Group-oriented	Extraversion – Introversion
(C) Emotionally Stable – Reactive (L) Vigilant – Trusting (O) Apprehensive – Self-assured (Q4) Tense – Relaxed	High Anxiety – Low Anxiety (Anxiety Neuroticism)

Table 3.4 The 16 Personality Factor traits (continues)

(A) Warm – Reserved (I) Sensitive – Unsentimental (M) Abstracted – Practical (Q1) Open-to-Change – Traditional	Tough-Mindedness – Receptivity
(E) Dominant – Deferential (H) Bold – Shy (L) Vigilant – Trusting (Q1) Open-to Change – Traditional	Independence – Accommodation
(F) Lively – Serious (G) Rule-conscious – Expedient (M) Abstracted – Practical (Q3) Perfectionistic – Tolerant to Disorder	Self-Control – Lack of Restraint

Source: (Cattell & Mead, 2008, p. 138)

### 3.6.2 Research on personality and reaction to exposure of violence

As alluded to in section 3.2, past research indicates that several personality factors are influenced by exposure to interpersonal violence. Some of these will be highlighted below.

Neuroticism describes a tendency to react with strong emotion to adverse events (Jakšić, Brajković, Ivezić, Topic & Jakovljević, 2012). Delongis and Holtzman (2005) suggest that, while individuals scoring higher on neuroticism (N) may still employ other adaptive strategies as well, they will tend to cope via emotional expression. Higher levels of negative emotions may obstruct the ability to decide upon appropriate coping strategies (Delongis & Holtzman, 2005). McCleery and Goodwin (2001) denote that neuroticism may be related to variation in HPA-axis regulation and that adolescents scoring high on N are more vulnerable to psychopathology and more sensitive to stress because their immediate responses are more rapid and intense, but slower to return to baseline (Jakšić et al., 2012). One facet of high neuroticism is heightened affective reactivity to daily stressors. Neurotic adolescents are

more anxious and less self-efficient (Spengler, Lüdtke, Martin & Brunner, 2013). Conversely, those who are low on neuroticism find it easier to “shake off” stressful events (Jakšić et al., 2012, p.258). Neuroticism (factors C, L, O and Q4) is significantly related to the use of hostile reaction, escapist fantasy, self-blame, sedation, withdrawal, wishful thinking, passivity and indecision; coping styles which are termed immature or neurotic (Kardum & Krapić 2001). Neuroticism has been suggested to be a predisposing factor to clinical depression, hopelessness and positively related to suicidal thoughts (Chioqueta & Stiles, 2005).

Exposure to trauma is related to neuroticism and openness to new experiences. Another study suggested that early emotional trauma such as interpersonal violence may be related to poor impulse control and interpersonal behaviour (Li, Wang, Hou, Wang, Liu & Wang, 2013). Adolescents who tend to react impulsively (factor H-) to situations, choosing the first response possibility that come to mind, or tend not to engage in meditative problem-solving (factor F+ and B-) about the nature of events, fail to account for alternate explanations for violent events that could lead them to make more constructive evaluations (Boxer & Sloan-Power, 2013). Adolescents exposed to interpersonal violence shows an escalation in pro-social behaviour (factor A+) and altruism (factor L+), perhaps as a way to overcome their own feelings of pain and fear (factor I+) (Davis & Siegel, 2000).

Joseph, Dagleish, Thrasher and Yule (1997) found that people with high PTSD symptoms scored higher on impulsiveness (factor H+) than those low in PTSD symptoms. It would seem that the notion of compulsive re-exposure might be more akin to impulsiveness than daringness (tendency to be venturesome). Although it might be that higher impulsiveness is a consequence of PTSD, it is possible that high levels of impulsiveness predispose adolescents to the development of PTSD (Joseph et al., 1997).

Extraversion (factors A, F, H, N and Q2), a personality factor which is characterized by sociability, liveliness, high scores on positive affect, an outgoing personality and cheerfulness, is significantly negatively associated with depression and hopelessness. This indicates that extraversion represents an independent dimension of positive affectivity (Chioqueta & Stiles, 2005; Jakšić et al., 2012). Surgency (positive emotionality) indicates the extent to which an individual is receptive to reward, sociable, sensation seeking and actively involved with the environment (Compas et al., 2004). Extraversion is related to the

psychological processes and brain systems involved in sensitivity to reward. Most of the traits grouped within extraversion are examples of approach or exploratory behaviour, including activity, sociability, talkativeness and assertiveness (Chioqueta & Stiles, 2005; Specht et al., 2012). Extraversion has been divided into two aspects. The one aspect reflects assertiveness and drive; the other reflects sociability and positive emotions (Specht et al., 2012).

Extraversion and surgency are related to greater externalizing problems (acting out) and to fewer internalizing problems (fear, sadness, low self-esteem) where anger and frustration predict both internalizing and externalizing problems (Rothbart, 2007).

DeLongis and Holtzman (2005) suggest that individuals higher on extraversion (E) appear to be effective and active copers in that they are more likely to use a variety of ways of coping, including cognitive reframing and active problem solving. Those higher on E are more likely to benefit from engaging in cognitive reframing in comparison to those lower on E (DeLongis & Holtzman, 2005).

Extraversion seems to influence well-being because it is positively related to positive emotions and sensitivity to positive affect, while neuroticism is negatively related to these factors (Chioqueta & Stiles, 2005; Garcia, 2010). Extraversion has a significant positive effect on active, problem-focused coping using coping styles such as rational action, positive thinking, substitution and restraint, while neuroticism is linked to less effective coping styles (Kardum & Krapié, 2001). Extraversion (factors A, F, H, N and Q2) and neuroticism (factors C, L, O and Q4) appear to reflect the various manifestations in personality of sensitivity to reward and punishment respectively and a great deal is known about the neural systems that respond to reward and punishment. These are fundamental aspects of temperament and, as such, appear very early in development (Ammaniti et al., 2012). Margolin et al. (2010) postulates that adolescents show unique types of comorbidity with over-arousal and depression associated with acting-out, risk-taking behaviours (all of which can impair academic performance and interpersonal relations ) after exposure to interpersonal violence. Furthermore, most troubled adolescents display a severe impairment in the capacity to experience, modulate and share in other's affective states (factor I) (Ammaniti et al., 2012).

Increases in emotional stability (factor C), conscientiousness (factor G) and agreeableness (empathy/warmth, versus egocentrism/antagonism (factor A)) are often labelled as maturation

because higher values on those traits are expected to facilitate the mastering of social roles (Specht et al. 2012). Agreeableness enhances the ability to maintain relationships (Specht et al., 2012). Individuals who are more satisfied with their lives experience more positive changes in emotional stability (factor C), agreeableness and conscientiousness in the years that follow compared to less satisfied individuals and increases in these traits are commonly labelled personality maturation (Specht et al., 2012). Individuals whose life satisfaction increases more strongly concurrently experience more positive changes in personality (Specht et al., 2012).

The factor O (guilt proneness) and factor Q4 (ergic tension), the 16PF anxiety primary traits, are differentially related to performance (Matthews, 1989). In normal populations, there are only small positive correlations between anxiety scales related to specific situations. Of the 16PF factors not associated with extraversion or anxiety, it is proposed that factor B (intelligence), factor I (tender-mindedness), factor Q, (radicalism) and factor G (superego) appear to be the most reliable. Factor I may be the closest equivalent to the psychoticism dimension (Matthews, 1989). Psychoticism is associated with the distortion of reality and the incompetence to distinguish between reality and fantasy (Woods, Dautenhahn, Kaouri, te Boekhorst & Koay, 2005). Individuals with high psychoticism have difficulty processing diverse sources of information (Corr, 2010).

Consistent with expectations that those scoring higher on factors A would be adaptive, flexible copers able to engage with others and the world around them, DeLongis and Holtzman (2005) found those higher on factor A tended to report lower levels of distancing in coping with family stress. Additionally, those scoring higher on factor A reported relatively more empathic responding in stressful situations involving others as compared to those with non-interpersonal stressors. Conscientiousness may be related to the willingness to achieve, goal setting and effort regulation referring to factor G (Spengler, et al., 2013). Adolescents who maintain high stable levels of negative affectivity (factor Q4 – anxiety, factor E – aggressive, factor I – fear) would be more likely to evaluate violent events as highly threatening (Boxer & Sloan-Power, 2013). The adolescent's temperament can thus either render the adolescent more resilient or more vulnerable (Lewis, 1999). Adolescents that are easy-going (factor A+), endearing (factor H+) and have good skills (factor N+) appear to be less at risk from the long-term effects of trauma. Self-confident (factor G+) adolescents with

a positive self-image and who believe that they have some control over what happens to them in life tend to be more resilient (factor F) (Lewis, 1999).

Adolescents exposed to interpersonal violence might display rigidly controlled behaviour (factor G+) following set precedents such as inflexible rituals, rigidly controlled eating habits and under-controlled (factor G-) behaviours including aggression, self-injurious behaviours and frozen avoidance reactions (Fowler et al., 2009; Price, Higa-McMillan, Kim & Frueh, 2013).

When this study commenced insufficient research results were available to conclusively portray the impact of exposure to interpersonal violence as represented by 16PF. No available 16PF profile described a typical so traumatized adolescent. The foregoing literature study and definitions nevertheless enabled the researcher to make logical predictions regarding specific 6PF factors most likely to be influenced by interpersonal violence. Research results reviewed in chapter two, highlight that exposure to interpersonal violence can lead to a loss of sense of security, risk-seeking and reckless behaviour, sleep disturbances, nightmares, impairments in self-efficacy, attachment difficulties, anxiety, fear, stress, aggression, social avoidance and trauma-specific fear. The definition of PTSD includes persistent negative alterations in mood and cognition, flashbacks, nightmares and intrusive thoughts, avoiding thoughts and feelings, not being able to have loving feelings, diminished responsiveness to the external world as well as difficulty sleeping or concentrating, anxiety, hypervigilance, exaggerated startle response, irritability and anger (Hagama et al., 2001; Neigh et al., 2013; Ozer & Weiss, 2004; Wakefield, 2013). It is therefore to be expected that the consequences of exposure to interpersonal violence may be visible in the factors of the 16PF listed below. Expected outcomes are associated with each factor.

a) Factor G (Expedient – Rule-conscious):

Low G (G-): Individuals with a low G tends to have trouble in situations that require conformance to rules and regulations (Craig, 1999).

People with low G may disrespect social and external rules and regulations and feel few obligations to others. They tend to be careless, indolent, undependable and indulgent (Craig,

1999; Landman, 1992). Guilt proneness, as well as depression and PTSD have a certain neurobiological base to it, therefore indirectly affecting the expression of personality (Craig, 1999). A combination of factors G- and O+ suggest the individual enjoy both breaking rules or stretching rules and feel guilty about it. This combination may predict unconventional behaviour (Craig, 1999). A low G may propose a plea for help. As indicated in the literature study, adolescents exposed to interpersonal violence develop a sense of learned helplessness, which may seriously affect mood and the development of a sense of efficacy and self-control, indicating the G factor of the 16PF. Furthermore, adolescents' interaction with their social environment changes in such a way as to increase their risk of exposure to stressors.

b) Factor I (Sensitive – Unsentimental):

High I (I+): Individuals with a high I tends to be intuitive and makes judgements based on subjective impressions and their own emotional reactions. They tend to battle with situations that require toughness (Craig, 1999; Landman, 1992). Factor I is of particular importance in this study, since it might reflect the way that victims of interpersonal violence habitually process information. Furthermore, they tend to be vulnerable to perceived stress and wish to avoid conflict, feel insecure and unrealistic, temperamental and seek help and sympathy. Being compassionate and sensitive, they are attuned to their own areas of vulnerability (Cattell, 1989; Craig, 1999; Landman, 1992). Adolescents in general might possibly be somewhat more sensitive to experiential input and particularly vulnerable to psychological harm because of their unique developmental phase; they worry about their practical needs (Veenema & Schroeder-Bruce, 2002). This should be corrected for when interpreting research results.

c) Factor O (Apprehensive – Self-assured):

High O (O+): A high O suggests psychological distress, referring to anxiety and depression. Individuals with a high score tend to worry needlessly, are depressed, feel worthless and inadequate, have a vague sense of dread and have low-self-esteem (Cattell, 1989; Craig, 1999; Landman, 1992). They are easily overcome by their emotions (emotionally unstable), are overly sensitive to criticism which tends to make them depressed and to lack self-

acceptance. They also tend to be self-reproaching, emotionally troubled and prone to feelings of guilt without reasonable cause, cry easily and feel lonely (Cattell, 1989; Craig, 1999; Landman, 1992). Factor O reflects an underlying emotional self-attitude, mostly in reaction to life experiences. A combination of factors O+ and Q4+ refers to individuals that are tense, driven and easily frustrated (Craig, 1999). As denoted in the literature study, adolescents are more vulnerable to develop depression indicating factor O+. Unrealistic feelings of guilt may also be part of this factor.

d) Factor Q4 (Tense – Relaxed):

High Q4 (Q4+): A high score suggests free-floating anxiety, particularly in the presence of insecurity. Individuals with a high Q4 score tend to be restless, tense, impatient, anxious and emotionally volatile. They feel frustrated and maintain a level of excitement and tension throughout their behaviour, leading to interference with their functioning and efficiency (Cattell, 1989; Craig, 1999; Landman, 1992). Factor Q4 is a prominent factor in the anxiety second order factor. A combination of factors Q4+ and O+ suggests individuals that are apprehensive and insecure, have many self-doubts and may have sleep disturbances and depression (Craig, 1999). Research concludes that the stress, anxiety and fear generated by exposure to violence interfere with significant normal developmental tasks (Salzinger et al., 2002). Increased anxiety is common for all children and adolescents exposed to interpersonal violence.

These observations lead to the deduction that 16PF factors I, O, G and Q4 will give a good indication of untoward consequences of exposure to interpersonal violence.

### **3.7 COPING**

Coping is a complex concept that is interpreted differently by different theorists. They apply different terms to the descriptions of behaviour (Beutler, Moos & Lane, 2003). Boxer and Sloan-Power (2013, p. 215) defines coping as “the specific set of cognitive, behavioural and emotional responses enacted following the experience of a stressor”. Some rely on



behavioural observations while others emphasize aspects of thought and cognitive structure. Some theoretical definitions emphasize the style or pattern that characterizes coping while others emphasize responses to specific stressful circumstances. Some focus primarily on the adequacy with which one copes (Beutler et al., 2003).

There is agreement that the way a person copes with stress predicts that person's mental health and psychological adjustment (Holen et al., 2010). Several forms of coping (such as constructive problem solving or effortful emotion regulation) result in improved adjustment and adaptation whereas others (such as avoidance or withdrawal) lead to worse adjustment and maladaptation (Boxer & Sloan-Power, 2013). Literature reveals very few opinions and no consensus to establish which coping patterns, employed during general stressful situations, could be associated with mental health in young children. This may be partly attributed to a lack of agreement on ways to conceptualize or measure coping (Holen et al., 2010). In the general context of traumatic stress, like interpersonal violence, active or instrumental coping strategies (such as positive thinking or dealing actively with problems) have nevertheless been correlated with a positive adaptation to stress, while passive coping strategies (such as avoidance) are most often considered as maladaptive coping strategies (Olf, Langeland & Gersons, 2005).

The specific characteristics of stressful circumstances appear to influence coping choice and coping efficiency simultaneously. Evidence proposes that most individuals systematically vary their coping efforts and choices to suit a certain stressor. General coping styles adopted over time tend to be inadequately related with the ways in which one copes in a specific situation (DeLongis & Holtzman, 2005). For an adolescent coping is a dynamic, purposeful process used to react to stimuli appraised as taxing or exceeding one's resources. Coping includes behavioural, emotional and cognitive attempts to manage the demands imposed by a stressor (Seiffge-Krenke et al., 2009). Coping represents a fundamental element of resilience, a related but different construct (Boxer & Sloan-Power, 2013). Coping refers to a broad set of skills and purposeful responses to stress, whereas resilience refers to constructive adaptation in response to severe difficulty (Glennie, 2010).

Resilience is defined as the ability to successfully cope with change and misfortune. It is seen as a personality trait that can aid an adolescent to bounce back or heal from stress and

disaster and sufficient resilience helps to explain why some traumatized adolescents would be less susceptible to psychiatric illness than others (Ahern, 2006). A lack of resilience plays a vital role in the onset of PTSD, while a measure of resilience might curtail its symptoms (Jakšić et al., 2012).

As cited in Ungar (2011), Donnon and Hammond identified eleven factors that contribute to resilience. These include parental support, parental expectations, peer relationships, community cohesiveness and commitment to learning at school, school culture, cultural sensitivity, self-control, empowerment, self-concept and social sensitivity (p.3). Resilience is both a characteristic of the individual adolescent and a quality of that adolescent's environment which provides the resources necessary for positive development despite adverse circumstances (Unger, Brown, Liebenberg, Othman, Kwong, Armstrong et al., 2007).

Current views concerning resilience stems from research viewing psychological aspects of coping and stress respectively (Ahern, 2006). As is the case with other personality traits, resilience will also evolve through time and circumstance to establish competence in handling stress (Unger, 2013). Protective factors (such as IQ and temperament) may become more accessible to children as they mature, while chronic exposure to interpersonal violence may erode protective factors (Beasley, Thompson & Davidson, 2003; Margolin & Gordis, 2004). Resilience is related to psychological development and changes in emotional and cognitive competency (Agaibi & Wilson, 2005).

Resilience can vary with the individual's stage of development and can, at each stage, be expressed in behaviours that can be interpreted as positive or negative. Resilience can be seen as a combination of personal characteristics and environmental factors that enables an individual, group or community, to meet stress and adversity with coping and adaptation (Ahern, 2006). Resilience may be strengthened by strong extroverted personality characteristics and a capacity to mobilize resources (Agaibi & Wilson, 2005). In applying the 16PF questionnaire, extroverted personality characteristics will be reflected by factors, A, F, H, N and Q2 (hardiness, ego resilience, self-esteem, assertiveness and locus of control).

### 3.7.1 The Kidcope Questionnaire

During this study it will be necessary to examine the role of coping styles in an adolescent's experience of traumatic situations and the influence coping styles may have on the risk of post-traumatic stress disorder developing. The Kidcope questionnaire was identified as a suitable instrument in this regard (Foa et al., 1997).

The Kidcope is a widely employed brief questionnaire developed for measuring coping in children and adolescents by assessing the ten coping categories: distraction, withdrawal, cognitive restructuring, self-criticism, blaming others, problem solving, emotional expression, wishful thinking, social support and resignation (Holen et al., 2010).

Active coping (engaging with the stressor) involves thinking about how to solve the problem (preparation for action), taking steps to solve the problem, or reframing how one thinks about the problem (Kliewer & Zaharakis, 2013). This coping style is associated with a high sympathetic response and generally also with a moderate HPA-axis response (Koolhaas, 2008). Seeking social support is another active coping strategy in dealing with traumatic stress and considerably safeguards against PTSD as evidenced in a recent meta-analysis (Olf, Langeland & Gersons, 2005). Engagement coping responses are additionally differentiated as primary control (or active) coping responses (problem solving, emotional expression, emotional modulation) and secondary control (or accommodative) coping (acceptance, cognitive restructuring, positive thinking, distraction) (Compas et al., 2004). Avoidant coping, in contrast, involves denying that the problem exists or mentally or behaviourally disengaging from it (Kliewer & Zaharakis, 2013). Disengagement coping incorporates avoidance, denial and wishful thinking (Compas et al., 2004).

Not everybody exposed to trauma will develop PTSD. The interaction of risk factors along with the severity of the trauma appears to influence who will and who will not develop PTSD (Davis & Siegel, 2000). Research has suggested that most of the individuals exposed to trauma (such as interpersonal violence) do not develop PTSD, depression or further psychiatric or physical disorders (Olf et al., 2005). Cognitive appraisal mechanisms and coping processes may play a role in determining the outcome through their effects on neuroendocrine stress systems (Olf et al., 2005).

Several traumatized adolescents experience temporary symptoms of depression, anxiety, or developmental regression but return to baseline quickly, whereas others endure long-standing PTSD and other psychiatric syndromes, from internalizing symptoms such as depression and anxiety, to externalizing symptoms such as behavioural difficulties (Gerson & Rappaport, 2013). In this regard, researchers have postulated that it will be important to study children who do not develop PTSD when exposed to traumatic stressors. Factors such as resilience, coping skills, along with the availability of social support that a child or adolescent can utilize in times of stress or trauma, may prove to be informative areas of research (Davis & Siegel, 2000; Gerson & Rappaport, 2013).

The fact that not all people exposed to exceptional stress develop PTSD is evidence that individual variations in vulnerability along with coping capacity often play a role (Weisaeth, 1998). Sources of vulnerability to adversity, stress and trauma can be present in the individual's personality and coping repertoire or in the environment (Agaibi & Wilson, 2005). Resilience also relates positively to extraversion (Factors A, F, H, N and Q2) and conscientiousness, reflecting the benefits of positive affective style, capacity for interpersonal closeness and high levels of social interaction and activity (Campbell-Sills, Cohan & Stein, 2006). Mediating factors can be related to the nature of the traumatic experience, the characteristics of the adolescent who experienced the trauma, or post-traumatic life events.

### **3.7.2 Coping and the adolescent**

Recent studies suggest that personality related factors like temperament, esteem and self-efficacy predispose adolescents to use certain coping styles. There seems to be a consensus that coping strategies may be of either a cognitive or behavioural nature and researchers often cluster them into those categories. Likewise coping strategies can lead to either approaching or avoiding a problem. Individuals may alternate coping strategies to suit situational characteristics (Sveinbjornsdottir & Thorsteinsson, 2008).

Adolescents are more likely to utilize approach-oriented coping in situations evaluated as being taxing yet controllable. They are more likely to have a preference to cope by

withdrawing in situations viewed as overbearing threat, loss or lack of control (Seiffge-Krenke et al., 2009). Approach-oriented coping include cognitive attempts to understand or change ways of thinking about the stressor and behavioural attempts to resolve the stressor by dealing directly with it or its consequences. Avoidance strategies refer to cognitive efforts to deny or minimize the stressor and behavioural efforts to withdraw from or avoid the stressor (Ebata & Moos, 1994).

The actual process of coping with violence depends on the adolescent's perceptions and appraisals of risks within the community (Patton et al., 2012). Adolescent exposure to violence is, for instance, associated with PTSD symptoms, but adolescents with positive coping styles reveal higher self-concept and better academic achievement and are less susceptible to PTSD. Still, this positive-negative coping style dichotomy is more complex, with a coping strategy that may be positive in one context potentially negative in another (Patton et al., 2012). Although most adolescents use several different types of coping strategies concurrently, making it difficult to isolate their unique effects, research signifies avoidance behaviours, more specifically escape-avoidance coping, as a substantial predictor of post-traumatic morbidity (Olf et al., 2005).

Coping strategies selected in response to interpersonal violence are contextualized in line with adolescents' construction of the controllability of the event and the actual content and context of the event itself along with sociocultural factors, learning histories and personal resources (Boxer & Sloan-Power, 2013). Individual coping strategies in adolescence are found to interact with well-being and adjustment, success at school and physical and mental health (Sveinbjornsdottir & Thorsteinsson, 2008). This means that an employed coping style may offer a protective resource, reinforcing resilience under violent circumstances. Inversely an undue coping style may increase vulnerability and the likelihood of negative outcomes in the context of violence (Boxer & Sloan-Power, 2013).

### **3.7.3 Coping and Personality**

Personality and social relationships play an essential role in nearly every aspect of stress and coping. Coping refers to “adaptively changing cognitive and behavioural efforts to manage

psychological stress” (DeLongis & Holtzman, 2005, p.2). Ising and Holsboer (2006) postulates that successful coping with stress implies an appropriate regulation of the stress response, an effectual termination when the stress is over and the adolescent has adapted to new conditions, referring to physiological processes. Personality may directly facilitate or constrain coping (Connor-Smith & Flachsbart, 2007). Thus, coping mechanisms are situation dependent and interrelate with personality variables (Agaibi & Wilson, 2005).

Personality processes (intelligence and cognitive styles of information processing) are correlated with coping styles and the types of defences used in anxiety-provoking situations (Agaibi & Wilson, 2005). In the literature, the term *coping style* is heavily laden with behavioural descriptions and does not emphasize sufficiency or the emotional and cognitive correlates of coping. The term *coping* itself invokes both coping styles and skills and their sufficiency (Beutler et al., 2003).

Compass (2009) postulates that coping involves an organized set of processes such as goal directed and organizing coping efforts around specific sets of goals and motives. Coping requires the use of cognitive resources including blocking sensations, overriding thoughts and stopping emotions (Patton et al., 2012). Active self-control or regulation in a stressful situation depletes such resources. As resources are depleted, cognitive performance is impaired. Individuals in a depleted state struggle with discouraging or frustrating tasks and perform poorly on intellectual tasks (Patton et al., 2012).

The way in which adolescents cope with challenging and violent situations may be an essential moderator in the consistent relationship among stressful environmental circumstances and psychological regulation (Ebata & Moos, 1994). Coping is generally thought to serve various purposes, including sustaining mental and physical health along with social functioning. Recent research argues that coping behaviour is an indicator diagnostic of personality traits. This would suggest that it would be prudent to examine an individual’s personality traits and coping styles concurrently when studying the effect of violence on a person (Geisler, Wiedig-Allison & Weber, 2009).

The development of coping cannot be understood without considering the multiple physiological, emotional, behavioural, attentional and interpersonal processes that give rise to it and the larger social ecological contexts within which it unfolds. A number of researchers

have suggested conceptualizing coping as part of an intricate adaptive system that entails stress, resilience and competence (Skinner & Zimmer-Gembeck, 2007).

Brain networks and the mechanisms modulating their activation underlie differences in reactivity and self-regulation and control the earliest means of coping. In view of the neural basis of these variables, the *executive attention system* has been identified as facilitating conscious and volitional control in coping. This system entails the brain cells and neural networks which control temperamental effortful control as well as the regulation of thought, emotion and behaviour (Rueda & Rothbart, 2009).

Understanding coping is necessary to determine the effects of stress on children and adolescents and in strategizing against untoward effects. To that end it should be considered that the adolescent does not only have the potential to deal with the demands that adversity brings into his or her life, but also to consider the effect of ongoing encounters on his or her own development (Skinner & Zimmer-Gembeck, 2007). Temperament-based emotional reactivity, regulatory abilities and coping strategies underlie stress reactions. Knowledge of the factors that strengthen or weaken stress reactions is important in designing interventions that might assist adolescents in coping with adversity (Rueda & Rothbart, 2009).

Adolescents' response and means of dealing with stress influence their social relationships, their reaction to subsequent stressors they encounter and, eventually, even their own stress physiology and development (Skinner & Zimmer-Gembeck, 2007). Early experiences with controllable versus uncontrollable stress have an effect on subsequent brain function and responses to stress in later development (Compas, 2009). All external stimuli perceived by the adolescent and mediated by consciousness determine the adolescent's internal positioning and his or her reactions (Bozhovich, 2004).

As discussed in chapter two, the sensitization of the brain stem and midbrain neurotransmitter systems also means that the other critical physiological, cognitive, emotional and behavioural functions which are mediated by these systems will become sensitized (Perry et al., 1995). When the stressful event is of a sufficient duration and intensity, these neurophysiological changes are not readily reversible. In such a situation, adolescents victimized by trauma are at risk for developing permanent vulnerabilities – permanent changes in neuronal differentiation and organization (Perry et al., 1995). As brain areas involved in the acute stress response also mediate a variety of other functions, sensitization of these systems



by repetitive re-experiencing of a traumatic event leads to dysregulation of these functions. Thus, the traumatized adolescent may exhibit motor-hyperactivity, anxiety, sleep problems, hypertension, behavioural impulsivity and a variety of neuro-endocrine abnormalities (Perry et al., 1995). The development of coping, self-regulation and emotional control is steered by the physiology of the brain and central nervous system and by experiences encountered during development. Brain development both facilitates and constrains stress responses and coping during phases of childhood and adolescence. Certain aspects of experiences might actually degrade or restrict the development of adaptive means of coping (Compas, 2009). The hippocampus is responsible for memories of events and contexts and is a vulnerable brain structure as far as sensitivity to epilepsy, stress and aging is concerned. It undergoes a variety of structural and functional changes in response to stress and if the hippocampus and other brain regions are damaged, individuals lose the ability to remember and perform optimally, thereby further impairing the ability to cope (McEwen, 1999). As stated earlier, the hippocampus is one of the most vulnerable and plastic of brain regions.

When young people are distressed, their energy is directed away from the learning process, thereby interfering with optimal school performance and age-appropriate psychosocial development (Frydenberg, Lewis, Bugalski, Cotta, McCarthy, Luscombe-Smith & Poole, 2004). Furthermore, a strong association pertaining to stress, depression, anxiety and the lack of coping resources (the extent to which adolescents appraise, cope with and recover from stressful situations) has been established (Andersson Arntén et al., 2008). Some researchers argue that psychological coping strategies could have a significant impact on health and well-being (DeLongis & Holtzman, 2005).

Stressful events entail danger and aggravate fear, anger, anxiety, or sadness and these aversive states have been associated with diverse forms of dysfunction and pathology in the clinical literature (Rueda & Rothbart, 2009).

### **3.8 CONCLUSION**

This chapter described the potential consequences of the exposure to interpersonal violence on the development of the personality of the adolescent. Temperament and personality were



defined and methods of personality assessment were discussed. Factors of the 16PF that are likely to differ between adolescents who were exposed to interpersonal violence and those who were not exposed, were identified.

It was shown that personality and social relationships play an essential role in approximately every aspect of stress and coping, while the nature and roles of coping and resilience were discussed as well. Individual differences in the personality of the adolescent such as resilience, which might help clarify why only some traumatized adolescents develop long-term effects, were considered.

Chapter four describes the empirical research and related findings. Based upon the findings in Chapter five, the research hypothesis stands to be accepted or rejected.

## CHAPTER 4

### THE EMPIRICAL STUDY

#### 4.1 INTRODUCTION

Interpersonal violence can have a devastating and extensive effect on the development of the adolescent through multiple simultaneous channels of exposure. It has been conclusively linked to a range of psychological problems in adolescents, including stress, anxiety, depression, PTSD, aggressive and antisocial behaviour problems and academic difficulties (Boxer & Sloan-Power, 2013).

Many adolescents are exposed to interpersonal violence which may develop into elevated levels of psychological distress, which, in turn, interferes with the adolescent's social and family life, developmental and learning processes.

The importance and relevance of this research was outlined in chapter one, describing the relative silence in the literature regarding the impact of interpersonal violence on the personality of adolescents. This chapter describes how the research was done, starting with the aim of the study, the hypotheses and the research design.

#### 4.2 AIM OF THE STUDY

As already alluded to in chapter one (in section 1.5) the aim of this study is threefold, namely:

1. to determine the extent to which the *expression of personality* by adolescents who have been exposed to *community related interpersonal violence* differ from the *expression of personality* by those who have *not been exposed to interpersonal violence*;
2. to determine if the *difference in expression of personality* between the two abovementioned groups are related to *levels of post-traumatic stress*;

3. to determine the extent to which the *coping style* of adolescents exposed to *community related interpersonal violence* will influence the development of *post-traumatic stress* and differences in *expression of personality*.

### 4.3 HYPOTHESES OF THE STUDY

Before listing the hypotheses, it will be convenient to mention that it is expected that certain primary personality factors of the 16PF will reflect differences between adolescents who have been exposed to *community related interpersonal violence* and those who have *not been exposed to interpersonal violence*. It is furthermore expected that the primary factors, which will reflect such differences, are the primary factors that are highly sensitive to environmental experience that have an impact on the HPA-axis. The HPA-axis and sympathetic-adrenal-medullary system are critical in promoting adaptive responses to stress, anxiety, or fear thus contributing to the regulation of the stress response (De Kloet, Vermetten, Gouze, Kavelaars, Heijnen & Westenberg, 2006).

During this study the following will be empirically tested by means of standardised tests:

#### **Hypotheses 1**

H<sub>0</sub>: Adolescents exposed to incidents of community related interpersonal violence will not express their personality in different ways than adolescents not exposed to such violence.

H<sub>1</sub>: Adolescents exposed to incidents of community related interpersonal violence will express their personality in different ways than adolescents not exposed to such violence reflecting on the following factors on the 16 PF:

- Factor **G-** (Low): rule-conscious – expedient;
- Factor **I+** (High): feeling – thinking (contrasting modes of evaluating experience);
- Factor **O+** (High): guilt proneness – self-confidence and resilience;
- Factor **Q4+** (High): Tense – relaxed (temperament).

## **Hypotheses 2**

H<sub>0</sub>: The personality expression of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post-traumatic stress, will not differ significantly from those who have not experienced such violence;

H<sub>1</sub>: The personality profile of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post-traumatic stress, will differ significantly from those who have not experienced such violence reflecting on the following factors;

- Factor G (Low): Self-indulgent and disregarding obligations to people;
- Factor I (High): Perception might be emotionally influenced;
- Factor O (High): Depressed mood and feelings of guilt;
- Factor Q4 (High): Elevated levels of anxiety.

## **Hypotheses 3**

H<sub>0</sub>: The coping style (positive or negative coping) of adolescents exposed to community related interpersonal violence will not influence the development of post-traumatic stress and differences in the expression of personality.

H<sub>1</sub>: The coping style of adolescents exposed to community related interpersonal violence will influence the development of post- traumatic stress and differences in the expression of personality. Adolescents exposed to community related interpersonal violence utilizing adaptive/positive coping styles will differ in the experience of post-traumatic stress and with regard to the impact on personality factors than adolescents exposed to community related interpersonal violence utilizing maladaptive/negative coping styles.

#### 4.4 THEORETICAL FRAMEWORK

Science is the body of established knowledge that has been accumulated to understand nature and human experiences better. This research will aim to contribute to this body of knowledge from the paradigmatic perspective of *post-positivism* which states that reality can only be imperfectly understood, research findings are probably true and that qualitative research methods can also be utilized (Struwig & Stead, 2001). For this research *affective neuroscience* forms the intellectual bridge for productive interaction between the neurobiological and psychosocial fields of science. This approach can yield clear bi-directional empirical predictions and may facilitate an in-depth understanding of the impact of interpersonal violence on the personality functioning of the adolescent (compare: Panksepp, 1998).

#### 4.5 RESEARCH METHODOLOGY

Research methodology represents the methods, techniques, and procedures that are utilised in the process of implementing the research design (Babbie & Mouton, 2001). The proposed research will follow a quantitative approach by implementing quantitative research methods in order to explore and describe differences expected shown on factors of the 16 PF questionnaire after exposure to community related interpersonal violence and the development and expression of the personality of the adolescent compared to a control group. The quantitative approach sees reality as existing and attempts to understand control and predict phenomena (Struwig & Stead, 2001). According to this approach phenomena can be best understood by examining their essential aspects, including their causes. The basis of determinism, which holds that all events have causes, is accepted (Struwig & Stead, 2001).

Table 4.1 below serves as a visual presentation of the research perspectives and processes utilised here.

Table 4.1 Research process

Paradigmatic perspective	Quantitative paradigm based in post-positivism
Research methodology	Quantitative approach
Research design	Quantitative descriptive survey comparing two groups
Sampling method	Purposive sampling
Data collection strategies	Literature study The 16 Personality Factor questionnaire (16PF), The KIDCOPE questionnaire, The Post-traumatic Diagnostic Scale (PDS) A self-reporting questionnaire
Reliability and Validity	Using measuring instruments that are standardised All participants complete the same questionnaires

#### 4.5.1 Research design

This research is done within a quantitative research paradigm. The aim and focus of quantitative research is to explain human behaviour (Babbie & Mouton, 2001). The research hypothesis, which flows from the research problem and the literature review, directs the scientific inquiry (Garbers, 1996), leading to hypothesis testing. In employing a quantitative approach, measurement provides a quantifiable description of the research participants' characteristics which can be investigated using statistical methods.

The descriptive survey design has been selected for this study, which will focus on the similarities and differences between two groups (Mouton, 2001). As deduced from personal variables assessed through questionnaires, all members of the first group (sample 1) have been exposed to community related interpersonal violence and no members of the second group (sample 2) has been so exposed. The nature of the problem, as described in chapter one,

precluded the establishing of any causative factors in this design, as no temporal precedence on the part of victims was established (Yilmaz, Gencöz & Wells, 2011).

A self-reporting questionnaire has been used to assist the researcher in identifying sample 1 (adolescents exposed to community related interpersonal violence) and sample 2 (adolescents not exposed to such violence). The research design has been selected to provide a comprehensive analysis of the potential influence exposure to community related interpersonal violence has on the personality of adolescents, while the sampling method was chosen with a view to conducting the research in such a way that it will be possible to generalize results to greater populations (Maree, 2007).

The specific type of community related interpersonal violence adolescents were exposed to, refers to violence that is interpersonal in nature and which occurs outside the home (non-domestic), which is non-sexual, which involves ‘commonplace’ events such as hijackings, robbery and threats of physical assault and which is experienced directly rather than vicariously (seen on TV/films, hearing, reading about from others) (Rosenthal & Wilson, 2006).

#### **4.5.2 Sampling method**

All participants were grade 12 learners from the same public high school in Gauteng. Sampling from a single school could heighten homogeneity within the cohort (in terms of culture and environment), but can decrease the generalizability of the results. The administrative, financial and time burdens would have complicated more ambitious sampling unnecessarily, however. There were 335 grade 12 learners in the school, of whom some (172) did not participate.

Reasons for non-participation were:

- not being available during any phase of the research, because of private, academic or practical reasons;
- not yet being 18 years of age when the 16PF were to be answered and thus not able to meet normative prerequisites;

- having been exposed to personal violence prior to reaching adolescence ;
- having been exposed to violence (such as domestic or sexual violence) which did not conform to the definition of the community related interpersonal violence being studied in this research;
- having witnessed interpersonal violence without being injured or threatened personally.

By excluding all these adolescents from the study, it was aimed to limit factors that might influence the researcher's ability to make valid conclusions regarding the influence of exposure to community related interpersonal violence during adolescence.

The remaining grade 12 learners formed the population from which purposive samples 1 and 2 could be drawn. Purposive sampling refers to the selection of a sample with a specific purpose in mind (Maree, 2007). In this study the purpose would be to compare adolescents exposed to community related interpersonal violence to peers that were not exposed in that way. The remaining grade 12 cohort ( $n = 183$ ) was therefore requested to complete a battery of questionnaires. From the biographical information (self-report questionnaire) 93 learners, who reported being exposed to community related interpersonal violence such as hijacking, robbery and physical assault during the last 5 years (when they were between grade 7 and 12; their adolescent phase), were identified. These 93 learners constitutes sample 1. The remainder of research participants from the cohort of 183, who did not report exposure to the same violence, constitutes sample 2 ( $n = 90$ ).

South-Africa's burden of violent injury is the atmosphere in which the youth were raised, impacting on both Sample 1 and Sample 2. This research investigates the specific exposure to interpersonal violence on the personality of the adolescent. Exposure to trauma other than violence was not controlled for with regard to their possible influence on personality. It was foreseen that this aspect might influence the internal validity of the design somewhat, but this was accepted so as not to extend the research beyond the boundaries stated in obtaining cooperation and ethical clearance.



The careful sampling coupled with the use standardized scales of the 16PF set the stage for obtaining valid results. Internal validity could be heightened further by applying other appropriate instrumentation, by using the instruments correctly and ethically, by applying appropriate statistical analysis of the research data and by meticulous documentation of the process and results. Quantitative research offers various checks and balances to measure scale validity, standard error rates and other validating parameters (Cohen et al., 2000).

High validity would allow replication of the study at a later stage. Replicating findings usually convince researchers that the findings cannot merely be ascribed to coincidence (Cohen, Manion & Morrison, 2000), since findings have been statistically verified. The materials and methods employed in this research allow for future replication, bolstering the confidence of research findings and validity (Barlow & Durand 2002).

#### **4.5.3 Data collection strategies**

The following data-collection tools were administered:

- The *16 Personality Factor questionnaire* (16PF),
- The *KIDCOPE questionnaire*,
- The *Post-traumatic Diagnostic Scale (PDS)*,
- A *self-reporting questionnaire*.

##### ***4.5.3.1 The 16 Personality Factor Questionnaire: further information***

The 16PF has already been dealt with in chapter three, essentially to summarise literature regarding the 16PF and in motivating for doing so to an extent that exceeded the handling of other instruments that had been considered. In actually applying the 16PF in this research, yet more detailed information must be added to support the ways in which it was handled.

The 16PF was originally developed by Raymond Cattell in 1947, based on his strong background in the physical science (Cattell & Mead, 2008; Gorard & Taylor, 2004). Cattell aimed to apply factor analysis to uncover and measure fundamental dimensions of personality

(Cattell & Mead, 2008). Cattell and his colleagues strived for a thorough, research-based map of normal personality and systematically measured the widest possible range of personality dimensions, believing that ‘all aspects of human personality which are of importance, interest, or utility have already become recorded in the substance of language’ (Cattell & Mead, 2008, p.136). For over half a century, the 16 PF questionnaire has proven useful in understanding and predicting a wide range of important behaviours, thus providing a rich source of information for test users (Boyle et al., 2008).

The edition of the 16PF which was used in this research was derived from the versions sourced from the USA. The Human Science Research Council (HSRC) of South Africa utilised Forms A to E to develop and standardise the South African version and introduced the SA92-form in 1992. This edition incorporates provisions for the diverse culture groups of South Africa (Prinsloo, 1998). Stability in test scores is high when applying the 16 PF5 locally (Scherrer, Van Rooyen, de Beer, Heyns, van der Merwe & Knoetze, 2004).

The 16 PF questionnaire is a 187 item questionnaire. Each question is answered on a three-point scale. The test is comprehensive in its assessment of personality as it measures sixteen evidently unique and orthogonal traits or factors (Furnham, 1990). The scales of the 16 PF are bipolar, thus, they have two interpretable ends to them which are negatively correlated. The higher end and the lower end of each scale of the 16 PF are both interpretable (Landman, 1992). A summary of the primary factors is displayed in table 4.2.

Table 4.2 Summary of Bipolar Dimensions of Personality (16 Primary Factors)

Bipolar Dimensions of Personality (16 Primary Factors)	
Factor Code Primary Factor	Bipolar Dimension
(A) Warmth	Reserved vs. Warm-hearted
(B) Intelligence	Concrete vs. Abstract
(C) Emotional Stability	Reactive vs. Emotionally Stable
(E) Dominance	Submissiveness vs. Dominance
(F) Liveliness	Serious vs. Enthusiastic
(G) Rule-Consciousness	Expedient vs. Rule-Conscious
(H) Social Boldness	Shy vs. Socially Bold

(I) Emotional sensitivity	Tough-minded vs. tender-minded
(L) Vigilance	Trusting vs. Vigilant
(M) Abstractedness	Practical vs. Absent-minded
(N) Privatness	Forthright vs. Private
(O) Apprehension	Self-Assured vs. Apprehensive
(Q1) Openness to Change	Traditional vs. Liberal
(Q2) Self Reliance	Group-Oriented vs. Self-Reliant
(Q3) Perfectionism	Tolerates Disorder vs. Perfectionistic
(Q4) Tension	Relaxed vs. Tense

Source (Cattell & Mead, 2008, p. 138).

Few tests have been exposed to such extensive and critical psychometric assessment over such a long period of time as the 16PF, nor can other tests boast such rigorous criterion evidence (Furnham, 1990). The 16PF does not simply factor questionnaire material, but unites global structured research on personality in everyday life through data and objective ratings (Cattell, Eber & Tatsuoka, 1992). Internal consistency for the 16 PF primary scales (on a diverse sample of 4,660), ranged from 0.66 to 0.86, with a mean level of 0.75 (Boyle et al., 2008).

The 16PF5 used in South Africa and in this research displays internal consistency reliability that are higher than those of the fourth edition on which it was based for all primary scales, especially for factors L, M, N and Q3 (Scherrer, van Rooyen, de Beer, Heyns, van der Merwe & Knoetze, 2004). The mean reliability coefficient for the primary factors was 0.80 and 0.70; for the global factors the mean reliability coefficient was 0.87 and 0.78. Cronbach Alpha coefficients were calculated on each scale with a mean value of 0.76 (Scherrer et al., 2004). Test users in South-Africa can rely on local and international research findings to justify the appropriateness of their use of the 16 PF (Abrahams & Mauer, 1999).

Scherrer and colleagues (2004) developed new norms for South African populations based on the data of 1525 students (692 males and 833 females). The biographical variables identified in this study were population group, gender, study field, age and language. The global factor and primary factor scales were compared to four comprehensive measures of normal personality. They were the Personality Research Form – Form E (PRF), the California

Personality Inventory (CPI), the Neo Personality Inventory – Revised (NEO PI-R) and the Myers-Briggs Type Indicator (MBTI) (Scherrer et al., 2004). These correlations clearly showed that the construct validity of the most scales of the 16 PF is similar to the fourth edition (Scherrer et al., 2004).

Based on the underlying theoretical basis of the 16PF the following differences on Factors I, Q4, O and G are expected between the adolescents exposed to violence and those not exposed to interpersonal violence. The descriptions of the factors will be discussed briefly.

Considering that the right hemisphere of the brain processes information subjectively and emotionally and that the right hemisphere is thus more sensitive for negative emotional input (Panksepp, 1998), **Factor I** is of particular importance in this study, since it might reflect the way that victims of interpersonal violence habitually process information. The right pole (I+) is called *premsia*, a condensation for “protected emotional sensitivity” (Cattell 1989, p.152). This characterise the person’s response to his or her environment, i.e., either with feeling or with thinking. I+ individuals rely on their empathetic understanding to interpret the world. They are sensitive and attuned to their own vulnerability. They react in an emotional way to external stressors and are highly sensitive. *Premsia* inclines to be significantly related with mental health problems, both psychotic and neurotic (Cattell, Eber & Tatsuoka, 1992).

Individuals with low **Factor I** scores have few protective illusions and believe that the harsh realities of life should be accepted without much complaint. However, these two ways of processing information might have implications for hemispheric specialization and might be reflected in adaptive adjustment, as well as academic performance, e.g., certain academic content requires specific hemispheric specialization. Factor I is a factor in the second-order factor of tough-mindedness/receptivity – a low I (I-) reflects cool, tough-minded and realistic individuals, that are self-reliant, unsentimental and independent, tackling things responsibly and resourcefully. A high I (I+) reflects tender-mindedness, emotionally sensitive and vulnerable individuals; they are temperamental, impatient, unrealistic, clinging, insecure and demands attention (Craig, 1999; Landman, 1992).

**Factor Q4** gives a measure of tense versus relaxed temperaments (Cattell, 1982). Q4 manifestations express the range of frustration responses from anger and forcefulness to anxiety and to depression (Cattell & Schuerger, 2003). Factor Q4 is a factor in the second-order factor of High Anxiety/Low Anxiety – a low Q4 (Q4-) reflects calm, relaxed, composed, easy-going, tranquil individuals, showing little anxiety but lack vigour and drive and may be difficult to motivate (Craig, 1999; Landman, 1992). A high Q4 (Q4+) reflects tense, restless, overwrought, driven, impatient and emotional volatile individuals that maintain a level of excitement and tension which could interfere with their functioning and efficiency (Craig, 1999; Landman, 1992). Cattell (1989) found elevated Factor Q4 scores among individuals that were victims of interpersonal violence such as physical, sexual and emotional abuse. The 16PF Handbook also reports on elevated Q4 scores in the profiles of alcoholics, depressive individuals, persons attempting suicide and in the profiles of individuals showing a propensity for unpremeditated violent behaviour. These individuals became easily agitated and acted out aggressively with little or no provocation (Cattell, 1989). Q4 has the largest demonstrated association with clinical depression (Cattell & Schuerger, 2003).

**Factor G** reflects the superego strength of the person. A low score reflects possible difficulty in accepting and adhering to the middle-class virtues of honesty, charity and responsibility and a high score reflects persevering, conscientious individuals who readily accept and reliably discharge responsibility (Landman, 1992). Factor G is a factor in the second-order factor of lack of control/self-control – a low G (G-) reflects low rule compliance, weak superego, low on conventionality and group conformity, placid, slack and feels little obligations to others (Craig, 1999) and lack of self-control. A high G (G+) reflects responsibility, perseverance, emotionally disciplined, rule-bound and dominated by a sense of duty, higher superego and may have difficulties in situations that call for flexibility (Craig, 1999; Landman, 1992).

However, a low score on factor G should not merely be ascribed to immature moral development or to immorality, but it could also be ascribed to depression. The main reasons for depressive individuals to score low on factor G are, (a) a plea for help or an indication of experiencing subjective distress; or (b) an overly critical judgment of oneself, or negative self-evaluation, usually flowing from guilt proneness associated with depression and PTSD.

Guilt proneness, as well as depression and PTSD have a certain neurobiological base to it, therefore indirectly affecting the expression of personality (Craig, 1999).

Cattell (1989) argued that **Factor O** reflects an underlying emotional self-attitude, mostly in reaction to life experiences. High scores on Factor O are associated with staying awake at night worrying, becoming dejected when criticized, acting in self-depreciating ways and with self-reproach often found among depressed individuals. Cattell (1989) associated high O+ scores with feelings of worthlessness and susceptibility to manipulation and exploitation, a cynical view about humankind, as well as a high risk for committing suicide, possibly because such individuals may not find meaning in life. Furthermore, individuals scoring high on O feels unstable, reports over-fatigue from exiting situations and show a strong tendency for phantasy defence to be prevalent in O+ individuals.

Factor O is a factor in the second-order factor of High Anxiety/Low Anxiety (Cattell & Schuerger, 2003). A low O reflects self-confidence, self-sufficiency, toughness, resilience and high self-esteem (Craig, 1999). A high O suggests psychological distress referring to anxiety and depression. High scores are depressed, inadequate, have a low self-esteem, are emotionally troubled, cry easily, prone to debilitating feelings of guilt without reasonable cause and are emotional unstable (Craig, 1999; Landman, 1992). Clinically, factor O is very important because it is one of the largest factors in anxiety (Craig, 1999; Landman, 1992). It is expected that victims of interpersonal violence might demonstrate elevated scores on Factor O.

#### **4.5.3.2 KIDCOPE questionnaire**

The KIDCOPE questionnaire has also been introduced in chapter three, but requires some further elucidation. The KIDCOPE is a 15-item checklist designed to assess the frequency of use of 10 cognitive and behavioural coping strategies (Spirito, Stark & William, 1989). The rationale fundamental to this questionnaire supposes that coping is a process measure rather than a stable personality trait (Pereda, Forns, Kirchners & Muñoz, 2009). The coping strategies are the following: social withdrawal, wishful thinking, social support, emotional regulation, resignation, distraction, problem-solving, cognitive restructuring, self-criticism and blaming others (Stark et al., 1989). This questionnaire gave the researcher insight into

the coping skills adolescents have utilized to cope with stress after exposure to interpersonal violence and whether these strategies had a significant effect on the functioning of the adolescent thereafter.

In completing the questionnaire in this research, adolescents indicated the frequency of strategy use on a dichotomous (yes/no) scale, reflecting whether a coping strategy was used (1) or not (0) (Donaldson, Prinstein, Danovsky & Spirito, 2000). Additionally, they had to rate each of the 10 coping items on two scales:

- 1) The frequency with which they used a specific coping strategy (Frequency Scale). The response on the frequency scale is given on a 4-point Likert-type rating scale alternating from "not at all" to "almost all the time" (Stark, Spirito, Williams & Guevremont, 1989).
- 2) On the efficacy scale they had to rate the perceived efficacy of each coping strategy used to deal with a life stressor. This scale is completed on a three-point scale (not at all, a little, a lot) (Donaldson et al., 2000).

Previous use of the KIDCOPE has shown test-retest reliabilities ranging from 0.41 and 0.83 as well as evidence for concurrent validity with other measures of coping strategies (Piazza-Waggoner, Adams, Muchant, Wilson & Hogan, 2006). Validity has been established by moderate to high correlations of the KIDCOPE items with other, frequently used, coping scales (Stark et al., 1989). Based on previous research, adaptive/positive and maladaptive/negative coping strategies were grouped together in the current research.

The positive sub-scale has been shown to be internally consistent ( $\text{Alpha} = 0.77$ ). Both sub-scales have been shown to be reliable and to have convergent validity in relationship to multimodal coping measures (Cooke, Ford, Levine, Bourke, Newell & Lapidus, 2007). In the current research the reliability of the total coping scale was 0.61, the positive scale was 0.59 and the negative scale was 0.56.

#### 4.5.3.3 *The Post-traumatic Diagnostic Scale (PDS) questionnaire*

This questionnaire focuses on the symptoms presented when suffering from PTSD. The PDS Questionnaire has been used in a broad range of clinical and research contexts with a high degree of confidence when use of a structured clinical interview is unfeasible. The PDS questionnaire (Foa, 1995; Foa et al., 1997) is a 31-item self-report measure that assesses the occurrence of a number of traumatic events as well as post-traumatic stress symptoms. Adolescents are first asked to report the occurrence of a number of traumatic events and then they are asked to choose the traumatic event that has bothered them the most. The PDS items are used to rate the occurrence of the 17 PTSD symptoms in the past month using a four-point Likert scale ranging from 0 (“not at all”) to 3 (“almost always”) (Moser, Hajcak, Simons & Foa, 2007). These symptoms correspond with the DSM-IV symptoms for PTSD. Total PTSD symptom severity scores can be derived by summing the ratings for all 17 symptoms. The scale yields a maximum score of 51 points (Guler, Schmid, Wiedemar, Saner, Schnyder & Von Kanel, 2009). The PDS total symptom severity scale displays high internal consistency, test– re-test reliability and convergent validity with other measures of PTSD diagnosis and severity (Moser, Hajcak, Simons & Foa, 2007).

To diagnose PTSD a participant needs to endorse at least one re-experiencing, three avoidance and two arousal symptoms (Foa, 1995). The symptom is thought to be present if they score 1 or above. The PDS has high face validity because items directly reflect the experience of PTSD with high internal consistency (coefficient alpha of 0.92) (McCarthy, 2008). The PDS has good test-retest reliability, high internal consistency, good sensitivity (0.82) and specificity (0.77) when compared to diagnoses using Structured Clinical Interviews (Haslam & Mallon, 2003). To examine internal consistency coefficients alpha were calculated for the PTSD total score and for each of the scores of the three symptom clusters. Alpha was 0.92 for Total symptom severity, 0.78 for Re-experiencing, 0.84 for Avoidance and 0.84 for Arousal (Foa et al., 1997). These results indicate that each cluster comprises symptoms that measure a unified construct (Foa et al., 1997). A Kappa of 0.74 was obtained using the re-test sample of 110 participants and all four scales demonstrated satisfactory reliability: 0.83 for Total symptom severity, 0.77 for Re-experiencing, 0.81 for Avoidance and 0.85 for Arousal (Foa et al., 1997). Thus, the subscales have verified



reliability by having both high internal consistency and good stability over time (Foa et al., 1997).

In recent times, the PDS has been employed in diagnosing PTSD in the emergency services (McCarthy, 2008). The advantage of this scale over self-report measures lies in its complete correspondence to all six criteria of the DSM-IV (Foa, Cashman, Jaycox & Perry, 1997). Furthermore, the PDS provides reliable and valid information of both PTSD diagnosis and symptom severity.

#### ***4.5.3.4 Self reporting Questionnaire***

The *self-reporting questionnaire* provides information on the biographical details of grade 12 learners indicating their age, time of occurrence of exposure to community related interpersonal violence and type of violence. Thus, questions were asked to distinguish grade 12 learners who have been exposed to incidents of community related interpersonal violence (Sample 1) or learners who were not exposed to such violence (Sample 2).

Community related interpersonal violence exposure was assessed by self-reported behaviourally specific dichotomous questions (yes or no) regarding a series of events: (a) physical assault – attack with a weapon and (b) experienced violence (hijack, robbery). If being exposed to interpersonal violence such as the abovementioned, the learner had to indicate the type and occurrence of the traumatic event.

Sample 1 consisted of participants answering positively (Yes) to questions 1.

- Question 1: Have you ever been the victim (physically involved) of interpersonal violence (Hijack, robbery, assault) (If Yes, indicate what type)?
- Question 2: Have you ever been a witness of interpersonal violence (Yes/No)?

Additional information about the experience of trauma was collected using the following questions:

- Question 3: IF yes, when did the traumatic incident occur: 2 years ago/3 years ago/5 years ago?
- Question 4: IF yes to Question 1 and/or 2 answer: Have you ever been diagnosed with post-traumatic stress disorder and/or depression after exposure to interpersonal violence? If yes, when?
- Question 14: IF yes to Questions 1 and/or 2, or 4, circle the statement applying to you: I have been suffering from stress for the past year/ two years/five years due to exposure to interpersonal violence.

Participants exposed to only witnessing interpersonal violence were excluded from both sample 1 and sample 2 in this study as it was not part of the research question. Those participants did not partake in this study.

Sample 2 comprised of all the participants answering negatively (No) to questions 1 and/or 2, 4 and 14.

- Question 1: Have you ever been the victim (physically involved) of interpersonal violence (Hijack, robbery, assault) (If Yes, indicate what type)?
- Question 2: Have you ever been a witness of interpersonal violence (Yes/No)?
- Question 4: Have you ever been diagnosed with post-traumatic stress disorder and/or depression? If yes, when?
- Question 14: Circle the statement applying to you: I have been suffering from stress for the past year/ two years/five years.

The self-reporting questionnaire is attached in Appendix E.

Participants reported to only witnessing interpersonal violence with a diagnosis of PTSD and/or depression answering **Yes** to Questions 2 and 4 and **No** to question 1 was also excluded from this study. Participants reported exposure to interpersonal violence such as hijack, robbery and assault answering **Yes** to Question 1 and **No** to Question 4 was included in the study (Sample 1).

The key features in this questionnaire are clarity and simplicity. The validity of a clear item depends on the respondent's willingness and ability to provide that information (Paulhus &

Vazire, 2007). The self-reporting questionnaire was designed to be easy to interpret. What has been identified as a limitation to the questionnaire is that no questions were asked about multiple or alternative traumas that learners experienced. Some learners in Sample 1 could have experienced several traumas, while learners in Sample 2 could have experienced other type of traumas that could have affected them. This limitation could have influenced the validity of the results.

#### **4.5.4 Data analysis**

Personality expression is used as a basis for the identification of the profiles of adolescents' exposed to community related interpersonal violence and those not exposed to such violence. Because variables innate to the 16PF are distributed along the normal distribution curve, parametric and non-parametric techniques will be employed to verify the research hypotheses. In terms of measurement and evaluation, results are expressed at interval level.

Raw scores of the factors of the 16PF were converted into standard ten (sten) scores using the SA92-form norm tables (Prinsloo, 1998). Sten scores reflect a standard 10-point scale that vary from 1 (low) to 10 (high) with a mean of 5.5 and a standard deviation of 2.0 (Cattell 1989). Use of the norms tables allow the respondent to be compared with the scores of a representative sample of the population. To understand and to predict human behaviour well using 16PF, one must take into account the highly configurable nature of the interaction between a vast numbers of variables on the 16PF.

To test hypothesis one, a descriptive analysis of the 16PF scale scores was conducted and thereafter the possible differences between the two groups were explored. A multivariate analysis of variance (MANOVA) was performed to explore differences in the personality traits. The main focus was on the previously identified factors which had the highest likelihood to show differences. Significance at levels of 5% and 1% will be calculated, which will allow the researcher to identify which personality traits among adolescents exposed to interpersonal violence are statistical significantly different. The pairwise

comparisons were done using the Bonferroni adjustment. This was necessary because multiple factors were compared and it could influence type I errors.

To test hypothesis 2 (personality differences based on experience of post- traumatic stress) the reliability of the PDS questionnaire for this sample was investigated firstly. The descriptive statistics for the PSD questionnaire was given for three groups (exposed and high PTSD symptoms; exposed and low PTSD symptom and non-exposed). The differences in the PSD scores of the three groups were investigated using a t-test. The personality scale scores on the identified factors were then compared between the three groups using a MANOVA and post hoc pairwise comparisons (Pallant, 2010).

To test hypothesis three the reliability of the KIDCOPE questionnaire was investigated in order to determine the consistency in measurement for this sample. Secondly, the frequency statistics on the Coping scale was depicted. An inter-correlation matrix between the two coping styles (adaptive and maladaptive) using Pearson's correlation statistics was calculated. Due to a lack of significant correlations, it was not possible to determine the mediating effect of coping (Pallant, 2010).

#### **4.6 VALIDATING THE RESEARCH**

The researcher identified and defined the research problem as accurately as possible. Hypotheses were formulated, making predictions about relationships between specific variables (dependent – personality, independent – interpersonal violence) which are measurable and a valid indicator of the hypothetical variable in which the researcher is interested (Cohen et al., 2000). The population was taken into account. Although it entails a purposive sampling method, the groups were equal on important characteristics such as age (adolescents), grade (grade 12), school, socio-economic status and general potential exposure to interpersonal violence.

Validity of results refers to the appropriateness, meaningfulness and usefulness of specific inferences made from a test score (Babbie & Mouton, 1998). This includes the application of

statistics to questionnaire construction as well as the use of statistical hypothesis testing (Struwig & Stead, 2001). In quantitative data validity may be enhanced through careful sampling, suitable instrumentation and appropriate statistical treatment of the data (Cohen et al., 2000).

The external validity of this study, linking to the time, place and conditions in which the research was conducted, was not compromised. Extraneous variables, which can interfere with the research design as their presence could prevent whether the independent variable result in change to the dependent variable or not, was controlled in implementing the following:

- All participants within the group were treated the same way;
- Measures with acceptable reliability and validity scores were used (Struwig & Stead, 2001).

Taking cognisance of the design choices, the researcher aimed to maximise validity in the study by using face-, construct-, content- and criterion validity, as well as internal consistency reliability. The validity types listed in table 4.3 were considered when interpreting scores.

Table 4.3 Types of Validity

Face validity	Questionnaires measured what it means to measure (16 PF, KIDCOPE, PDS Questionnaire)
Content validity	The items reflected the theoretical content domain of the construct being measured
Criterion-related validity	The ability to predict behavioural criteria (such as self-esteem and creativity)
Construct validity	16 PF was developed using factor analysis and continuous research confirmed construct validity. PDS is based on DSM-category and KIDCOPE is theory-based.

Source (Cohen, Manion & Morrison, 2000; Struwig & Stead, 2001)

The 16PF has been shown to be effective in predicting behavioural criteria such as self-esteem, adjustment, interpersonal skill, empathy, creative potential and leadership potential

(Scherrer et al., 2004). The construct validity of this test demonstrates that it measures sixteen distinct personality traits.

Reliability (accuracy and precision of an instrument) indicates whether a particular technique, applied repeatedly to the same object, would yield the same result regularly (Babbie & Mouton, 1998). With the 16PF the test-retest reliability were found to, as was stability in test scores (Scherrer et al., 2004). While high reliability does not guarantee valid results (as other factors may intervene), results cannot be regarded as valid in the absence of reliability (De Vos, 1998). Reliability was achieved by applying a standardised personality questionnaire as the research instrument of choice. The term 'standardised' refers to those tests and questionnaires that have been standardized for a certain norm population and the test results are usually expressed in terms of a norm score. Results are thus quantified in order to obtain a valid comparison with a similar population group (Cohen et al., 2000).

#### **4.7 ETHICAL CONSIDERATIONS**

While the participants in this research were, at the time of the research, already young adults in the eyes of the law, the researcher held that research with senior adolescents nevertheless require special attention and a child-sensitive approach. It is of utmost importance that informed consent is obtained prior to commencement of the research project. Informed consent involves a research participant's formal agreement to cooperate in a study following full disclosure of the nature of the research and the participant's role in it (Simon in Hales, Yudofsky & Talbott, 1999). The basic components of informed consent are competence, voluntarism, full information and comprehension on the part of the research participant (Imber, Glanz, Elkin, Sotsky, Boyer & Leber, 1996). In other words, research participants must be capable of consenting to participation in the research; they must volunteer and not be coerced into participating against their will. They must have all the information they need to make the decision and they must understand what their participation will involve.

In the interest of the participants in this psychological research and to clarify the responsibilities of researchers, these ethical principles include general guidelines for conducting research, were adhered to (See Appendix B for the consent statement of the

Department of Education, Gauteng for conducting the research; Appendix C for the consent of the headmaster of Jeugland Hoërskool; and Appendix D for the consent from both the adolescent and parent).

In addition to the principles of informed consent, protection against potential harm and the right to confidentiality, the Society for Research in Child Development (1990) has endorsed ethical guidelines for research that address some of the issues unique to research with children. Not only do these guidelines call for confidentiality, protection from harm and debriefing, but they also require informed consent from children's caregivers and from the children themselves if they are age seven and older. These guidelines specify that the research must be explained to children in language they can understand so they can decide whether they wish to participate.

This means that participants will be protected from both physical and psychological harm. These principles also emphasize the researcher's responsibility for the research participants' welfare, because the researcher ultimately must ensure that the welfare of the research participants is given priority over any other consideration, including research design.

Appendix A presents the Ethics approval of the Faculty of Humanities of the University of Pretoria.

## **4.8 CONCLUSION**

This chapter offered a comprehensive description of the aim of the study, the hypotheses, the relevant research methodology and the data analysis. In the following chapter the data of the empirical investigation will be discussed and analysed. The research findings and conclusions will be outlined.

## CHAPTER FIVE

### FINDINGS OF THE EMPIRICAL STUDY

#### 5.1 INTRODUCTION

Departing from a premise that personality formation is a process that starts in childhood and that this process is subject to experiences of violence, this research explored the expression of emergent personality functioning among adolescents who had been exposed to community related interpersonal violence in particular.

Previous research (Balbernie, 2001; Bremner, 2006; Perry, Pollard, Blakley, Baker & Vigilante, 1995; Yehuda, 2006) shows that trauma and stress associated with interpersonal violence can adversely affect the neurobiology of the individual, since social, emotional, and cognitive influences interact in multi-faceted ways with neurobiological systems to affect adaptive functioning. The goal of this research is thus to explore the influence of exposure to community related interpersonal violence on the personality functioning of adolescents. The most significant findings of the present study are summarized in this chapter.

Firstly, the descriptive data of the 16PF questionnaire completed by the two groups of adolescents are given. A MANOVA was performed to explore differences in the personality traits between the two groups. Secondly, the descriptive data of the PDS questionnaire is provided. A MANOVA is used to investigate the effect of high and low scores on the PDS questionnaire on the personality traits of the adolescents. Thirdly, the KIDCOPE results are analysed using descriptive statistics. All the calculations were done by means of the SPSS Windows version 19.0 statistical analysis program.

#### 5.2 THE CHARACTERISTICS OF THE PARTICIPANTS

Table 5.1 provides information on the biographical characteristics of Sample 1 (adolescents exposed to interpersonal violence) and Sample 2 (adolescents not exposed to interpersonal violence).



Table 5.1 Characteristics of the participants

	Mean age	Gender	
		Male	Female
Sample 1 (S1) (n = 93)	18 years 7 months	54 (58%)	36 (42%)
Sample 2 (S2) (n = 90)	18 years 9 months	47 (52%)	43 (48%)

The 183 research participants were selected from a group of 335 grade 12 learners from a single secondary school, as detailed in chapter four. The 183 were placed into two sample groups by means of purposive sampling as follows: Sample 1 consisted of all the research participants that reported exposure to community related interpersonal violence during the past 5 years on the self-reporting questionnaire (n = 93). The research participants that did not report exposure to such violence formed Sample 2 (n = 90). All participants were 18 years and older to meet the normative prerequisites of the 16PF.

It is unknown how many of the 172 non-participants from the total of 335 grade 12 learners had been subjected to community related interpersonal violence. From the 335, it may be expected that in total significantly more than the 93 learners in sample 1 had indeed been so exposed. This reflects alarmingly high levels of community related interpersonal violence.

The participants in Sample 1 were exposed to interpersonal violence such as hijacking, robbery and physical assault (See table 5.2). The incidents occurred over the past five years, while they were in grade 7 to grade 11. The participants were physically involved and exposed to interpersonal violence during the adolescent phase and not only witnessing interpersonal violence.

Table 5.2 Type of violence exposed to (n=93)

Type of violence	F (%)
Armed robbery	58 (62.4%)
Hijacking	17 (18.3%)
Physical Assault	18 (19.3%)

The statistics used to test each hypothesis will be outlined below.

### 5.3 HYPOTHESIS 1

From the literature study (chapters 2 and 3) the assumption is made that the neurological or biological changes, due to the experience of interpersonal violence can have an impact on the expression of personality. The inference is that prior experience, whether nurture or violence, will have an impact on brain chemistry, i.e., the biological basis of personality, and as such will be reflected in the way that personality is expressed. Based on the literature the following hypotheses were formulated:

H0: Adolescents exposed to incidents of community related interpersonal violence will not express their personality in different ways than adolescents not exposed to such violence.

H1: Adolescents exposed to incidents of community related interpersonal violence will express their personality in different ways than adolescents not exposed to such violence. This will especially be reflected on the following factors on the 16PF:

- Factor G – (Low): Rule-conscious versus Expedient;
- Factor I+ (High): Feeling versus Thinking;
- Factor O+ (High): Guilt proneness versus Self-confidence and resilience;
- Factor Q4+ (High): Tense versus Relaxed temperaments.

To test hypothesis one, a descriptive analysis of the 16PF scale scores for the two groups was conducted and thereafter the possible differences in the personality traits of the adolescents in the two groups were explored using a MANOVA. The main focus was on factors that would, according to literature, be most likely to show differences.

### 5.3.1 Descriptive statistics of the 16PF Questionnaire Standard Scores

Table 5.3 provides the descriptive statistics of 16PF data of the two groups (Sample 1/Sample 2), with specific reference to the number of valid cases for each variable, the means, and standard deviations attained. Standard scores for the 16PF Questionnaire ranges from 1 to 10 (sten scores).

Table 5.3 Descriptive Statistics of the 16PF Questionnaire standard scores

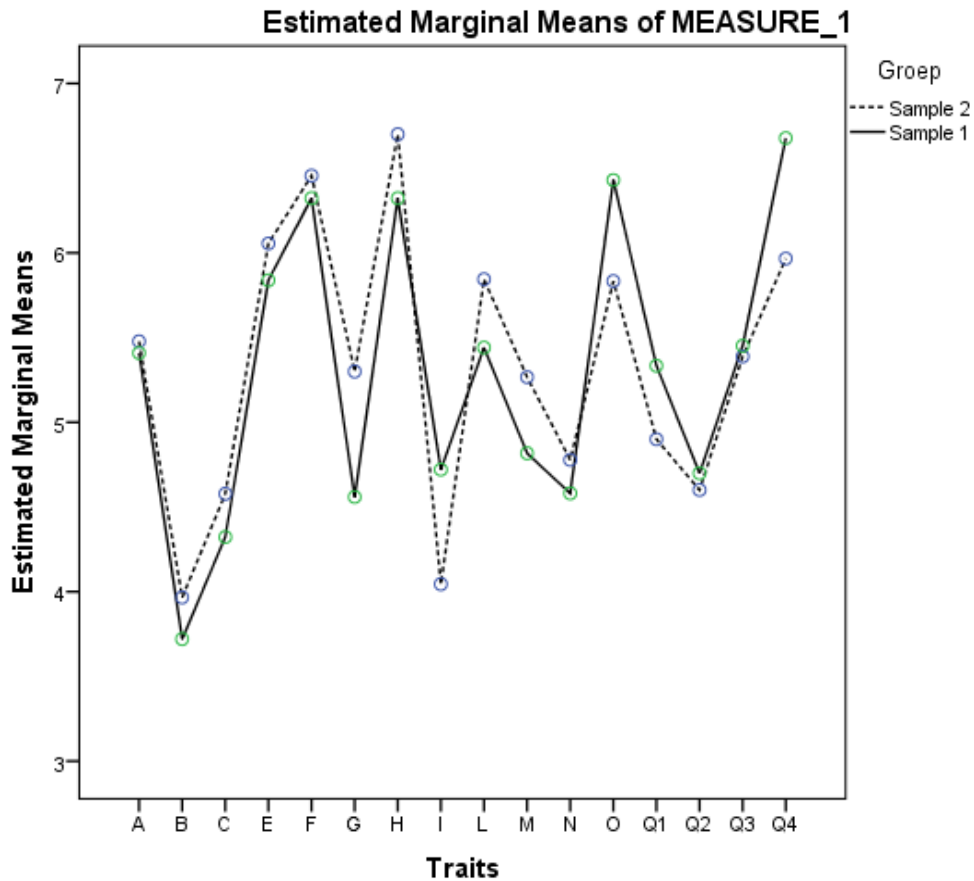
Trait	Group	Mean	Std. Deviation	N
A	S2	5.48	1.825	90
	S1	5.41	1.663	93
	Total	5.44	1.740	183
B	S2	3.97	1.751	90
	S1	3.72	1.784	93
	Total	3.84	1.767	183
C	S2	4.58	1.860	90
	S1	4.32	2.313	93
	Total	4.45	2.101	183
E	S2	6.06	1.844	90
	S1	5.84	1.924	93
	Total	5.95	1.883	183
F	S2	6.46	1.670	90
	S1	6.32	1.770	93
	Total	6.39	1.718	183
G	S2	5.30	1.732	90
	S1	4.56	2.129	93
	Total	4.92	1.974	183
H	S2	6.70	1.795	90
	S1	6.32	1.866	93
	Total	6.51	1.836	183
I	S2	4.04	1.860	90
	S1	4.72	1.651	93
	Total	4.39	1.784	183
L	S2	5.84	1.860	90
	S1	5.44	1.874	93
	Total	5.64	1.873	183
M	S2	5.27	2.087	90
	S1	4.82	1.876	93
	Total	5.04	1.990	183
N	S1	4.78	1.999	90
	S2	4.58	1.974	93
	Total	4.68	1.983	183
O	S2	5.83	2.174	90
	S1	6.43	2.407	93
	Total	6.14	2.308	183
Q1	S2	4.90	2.288	90
	S1	5.33	2.184	93
	Total	5.12	2.240	183

Q2	S2	4.60	1.965	90
	S1	4.70	1.932	93
	Total	4.65	1.944	183
Q3	S2	5.39	1.981	90
	S1	5.45	2.204	93
	Total	5.42	2.092	183
Q4	S2	5.97	1.659	90
	S1	6.68	1.854	93
	Total	6.33	1.792	183

The means and standard deviations of the 16PF results are presented in this table. A standard deviation is a statistical index that reflects the degree of dispersion in a group of scores (Pallant, 2010). If the scores are tightly packed around a central value, the standard deviation will be small. According to this table the standard deviation ranges between 1.651 and 2.407. For all 16 traits these standard deviations were small relative to the sizes of the corresponding means. It is concluded that the 16PF scores were clustered around the mean and the variances displayed were not too large relative to the means.

The mean scores of the 16PF traits of the two groups are presented graphically in figure 5.1.

Figure 5.1 Mean scores of the 16 PF traits



### 5.3.2 Multivariate analysis

Profile analysis is a special application of multivariate analysis of variance (MANOVA) to a situation where there are several dependent variables, all measured on the same scale (Tabachnick & Fidell, 1989). The aim of the analysis was to compare the means of the 16PF traits between sample 1 and sample 2. To test if it is appropriate to do a MANOVA on the data set, the following tests were done to check the assumptions of MANOVA.

#### 5.3.2.1 Box's Test of Equality of covariance matrices

Box's test (Table 5.4) tests whether the data of this study violates the assumption of homogeneity of variance-covariance matrices (Pallant, 2010).

Table 5.4 Box's Test of Equality of covariance matrices

<b>Box's Test of Equality of Covariance Matrices<sup>a</sup></b>	
Box's M	145.024
F	0.968
df1	136
df2	100946.155
Sig.	0.589
Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.	
<sup>a</sup> Design: Intercept + Group Within Subjects Design: traits	

The significance value is 0.589, which is much larger than 0.05. This indicates that the assumption has not been violated. Box's test of equality of covariance matrices is sensitive to deviations from normality of the dependent variables. Although none of the dependent variables to be included in the MANOVA were normally distributed, "a violation of this assumption has minimal impact if the groups are of approximately equal size" (Hair, Black, Babin & Anderson, 2010, p. 365) and this was the case here.

Table 5.5 Levene's Test of Equality of Error variances

<b>Levene's Test of Equality of Error Variances<sup>a</sup></b>				
	F	df1	df2	Sig.
A	1.270	1	181	0.261
B	1.225	1	181	0.270
C	5.118	1	181	0.025
E	0.458	1	181	0.499
F	0.135	1	181	0.713
G	5.430	1	181	0.021
H	0.000	1	181	0.997
I	1.680	1	181	0.197
L	0.538	1	181	0.464
M	1.486	1	181	0.225
N	0.013	1	181	0.910
O	2.381	1	181	0.125
Q1	0.130	1	181	0.719
Q2	0.000	1	181	0.983
Q3	1.117	1	181	0.292
Q4	3.353	1	181	0.069

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
<sup>a</sup> Design: Intercept + Group Within Subjects Design: traits

Based on the findings presented in Table 5.5, it was found that the variances of the individual traits C and G differed significantly across the two groups (sample 1 and sample 2) (significance values of 0.025 and 0.021 for C and G respectively). For the other 14 traits there were no significant statistical differences in the variances. In the next section a multivariate analysis of variation will be performed and the assumption of sphericity will be evaluated.

### 5.3.3 Multivariate analysis of variance (MANOVA)

Multivariate analysis of variance (MANOVA) is an extension of analysis of variance for use when more than one dependant variable is used (Pallant, 2010). A one-way MANOVA for independent samples was conducted to determine whether there are statistically significant differences between the two groups in terms of personality traits. Table 5.6 provides the results of the MANOVA.

Table 5.6 Multivariate tests

Multivariate Tests <sup>b</sup>							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Traits	Pillai's Trace	.750	33.457 <sup>a</sup>	15.000	167.000	0.001	0.750
	Wilks's Lambda	.250	33.457 <sup>a</sup>	15.000	167.000	0.000	0.750
traits * Group	Pillai's Trace	.153	2.007 <sup>a</sup>	15.000	167.000	0.017	0.153
	Wilks's Lambda	.847	2.007 <sup>a</sup>	15.000	167.000	0.017	0.153
<sup>a</sup> Exact statistic							
<sup>b</sup> Design: Intercept + Group							

One of the most frequently reported statistics to determine statistically significant differences among groups is Wilks's Lambda. However, the present study's sample size does not adhere to the assumptions set for the use of Wilks's Lambda and hence Pillai's Trace was used. The latter is believed to be a more robust test (Pallant, 2010). The profile analysis indicated that there were significant differences in the 16PF across the sample groups ( $p$  value  $< 0.05$ ; partial eta squared = 0.153).

Before determining which factors differ significantly from one another, Mauchly's Test of Sphericity was done to determine if measures analysis of variance would suffice to determine the former. Mauchly's Test of Sphericity is important because it determines whether the assumption of sphericity in the data set is violated. If sphericity is violated, the researcher knows that the variance calculations may be distorted and this could result in an incorrect  $F$ -value.

Table 5.7 Mauchly's Test of Sphericity

Mauchly's Test of Sphericity <sup>b</sup>							
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	Df	Sig.	Epsilon <sup>a</sup>		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Traits	0.056	507.712	119	0.000	0.681	0.729	0.067

Tests the null hypothesis that the error covariance matrix of the ortho-normalized transformed dependent variables is proportional to an identity matrix.

The table indicated that there is a significant difference among the groups and sphericity is thus violated. To counter this, the Greenhouse-Geisser correction was used (Greenhouse-Geisser effect = 0.681) for further analysis.

Table 5.8 Tests of Between-Subjects Effects

Tests of Between-Subjects Effects						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	82420.155	1	82420.155	21787.888	0.000	0.992
Group	0.745	1	0.745	0.197	0.658	0.001
Error	684.695	181	3.783			



From Table 5.8 it can be ascertain that there is an interaction between group and trait and not between the groups only; therefore the results will be further explored.

Table 5.9 Tests of Within-Subjects Effects

Tests of Within-Subjects Effects							
Source		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Traits	Greenhouse-Geisser	1773.072	10.215	173.577	31.399	0.000	0.148
Traits Group	Greenhouse-Geisser	127.782	10.215	12.509	2.263	0.012	0.012

As depicted in table 5.15 there is a significant difference in the mean scores across the traits of the 16PF as expected (Greenhouse-Geisser F value = 31.399,  $p < 0.001$ ). There is an interaction effect between the traits and group (Greenhouse-Geisser F value = 2.263,  $p < 0.05$ ; partial eta squared = 0.012), which indicate that some traits differ between Sample 1 and Sample 2.

In performing the tests between subjects to determine which traits showed differences, the Bonferonni adjustment (Pallant, 2010) was used, as several tests were used on the same data. This could influence the Type I error. The level of significance ( $p < 0.05$ ) is thus divided by the number of the tests done. Significant differences would then be indicated if the p-value was smaller than 0.003, which was not the case for this data. Although the MANOVA showed that there were some significant interaction between group and trait, the specific differences in traits between the two groups could thus not be identified through the post-hoc tests.

### 5.3.4 MANOVA on selected factors

From the MANOVA using all factors (above) it can be concluded that there were differences in some of the traits between the two groups, but not for the personality profile as a whole. It was decided to test for differences in the traits that were identified from the literature as potential indicators of experience of violence (Factor G, I, O and Q4). The same procedure was followed to test if it is appropriate to do a MANOVA on the data set. The Box test of equality of covariance showed a significance value of 0.67 which is larger than 0.05. The assumption of homogeneity has not been violated. Levene's test for equality of variances shows that there are no statistical differences in the variance of the four selected variables. The data can thus be analysed using a MANOVA.

Table 5.10 Multivariate Tests

Multivariate Tests <sup>a</sup>						
Effect		Value	F	Hypothesis df	Error df	Sig.
	Wilks's Lambda	0.027	1609.444 <sup>b</sup>	4.000	178.000	0.000
	Wilks's Lambda	0.923	3.723 <sup>b</sup>	4.000	178.000	0.006
<sup>a</sup> Design: Intercept + Group						
<sup>b</sup> Exact statistic						

One of the most frequently reported statistics to determine statistically significant differences among groups is Wilks's Lambda (Pallant, 2007). The results suggest a Wilks's Lambda value of 0.923, ( $p < 0.006$ ). This indicates that there is statistically significant difference in the personality profile between the groups on factors G, I, O, and Q4.

#### 5.3.4.1 Test of Between-subject effects for the 16PF Questionnaire

A significant result was obtained on the MANOVA ( $p < 0.05$ ). As a result the next step was to determine which factors caused these significant differences. In order to do so, the tests for between-subjects effects were performed.

Since Sample 1 and Sample 2 have been tested on different variables, a Bonferonni adjustment was applied. The Bonferonni adjustment involves dividing the alpha level of 0.05 by the number of analyses that were conducted. For the purposes of this study, the Bonferonni adjustment was determined by dividing 0.05 by four (amount of dependent variables used in analysis) (Pallant, 2010). When using the Bonferonni adjustment, significant differences will be at a level of  $p < 0.0125$ . The results of the test of between-subject effects are depicted in Table 5.11 below.

Table 5.11 Tests of Between-subjects effects

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	G	25.104 <sup>a</sup>	1	25.104	6.645	0.011
	I	20.900 <sup>b</sup>	1	20.900	6.773	0.010
	O	16.289 <sup>c</sup>	1	16.289	3.093	0.080
	Q4	23.105 <sup>d</sup>	1	23.105	7.452	0.007
Intercept	G	4445.826	1	4445.826	1176.755	0.000
	I	3513.709	1	3513.709	1138.622	0.000
	O	6878.584	1	6878.584	1306.020	0.000
	Q4	7312.220	1	7312.220	2358.265	0.000
Group	G	25.104	1	25.104	6.645	0.011
	I	20.900	1	20.900	6.773	0.010
	O	16.289	1	16.289	3.093	0.080
	Q4	23.105	1	23.105	7.452	0.007
Error	G	683.825	181	3.778		
	I	558.553	181	3.086		
	O	953.296	181	5.267		
	Q4	561.223	181	3.101		
Total	G	5145.000	183			
	I	4103.000	183			
	O	7861.000	183			
	Q4	7912.000	183			
Corrected Total	G	708.929	182			
	I	579.454	182			
	O	969.585	182			
	Q4	584.328	182			
<sup>a</sup> R Squared = 0.035 (Adjusted R Squared = 0.030)						
<sup>b</sup> R Squared = 0.036 (Adjusted R Squared = 0.031)						

<sup>c</sup> R Squared = 0.017 (Adjusted R Squared = 0.011)
<sup>d</sup> R Squared = 0.040 (Adjusted R Squared = 0.034)

From this table it is evident that there is a statistically significant differences in the means for Factors G ( $p = 0.011$ ), I ( $p = 0.010$ ) and Q4 ( $p = 0.007$ ) between Sample 1 and Sample 2. The interpretation of the results will be discussed in Chapter 6.

### 5.3.5 Concluding remark

It can therefore be stated that:

- The hypothesis (which states that adolescents exposed to incidents of community related interpersonal violence will express their personality in a different way than adolescents not exposed to such violence) can be partially accepted based on the differences in three factors of the 16PF. Of the factors that were identified to show potential differences, three of the four factors (Factor G, I and Q4) showed significant differences between Sample 1 and Sample 2.

## 5.4 HYPOTHESIS 2

The inference is that prior experience, whether nurture or violence, can have an impact on brain chemistry, the biological basis of personality, and as such will be reflected in the way that personality is expressed. Based on the literature of posttraumatic stress quoted in Chapter 3 it is shown that certain people develop posttraumatic stress after experiencing intense trauma. Because of the seriousness of these symptoms it is hypothesized that the experience of posttraumatic stress could have an impact on the expression of personality as described in Chapters 2 and 3.

Based on the literature the following hypotheses were formulated:

H<sub>0</sub>: The personality expression of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post- traumatic stress, will not differ significantly from those who have not experienced such violence;

H1: The personality profile of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post- traumatic stress, will differ significantly from those who have not experienced such violence reflecting on the following factors;

- Factor G (Low): Self-indulgent and disregards obligations to people;
- Factor I (High): Perception might be emotionally influenced;
- Factor O (High): Depressed mood and feelings of guilt;
- Factor Q4 (High): Elevated levels of anxiety.

To test hypothesis 2 (personality differences based on experience of post- traumatic stress) the reliability of the PDS questionnaire for this sample was investigated firstly. The descriptive statistics for the PSD questionnaire was given for three groups (exposed and high PTSD symptoms; exposed and low PTSD symptom, and non-exposed). The differences in the PSD scores of the three groups were investigated using a t-test. The personality scale scores on the identified factors were then compared between the three groups using a MANOVA and post hoc pairwise comparisons (Pallant, 2010).

#### **5.4.1 Reliability statistics for the PDS questionnaire**

The reliability of the total PDS scores as well as for the three subscales is investigated in order to determine the consistency of the measurement for this sample. The Cronbach's Alpha Coefficient is used to give a measure of the internal consistency of the instrument (Tabachnich & Fidell, 1989). A Cronbach's Alpha Coefficient of 0.70 or higher is considered to be acceptable.

A reliability analysis was conducted on the results of the PDS questionnaire as a whole and for the subscales and is reported in Table 5.12.

Table 5.12 Reliability analysis for the PDS

Sample 2 (N = 90) Sample 1 (N = 93)				
Subscale	Group	Cronbach's Alpha	Cronbach's Alpha based on standardised items	N of Items
<b>Re-experiencing</b>	S2	0.857	0.859	7
	S1	0.893	0.894	7
<b>Avoidance</b>	S2	0.863	0.864	10
	S1	0.887	0.886	10
<b>Arousal</b>	S2	0.886	0.888	7
	S1	0.856	0.857	7
<b>Total Score</b>	S2	0.942	0.943	24
	S1	0.949	0.949	24

This table illustrates that the total score as well as all the subscales of the PDS questionnaire had highly acceptable reliability scores ranging from 0.856 to 0.949. There is thus a high consistency in the measurement.

#### 5.4.2 Descriptive statistics for the PDS

Table 5.13 provides the frequency of the symptoms experienced according to the PDS for both Sample 1 and Sample 2.

Table 5.13 Frequency of Posttraumatic Stress Disorder Symptoms

Symptom	S2 (N = 90)		S1 (N = 92)	
	Frequencies	(%)	Frequencies	(%)
1. Intrusive images	17	18.9	39	42.4
2. Nightmares	11	12.2	26	28.2
3. Reliving of trauma	10	11.1	19	20.7
4. Emotionally upset when reminded of trauma	26	28.9	38	41.3
5. Physical reaction when	10	11.1	23	25

reminded of trauma				
6. Trying not to think, talk, feel about the trauma	19	21.1	32	24.8
7. Trying to avoid activities, places, people	13	14.5	31	33.7
8. Memory loss	12	13.4	20	21.8
9. Loss of interest	5	5.6	11	22.9
10. Feeling distant	15	16.7	31	33.7
11. Feeling emotionally numb	12	13.3	23	25
12. Lack of future plans	17	18.9	35	38.1
13. Difficulty sleeping	22	24.4	37	40.3
14. Irritability	23	25.6	31	33.7
15. Difficulty concentrating	18	20	33	35.9
16. Overly alert	12	13.4	29	31.5
17. Easily startled	13	14.4	25	27.2

Table 5.14 indicated that adolescents exposed to community related interpersonal violence (sample 1) endorsed each of the PTSD symptoms more frequently than the adolescents not exposed to such violence (sample 2). One participant did not complete the PDS questionnaire, therefore Sample 1 constitutes of 92 participants in this regard.

The total PDS score as well as the scores for the three subscales were calculated and then converted into percentages by dividing each score (sub-score) by the number of items in the scale (sub-scale). Descriptive statistics for these constructs of posttraumatic stress symptoms appear in Table 5.14.

Table 5.14 Descriptive statistics and t-test results of the two groups

Subscale	Group	Mean %	Std. Deviation	T value	P value
<b>Re-experiencing</b>	S2 (n=90)	42.22	32.25892	-1.572	0.118
	S1 (n=92)	50.31	36.95510		
<b>Avoidance</b>	S2	38.66	29.03698	-2.107	0.037
	S1	48.36	32.92606		
<b>Arousal</b>	S2	44.44	35.86290	-2.493	0.014

	S1	57.45	34.53976		
<b>Total score</b>	S2	41.38	28.11993	-2.288	0.023
	S1	51.58	31.83349		

The means and standard deviation of the PDS questionnaire can be ascertained from this table.

To determine whether differences in PDS scores between Sample 1 and Sample 2 are statistically significant, t-tests for independent samples were performed on the total PDS scores as well as the sub-scales (table 5.16). Levene's test for equal variances were done and taken into account in the interpretation.

The results of the t-tests for the PDS scale as a whole as well as two of the subscales (Avoidance and Arousal scales) confirm that Sample 1 differed significantly from those for Sample 2 ( $p < 0.05$ ). It shows that on average adolescents in Sample 1 experienced more PTSD symptoms than adolescents in Sample 2.

The relative high scores of Sample 2 on the PDS should be noted. This group was not exposed to community related interpersonal violence but still experienced some post-traumatic stress. This result will be discussed in the next chapter.

After it was found that the two groups differed with regard to their mean PDS scores, the differences in personality profile was explored between adolescents exposed to community related interpersonal violence (sample1) who experienced high and low levels of PDS and adolescents who have not experienced such violence (sample 2).

### **5.4.3 MANOVA of the 16PF items across 3 groups with different levels of PDS scores**

To test the hypothesis if adolescents exposed to community related interpersonal violence who experience high levels of PTSD expressed their personality differently, a MANOVA for three independent samples was used. By means of the MANOVA the personality profiles of the following three groups were analysed:



- Group 1 was adolescents in Sample 1, who experienced high levels of posttraumatic stress (PTSD score  $\geq 36$ ) (n=23);
- Group 2 was adolescents in Sample 1 who experienced low levels of post-traumatic stress (PTSD score  $< 36$ ) (n=69);
- Group 3 was adolescents in Sample 2 (n=90).

In table 5.15 the mean 16PF scores of the four traits that were identified in the literature as potentially affected by the exposure to violence (G, I, O, and Q4) are given for the three groups.

Table 5.15 Descriptive Statistics of 16PF scores for 3 groups

Descriptive Statistics				
	PDS_Total_recoded	Mean	Std. Deviation	N
G_16PF	Sample 1 Low PDS score	4.71	2.204	69
	Sample 1 High PDS score	4.17	1.899	23
	Sample 2	5.30	1.732	90
	Total	4.93	1.974	182
I_16PF	Sample 1 Low PDS score	4.46	1.558	69
	Sample 1 High PDS score	5.43	1.754	23
	Sample 2	4.04	1.860	90
	Total	4.38	1.785	182
O_16PF	Sample 1 Low PDS score	6.36	2.345	69
	Sample 1 High PDS score	6.78	2.558	23
	Sample 2	5.83	2.174	90
	Total	6.15	2.303	182
Q4_16PF	Sample 1 Low PDS score	6.46	1.883	69
	Sample 1 High PDS score	7.43	1.532	23
	Sample 2	5.97	1.659	90
	Total	6.34	1.788	182

To determine differences between the three groups a MANOVA was performed on traits G, I, O, and Q4 of the 16PF. The following tests were done to ascertain the use of a MANOVA.

#### 5.4.4 Box's Test of Equality of Covariance Matrices

Box's test will identify whether the data of this study violates the assumption of homogeneity of variance-covariance matrices.

Table 5.16 Box's test of equality of covariance matrices

<b>Box's Test of Equality of Covariance Matrices<sup>a</sup></b>	
Box's M	21.523
F	1.024
df1	20
df2	16396.986
Sig.	.428
Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.	
<sup>a</sup> Design: Intercept + PDS_Total_recoded	

The significance value is 0.428, therefore larger than 0.05 indicating that the assumption has not been violated. Therefore, the variables can be compared with each other. Next Levene's test for equality of error variance was done (Table 5.17).

Table 5.17 Levene's Test of Equality of Error Variances

<b>Levene's Test of Equality of Error Variances<sup>a</sup></b>				
	F	df1	df2	Sig.
G_16PF	2.980	2	179	.053
I_16PF	1.066	2	179	.347
O_16PF	.843	2	179	.432
Q4_16PF	1.310	2	179	.272
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.				
<sup>a</sup> Design: Intercept + PDS_Total_recoded				

Based on the findings presented in Table 5.17, it is concluded that there were no significant differences in the variances of the variables under investigation. The data was thus adequate for further statistical analysis.

### 5.4.5 Multivariate tests

This set of multivariate tests will indicate whether there are statistically significant differences in the 16PF scores of adolescents exposed to community related interpersonal violence (Sample 1) with high and low PTSD scores and adolescents that have not experienced such violence (Sample 2). The results appear in Table 5.18.

Table 5.18 Multivariate tests

Multivariate Tests <sup>a</sup>						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.965	1221.070 <sup>b</sup>	4.000	176.000	.000
	Wilks's Lambda	.035	1221.070 <sup>b</sup>	4.000	176.000	.000
PDS total score	Pillai's Trace	.128	3.023	8.000	354.000	.003
	Wilks's Lambda	.873	3.099 <sup>b</sup>	8.000	352.000	.002
<sup>a</sup> Design: Intercept + PDS_Total_recoded						
<sup>b</sup> Exact statistic						
<sup>c</sup> The statistic is an upper bound on F that yields a lower bound on the significance level.						

The results indicate a Pillai's Trace value of 0.965 with p-value ( $p < 0.001$ ) for trait and a p-value of 0.003 for the interaction between trait and the three groups based on the PDS scores. The mean score of two of the 16PF factors investigated differ significantly across the three groups.

The Sphericity assumption requires that the variance of the population difference score for any two conditions are similar to the variance of the population difference scores for any other two condition; an assumption that is commonly violated (Pallant, 2010). This is assessed utilising Mauchly's test of Sphericity (Pallant, 2010).

Table 5.19 Mauchly's test of Sphericity

Mauchly's Test of Sphericity <sup>a</sup>							
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup>		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound

Traits	0.790	41.802	5	.000	0.869	0.893	0.333
Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.							
<sup>a</sup> Design: Intercept + PDS_Total_coded Within Subjects Design: traits							
<sup>b</sup> May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.							

The table indicated that the assumption of sphericity is violated. To counter this, the Greenhouse-Geisser correction was used (Greenhouse-Geisser effect = 0.869). Since the Greenhouse-Geisser correction of 0.869 is closer to 1 than to 0.333, it seems that the variances of the differences between the traits are reasonably homogeneous. This was followed by the test of between-subjects effects to determine on which factors differences can be found (Table 5.20).

Table 5.20 Test of between subjects Effects

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	G_16PF	28.802 <sup>a</sup>	2	14.401	3.811	0.024
	I_16PF	36.207 <sup>b</sup>	2	18.103	5.994	0.003
	O_16PF	21.337 <sup>c</sup>	2	10.669	2.035	0.134
	Q4_16PF	41.168 <sup>d</sup>	2	20.584	6.852	0.001
Intercept	G_16PF	2912.295	1	2912.295	770.691	0.000
	I_16PF	2814.145	1	2814.145	931.743	0.000
	O_16PF	5213.713	1	5213.713	994.565	0.000
	Q4_16PF	5712.431	1	5712.431	1901.624	0.000
PDS total score	G_16PF	28.802	2	14.401	3.811	0.024
	I_16PF	36.207	2	18.103	5.994	0.003
	O_16PF	21.337	2	10.669	2.035	0.134
	Q4_16PF	41.168	2	20.584	6.852	0.001
Error	G_16PF	676.407	179	3.779		
	I_16PF	540.634	179	3.020		
	O_16PF	938.355	179	5.242		
	Q4_16PF	537.712	179	3.004		
Total	G_16PF	5136.000	182			
	I_16PF	4067.000	182			
	O_16PF	7852.000	182			
	Q4_16PF	7896.000	182			

Corrected Total	G_16PF	705.209	181			
	I_16PF	576.841	181			
	O_16PF	959.692	181			
	Q4_16PF	578.879	181			
<sup>a</sup> R Squared = 0.041 (Adjusted R Squared = 0.030)						
<sup>b</sup> R Squared = 0.063 (Adjusted R Squared = 0.052)						
<sup>c</sup> R Squared = 0.022 (Adjusted R Squared = 0.011)						
<sup>d</sup> R Squared = 0.071 (Adjusted R Squared = 0.061)						

The between-subjects effect ( $p < 0.000$ ) implies represents significant differences across the three groups.

The basic post hoc tests option available in the SPSS GLM Repeated Measures procedure was used to determine which of the means of the 16PF scores differed significantly from one another. The pairwise comparisons were done using the Bonferroni adjustment and are summarised in Table 5. 21.

Table 5.21 Pairwise comparisons

Multiple Comparisons							
Bonferroni							
Dependent Variable	(I) PDS_Total_recoded	(J) PDS_Total_recoded	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
G 16PF	Sample 1 Low PDS score	Sample 1 High PDS score	0.54	0.468	0.760	-0.59	1.67
		Sample 2	-0.59	0.311	0.179	-1.34	0.16
	Sample 1 High PDS score	Sample 1 Low PDS score	-0.54	0.468	0.760	-1.67	0.59
		Sample 2	-1.13*	0.454	0.042	-2.22	-0.03
	Sample 2	Sample 1 Low PDS score	0.59	0.311	0.179	-0.16	1.34
		Sample 1 High PDS score	1.13*	0.454	0.042	0.03	2.22
I 16PF	Sample 1 Low PDS score	Sample 1 High PDS score	-0.97	0.418	0.064	-1.98	0.04
		Sample 2	0.42	0.278	0.400	-0.25	1.09
	Sample 1 High PDS score	Sample 1 Low PDS score	0.97	0.418	0.064	-0.04	1.98
		Sample 2	1.39*	0.406	0.002	0.41	2.37
	Sample 2	Sample 1 Low PDS score	-0.42	0.278	0.400	-1.09	0.25
		Sample 1 High PDS score	-1.39*	0.406	0.002	-2.37	-0.41

O 16PF	Sample 1 Low PDS score	Sample 1 High PDS score	-0.42	0.551	1.000	-1.75	0.91
		Sample 2	0.53	0.366	0.452	-0.36	1.41
	Sample 1 High PDS score	Sample 1 Low PDS score	0.42	0.551	1.000	-0.91	1.75
		Sample 2	0.95	0.535	0.233	-0.34	2.24
	Sample 2	Sample 1 Low PDS score	-0.53	0.366	0.452	-1.41	0.36
		Sample 1 High PTSD score	-0.95	0.535	0.233	-2.24	0.34
Q4 16PF	Sample 1 Low PDS score	Sample 1 High PDS score	-0.97	0.417	0.063	-1.98	0.04
		Sample 2	0.50	0.277	0.224	-0.17	1.17
	Sample 1 High PDS score	Sample 1 Low PDS score	0.97	0.417	0.063	-0.04	1.98
		Sample 2	1.47*	0.405	0.001	0.49	2.45
	Sample 2	Sample 1 Low PDS score	-0.50	0.277	0.224	-1.17	0.17
		Sample 1 High PDS score	-1.47*	0.405	0.001	-2.45	-0.49
Based on observed means.							
The error term is Mean Square (Error) = 3.004.							
*. The mean difference is significant at the 0.05 level.							

This table indicates a statistical significant difference between the mean scores of Sample 2 and the Sample 1 High score group on factors G ( $p < 0.042$ ), I ( $p < 0.002$ ) and Q4 ( $p < 0.001$ ). Although Sample 1 Low PDS score and Sample 1 High score PDS differed slightly, significant differences was found for the adolescents not exposed to violence and those exposed to violence and having symptoms of PTSD.

#### 5.4.6 Concluding remark

It can therefore be stated that:

- The alternative hypothesis (which states that the personality profile of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of posttraumatic stress, will differ significantly with regard to selected factors from those who have not experienced such violence) can be accepted. There were significant differences with regard to Factors G, I and Q4 despite the small numbers of adolescents that experienced symptoms of PTSD.

## 5.5 HYPOTHESIS 3

Coping is a dynamic, purposeful process by which an adolescent react to stimuli appraised as taxing or exceeding his/her resources, including behavioural, emotional, and cognitive attempts to manage the demands imposed by a stressor (Seiffge-Krenke, Aunola & Nurmi, 2009). Previous research denote that coping that was more avoidant in nature predicted more PTSD symptoms over time (Krause, Kaltman, Goodman & Dutton, 2008).

Based on the literature study the following hypotheses were formulated:

H0: The coping style (positive or negative coping) of adolescents exposed to community related interpersonal violence will not influence/ facilitate the development of posttraumatic stress and differences in the expression of personality.

H1: The coping style of adolescents exposed to community related interpersonal violence will mediate the development of post- traumatic stress and differences in the expression of personality. Adolescents exposed to community related interpersonal violence utilizing adaptive/positive coping styles will differ in the experience of posttraumatic stress and with regard to the impact on personality factors than adolescents exposed to community related interpersonal violence utilizing maladaptive/negative coping styles.

To test hypothesis three the following analysis was done. The reliability of the KIDCOPE questionnaire was investigated in order to determine the consistency in measurement for this sample. Secondly, the frequency statistics on the Coping scale was depicted. An inter-correlation matrix between the two coping styles (adaptive and maladaptive) using Pearson's correlation statistics was calculated. Due to a lack of significant correlations, it was not possible to determine the mediating effect of coping (Pallant, 2010).

### 5.5.1 Reliability statistics for the KIDCOPE

The KIDCOPE was administered only in the S1 group where they indicated how they coped with the incident of violence. The KIDCOPE is comprised of 15 items and these items are evaluated on a Likert-scale. The individual coping strategies were combined into higher

order coping styles (e.g., negative/positive coping) (Spirito, Stark, Grace & Stamoulis, 1995). The maladaptive score (negative coping) includes coping through distraction, social withdrawal, self-criticism, blaming others, wishful thinking, and resignation. The adaptive score (positive coping) includes cognitive restructuring, problem solving, emotional regulation and social support (Piazza-Waggoner, Adams, Muchant, Wilson & Hogan, 2006).

Reliability analysis, using the Cronbach's Alpha Coefficient to determine the consistency in the measuring instrument is given in table 5.22.

Table 5.22 Reliability statistics for the KIDCOPE

<b>Subscale</b>	<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha on standardized Items</b>	<b>N of Items</b>
<b>Negative score</b>	0.557	0.558	8
<b>Positive score</b>	0.585	0.581	5
<b>Total score</b>	0.613	0.611	13

This table illustrates that the KIDCOPE scores yielded a Cronbach Alpha Coefficient of 0.613 for the test as a whole, and slightly lower alphas for the positive and negative coping strategies. The reliability of the scales is thus average (Tabachnick & Fidell, 1989). The small number of items included in each scale and also the fact that the test is on a 3-point Likert-scale could play in role in the lower reliability scores.

As a consequence of the small sample size and the fact that the KIDCOPE is evaluated on a 3-point Likert-scale, a dimension reduction technique such as exploratory factor analysis could not be performed on the data. Based on the literature (Chapter 3) two constructs (positive and negative coping skills) were calculated from the 15 items. These constructs were transformed into percentages by dividing the scores by the number of items (negative skills consisted of 8 items and positive skills of 5 items) and multiplying by 100.



Table 5.23 Descriptive statistics

	N	Mean %	Std. Deviation
KIDCOPE_Negative score	92	39.9457	23.23724
KIDCOPE_Positive score Standardised	92	71.3043	27.70398
KIDCOPE_Total score Standardised	92	52.0067	19.49921
Valid N	92		

The means and standard deviations of the KIDCOPE can be ascertained from this table.

### 5.5.2 Descriptive statistics of the KIDCOPE

The KIDCOPE were analysed in terms of positive and negative coping. In Table 5.24 the frequency of use of various coping strategies is provided. The helpfulness of strategies adolescents used after exposure to interpersonal violence is considered in table 5.25.

Table 5.24 Descriptive statistics of coping strategies used

Strategy (N = 92)	YES (Used)		
	Number of yes	%	Standard Deviation
1. Avoidance strategy	83	90.2	0.299
2. Positive reframing strategy	81	88.0	0.326
3. Problem solving strategy	80	87.0	0.339
4. Social support strategy	76	82.6	0.381
5. Forget strategy	75	81.5	0.390
6. Calm down strategy	74	80.4	0.399
7. Withdrawal strategy	72	78.3	0.415
8. Active strategy	65	70.7	0.458
9. Distract strategy	63	68.5	0.467
10. Keep quiet strategy	49	53.3	0.502
11. Emotional outlet strategy	47	51.1	0.503
12. Isolate strategy	45	48.9	0.503
13. Blame of self-strategy	44	47.8	0.502
14. Blame others strategy	36	39.1	0.491
15. Not in control strategy	33	35.9	0.482

From this table it can be seen that the strategies adolescents mostly used after exposure to interpersonal violence were a mixture of positive and negative coping strategies. For example they used avoidance strategies (90.2%); positive reframing (88%) and problem solving strategies (87%) most. The skills the adolescents used the least after exposure to interpersonal violence were: not being in control (35.9%); to blame others (39.1%) and to blame themselves (47.8%).

The original KIDCOPE scale describes response on the frequency scale given on a 4-point Likert-type rating scale alternating from "not at all" to "almost all the time" (Stark, Spirito, Williams & Guevremont, 1989). For this study "not at all" and "coping strategy used but not helpful" was rated as (0) and "coping strategy used helped a little" and "coping strategy used helped a lot" was rated as (1). Scores for the Negative coping strategies and Positive coping strategies was calculated. The usefulness of the strategies used is outlined in table 5.25. The means per strategy is included as an indication of the centre of gravity of the scale.

Table 5.25 Descriptive statistics of Helpfulness of coping strategies

Strategy (N = 92)	Positive/Negative Skills	(F)	(%)	Mean
<b>Positive coping strategies</b>				
1. Social support strategy	+	38	41.3	1.99
2. Positive reframing strategy	+	26	28.3	1.93
3. Active strategy	+	25	27.2	1.61
4. Problem solving strategy	+	22	23.9	1.85
5. Calm down strategy	+	17	18.5	1.66
<b>Negative coping strategies</b>				
6. Distract strategy	-	21	22.8	1.49
7. Withdrawal strategy	-	17	18.5	1.34
8. Forget strategy	-	13	14.1	1.58
9. Isolate strategy	-	7	7.6	0.91
10. Keep quiet strategy	-	7	7.6	0.98
11. Avoidance strategy	-	7	7.6	1.49
12. Blame of self strategy	-	7	7.6	0.82
13. Blame others strategy	-	6	6.5	0.64
14. Emotional outlet strategy	-	5	5.4	0.87
15. Not in control strategy	-	3	3.3	0.61

From this table it can be ascertained that the skills adolescents rated that helped them the most after exposure to interpersonal violence, were positive coping skills such as social

support (41.3%); cognitive reframing (28.3%) and problem solving (27.2%). The strategies adolescents rated as the least helpful in dealing with the experience of interpersonal violence were being out of control (3.3%); to vent emotionally (5.4%) and to blame others (6.5%) – all of these are negative strategies.

### **5.5.3 Correlation statistics for the KIDCOPE, 16PF and PDS Questionnaire**

Pearson's correlation coefficient ( $r$ ) is a measure of the strength of the linear association between two continuous variables. The value for a Pearson's correlation ranges from 0.00 (no correlation) and  $\pm 1.00$  (perfect correlation). Other factors such as group size will determine if the correlation is significant. Generally, correlations above 0.80 are considered relatively high (Pallant, 2010).

The total scores for the KIDCOPE coping styles and the PDS score as well as the KIDCOPE and the scale scores of the 16PF were correlated (Table 5.26).

### Correlations

		16PF G	16PF I	16PF O	16PF Q4	KIDCOPE Negative score	KIDCOPE Positive score	KIDCOPE Total score	PTSD: Re-Experience score 0 - 3	PTSD: Avoidance score 0 - 3	PTSD: Arousal score 0 - 3	PTSD: Total score 0 -3
16PF G	Pearson Correlation	1										
	N	92										
16PF I	Pearson Correlation	-0.092	1									
	Sig. (2-tailed)	0.385										
	N	92	92									
16PF O	Pearson Correlation	-0.329	0.271	1								
	Sig. (2-tailed)	0.001	0.009									
	N	92	92	92								
16PF Q4	Pearson Correlation	-0.278	0.217	0.550	1							
	Sig. (2-tailed)	0.007	0.038	0.000								
	N	92	92	92	92							
KIDCOPE Negative score Standardised	Pearson Correlation	-0.090	-0.074	0.076	0.068	1						
	Sig. (2-tailed)	0.395	0.483	0.474	0.518							
	N	92	92	92	92	92						
KIDCOPE Positive score Standardised	Pearson Correlation	0.257	-0.128	0.026	-0.038	.204	1					
	Sig. (2-tailed)	0.014	0.223	0.809	0.722	0.051						
	N	92	92	92	92	92	92					
KIDCOPE Total score Standardised	Pearson Correlation	0.074	-0.124	0.069	0.030	0.845	0.696	1				
	Sig. (2-tailed)	0.480	0.238	0.511	0.780	0.000	0.000					
	N	92	92	92	92	92	92	92				
PTSD: Re-Experiencing sc 0 - 3 Standardised	Pearson Correlation	0.025	0.252	0.189	0.192	0.173	0.085	0.173	1			
	Sig. (2-tailed)	0.816	0.015	0.071	0.067	0.100	0.418	0.098				
	N	92	92	92	92	92	92	92	92			
PTSD: Avoidance score 0 - 3 Standardised	Pearson Correlation	-0.093	0.239	0.190	0.282	0.106	0.006	0.081	0.795	1		
	Sig. (2-tailed)	0.379	0.022	0.070	0.007	0.315	0.955	0.444	0.000			
	N	92	92	92	92	92	92	92	92	92		
PTSD: Arousal score 0 - 3 Standardised	Pearson Correlation	-0.073	0.257	0.241	0.302	-0.001	-0.069	-0.039	0.715	0.786	1	
	Sig. (2-tailed)	0.491	0.013	0.020	0.003	0.993	0.511	0.715	0.000	0.000		
	N	92	92	92	92	92	92	92	92	92	92	
PTSD: Total score 0 -3 Standardised	Pearson Correlation	-0.055	0.270	0.222	0.282	0.104	0.010	0.081	0.907	0.949	0.897	1
	Sig. (2-tailed)	0.605	0.009	0.033	0.006	0.325	0.928	0.441	0.000	0.000	0.000	
	N	92	92	92	92	92	92	92	92	92	92	92

Table 5.26 Inter-correlation matrix

The relationship between the abovementioned was investigated using Pearson correlation coefficient. Preliminary analyses were performed to ensure no violations of the assumptions, normality and homoscedasticity (Pallant, 2010).

This table depicts significant correlations between the two subscales of the KIDCOPE and the total score. KIDCOPE positive score and KIDCOPE negative score correlates almost significantly (Pearson correlation = 0.204, p-value = 0.051).

There were also significant correlations between the PDS subscales. The PDS avoidance score and PDS re-experiencing score correlated significantly (Pearson correlation = 0.795, p-value = 0.0001); between PDS arousal score and PDS re-experiencing score (Pearson correlation = 0.715, p-value = 0.0001) as well as between PDS arousal score and PDS total score (Pearson correlation = 0.907, p-value = 0.0001).

There were no significant correlations between the coping scores and PDS scores. Because of a lack of correlations between variables no further analysis could be done.

#### **5.5.4 Concluding remark**

The data was tested and the results of the KIDCOPE indicated an average reliability.

Using this data it can be stated that:

- The coping style of adolescents exposed to interpersonal violence did NOT mediate the development of posttraumatic stress and differences in the expression of personality. The hypothesis is therefore accepted. The lower level of reliability of the scale can possibly play a role in these findings as well as the low number of adolescents that showed symptoms of PTSD.

## 5.6 CONCLUSION

The results of various statistical procedures were reported to enable the researcher to test the three hypotheses. Chapter 6 will focus on the interpretation and discussion of the results of this chapter. The results will be furthermore integrated with the existing literature reported in chapters 2 and 3.

## CHAPTER 6

### DISCUSSION

#### DEDUCTIONS, CONCLUSIONS AND RECOMMENDATIONS

##### 6.1 INTRODUCTION

The results of this research are a clear indication that crime accompanied by unwarranted violence cannot be dismissed as simply “normal crime” with little consequence. It is not sufficient to instruct victims to “just live with it”. In the case of adolescent victims of such violence, there may be repercussions for personality expression that may have an added cost for society for a lifetime. It is necessary to take clear and decisive action to harness in perpetrators and enhance support for victims.

As stated in chapter one, it was observed that the percentage of adolescents from a community in the greater Johannesburg area, who were victims of community related interpersonal violence such as hi-jack and robbery, seemed to be unexpectedly and alarmingly high. This observation leads to the undertaking of this study. Trauma and stress associated with interpersonal violence can adversely affect the neurobiology of the individual, since social, emotional and cognitive influences interact in multifaceted ways with neurobiological systems to affect every-day adaptive functioning. This study was therefore embarked upon to determine the difference in the expression of personality between adolescents exposed to community related interpersonal violence and those not exposed to such violence. Reflecting on the adolescent’s emotional, adaptive functioning and referring to high levels of anxiety and feelings of worthlessness, certain factors of the 16PF questionnaire were predicted to show a statistical significant difference after exposure to community related interpersonal violence.

This chapter consists of a discussion of the interpretation of the results as analysed in chapter five. It also aims to answer the research questions, as stipulated in chapter four section 4.3.

The formal deductions, conclusions and recommendations of the results are presented below.

## 6.2 FINDINGS RELATED TO HYPOTHESIS 1: DIFFERENCE IN PERSONALITY

Based on the literature the following hypotheses were formulated:

H0: Adolescents exposed to incidents of community related interpersonal violence will not express their personality in different ways than adolescents not exposed to such violence.

H1: Adolescents exposed to incidents of community related interpersonal violence will express their personality in different ways than adolescents not exposed to such violence reflecting on the following factors on the 16PF:

- Factor G – (Low): Rule-conscious versus expedient;
- Factor I+ (High): Feeling versus thinking;
- Factor O+ (High): Guilt proneness versus self-confidence and resilience;
- Factor Q4+ (High): Tense versus relaxed temperaments.

Despite the research results that were cited to cast light on features of the social context and biological factors that are determinants of trauma reaction and eventually PTSD, there is a lack of literature to indicate how community related interpersonal violence in the social context would hamper (if not aid) the expression of personality. In a bid to breach that gap, a study was launched with two sample groups of students from a secondary school. The 16PF questionnaire with its long history of empirical research was selected as primary research tool. The 16PF is based upon well-established theory of individual differences (Cattell & Mead, 2008; Grucza & Goldberg, 2007).

To assess the differences in personality profiles of adolescents exposed to community related interpersonal violence and those not exposed to violence, a MANOVA was used in analysing



16PF results. It was evident that there were some differences in the personality profiles of adolescents exposed to violence and those not exposed to violence. A MANOVA done using the factors where possible differences were expected theoretically indicated an interaction between group and trait and not between the groups only. This means that there were statistically significant differences for primary factor scales G ( $p=0.011$ ), I ( $p=0.010$ ) and Q4 ( $p=0.007$ ). Since several variables were used, a Bonferonni adjustment was applied. When using the Bonferonni adjustment, significant differences for factors G, I and Q4 were at a level of  $p<0.0125$ . The statistical significant differences for these factors are discussed below.

### **6.2.1 Factor I: Sensitivity: Feeling versus Thinking – contrasting modes of evaluating experience**

From the statistical analysis of the 16PF questionnaire the data revealed that adolescents exposed to interpersonal violence (Sample 1) had a higher I score than those adolescents not exposed to such violence (Sample 2) ( $M = 4.72$  vs  $M = 4.04$ ;  $p = 0.010$ ;  $p < 0.0125$ ). The higher I+ score suggest that the adolescent relies on feelings to make evaluations and to a greater part excludes reasoning during evaluation and decision-making. The adolescent therefore might be emotional, changeable and indecisive. Highly sensitive adolescents often find it difficult to communicate impressions to others. This is undoubtedly because feeling, unlike thinking, is not naturally aligned with linear, linguistic thought processes. Interpersonal difficulty might stem from the adolescent’s need for more than average amounts of reassurance and support, which might upset more self-reliant peers and colleagues. Intervention should focus on creating equilibrium between feelings and reasoning during decision-making.

Table 6.1 Summary of Factor I

<b>Factor I</b>	
Low Score	High score
Tough-mindedness, Rejects illusions, (I-)	Tender-minded, sensitive, dependent.

	Overprotected,(I+)
Unsentimental, expects little,	Fidgety, expecting affection and attention,
Self-reliant, taking responsibility,	Clinging, insecure, seeking help and sympathy,
Does not dwell on physical abilities,	Hypochondriacal, anxious about self,
Acts on practical, logical evidence.	Acts on sensitive intuition.

Source: Cattell, 1989.

Factor I (Feeling versus Thinking) is of particular importance in this study, since it might reflect the way in which victims of community related interpersonal violence habitually process information. A high score on I is called *premsia*, a condensed form of “protected emotional sensitivity” (Cattell 1989, p.152) which reflects the person’s characteristic response to his or her environment. I+ individuals rely on their empathetic understanding to make evaluations and they are sensitive and attuned to their own vulnerability. *Premsia* tends to be significantly associated with mental breakdown, both psychotic and neurotic (Cattell & Schuerger, 2003). Davies and Flannery (1998) stated that Adolescents exposed to chronic violence may develop a sense of learned helplessness, which may seriously affect mood and the development of a sense of efficacy and self-control; reflecting on Factor I+.

Considering that the right hemisphere processes information subjectively and emotionally, the right hemisphere is more sensitive for negative emotional input (Panksepp, 1998). Adolescents with right dominance that are exposed to severe assault and emotional abuse may not be able to cope. As these adolescents become increasingly shut off from their reasoning capabilities (left hemisphere), they may in severe cases tend to psychosis (Schore, 1997). Ogawa (2001) suggests the loss of a sense of security, repetitive behaviour, trauma-specific fear (fear towards an exclusive stimulus highly associated with the traumatic event) and futurelessness as other general symptoms and consequences in traumatized adolescents. Therefore, adolescents will respond differently to trauma due to dissimilar personality traits and brain processes.

### 6.2.2 Factor G: Rule – Consciousness: The content and action of moral values

From the literature review done in chapters two and three, in conjunction with the data revealed through the research, it is evident that the exposure of community related interpersonal violence might have an impact on the expression of personality and specifically with regard to Factor G.

**Factor G** reflects the superego strength and it contains both content and action of moral values (Rule – Consciousness), suggesting low superego strength or lack of acceptance of the moral standards of a group. The results of the study showed a difference between the groups (Sample 1,  $M = 4.56$ ; Sample 2,  $M = 5.30$ ) ( $p = 0.011$ ;  $p < 0.0125$ ).

Table 6.2 Summary of factor G

Factor G	
Low Score	High score
Lack of acceptance of group moral standards, (G-)	Superego strength or character, (G+)
Quitting, fickle, Frivolous, Self-indulgent, Slack, indolent	Persevering, determined Responsible, Emotionally disciplined, Consistently ordered,

Source: Cattell, 1989.

If an adolescent's G-score is low, it suggests indecisiveness and a tendency to give up easily. The adolescent might experience some difficulty making decisions and following through on own planning. It seems that the adolescent might often disregard rules and obligations to other people (Landman, 1992). However, a low score on Factor G should not merely be ascribed to immature moral development or to immorality, but it could be ascribed to depression. The main reasons for depressive individuals to score low on factor G are, (a) a plea for help or an indication of experiencing subjective distress; or (b) an overly critical judgment of oneself, or negative self-

evaluation, usually flowing from guilt proneness associated with depression and PTSD (Landman, 1992).

Factor G points towards the cognitive sets (with specific reference to self-directedness) adolescents use to view their world regarding their own values that directs their behaviour. Scoring low on G can signal a loss of personal values redirecting their view of the world, which could influence their expression of personality (Cattell, 1982). Adolescents with a low G suggest under-controllers and might display behaviours such as aggression, self-injurious behaviours and frozen avoidance reactions (Fowler et al., 2009; Price, Higa-McMillan, Kim & Frueh, 2013).

### 6.2.3 Factor Q4: Tension: Tense versus relaxed temperaments

The results indicated a statistical significant difference between Sample 1 (M = 6.68) and Sample 2 (M = 5.97) on Q4 using the Bonferonni adjustment ( $p < 0.0125$ ).

Table 6.3 Summary of factor Q4

<b>Factor Q4</b>	
Low Score Low ergic tension, (Q4-)	High score High ergic tension, (Q4+)
Relaxed, tranquil, torpid, unfrustrated, composed, Phlegmatic temperament.	Tense, driven, overwrought, fretful, Emotional volatile.

Source: Cattell, 1989.

Q4 (table 6.4) represents a level of excitement and tension, expressing undischarged and poorly controllable libido; referring to other frustrated ergs, such as aggression, escape and assertiveness (Cattell, Eber & Tatsuoka, 1992).

Factor Q4+ measures the unpleasant sensations that accompany autonomic arousal and nervous tension, also known as free floating anxiety. This refers to pervasive, generalized fears that are not attached to any particular idea, object or event. Cattell (1989) found elevated Factor Q4 scores among individuals that were victims of community related interpersonal violence such as physical, sexual and emotional abuse. The importance of the HPA-axis was discussed in chapter two. Adolescents who have been exposed to community related interpersonal violence may experience dysregulation of the HPA-axis, the stress response system (Margolin & Gordis, 2004). Several studies have indicated the involvement of the HPA axis in PTSD (Bremner, 2006; Herbert et al., 2006; Yehuda, 2006). Because of the HPA-axis's influence in Factor Q4 (referring to the stress hormone cortisol manifesting on the anxiety levels of the adolescent), elevated Q4 scores are likely to be found following exposure to community related interpersonal violence, indicating affected post-trauma adaptive functioning.

Q4 is thought of as the factor in depression which is connected with the general level of frustration. Therefore, Q4 manifestations express the range of frustration response from anger and aggression to anxiety and depression (Cattell & Schuerger, 2003). High scores may, coupled to other observations, suggest a classical anxiety neurosis or situational anxiety (Craig, 1999).

Anxiety is the principle indicator of pathology on the 16PF Questionnaire. Factor Q4 is, however, not a direct indication of anxiety, as it is situation-linked. To fully comprehend and integrate the anxiety dimension, one has to take into account the scores on Factors C, L, O and Q3. In order to reduce the high Factor Q4 score, the environment of the adolescent needs to be changed to pacify anxiety, thus lessening the stress by removing the adolescent from any intolerable situation. As indicated in chapter two, personality not only affects the appraisal of and coping with stress, but it is also vital with regard to the selection and shaping of stressful circumstances (Vollrath, 2001). The implication of high anxiety levels for the adolescent could furthermore manifest as mental efficiency problems such as slowing, scrambled or blocked thoughts and words and memory failure; they enhance distractibility and are exacerbated by depression (Lezak, Howieson & Loring, 2004). This supports the research statement discussed in chapter three that overall functioning (emotional, social, cognitive), attitudes, school

performance as well as social competence can be affected negatively after exposure to community related interpersonal violence (Donnelly et al., 2005).

Individual differences must be taken into account. Adolescents responded differently to community related interpersonal violence. This may also be explained by the complexity of the human brain and the variety of functions associated with a single structure.

#### **6.2.4 Deductions related to hypothesis 1: difference in personality**

The combined result of the statistical observations and associated considerations given above in sections 6.2.1 to 6.2.3 indicate that adolescents exposed to sudden, unexpected community related interpersonal violence appear to be more vulnerable to emotional, physiological, social, behavioural and cognitive difficulties (Factors G, I and Q4) and that this can have a negative impact on their functioning.

More pronounced differences may have been found with larger sample sizes, but the statistical evidence is sufficient to conclude that it can be accepted that adolescents exposed to incidents of community related interpersonal violence will express their personality in a different way than adolescents not exposed to such violence based on factors G, I and Q4 of the 16PF in testing hypothesis 1. The formulation of hypothesis 1 also required similar findings for 16PF factor O, which was not quite borne out with the limited sample size. This means that the formulated hypothesis 1 can be accepted only partially, whereas a similar hypothesis without the factor O requirement would be statistically accepted. However this may be, the deduction in the previous paragraph holds true.

## 6.2 FINDINGS RELATED TO HYPOTHESIS 2: PERSONALITY AND PTSD SCORES

Based on the literature the following hypotheses were formulated:

H0: The personality expression of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post- traumatic stress, will not differ significantly from those who have not experienced such violence;

H1: The personality profile of adolescents exposed to incidents of community related interpersonal violence, who experience high levels of post- traumatic stress, will differ significantly from those who have not experienced such violence reflecting on the following factors;

- Factor G (Low): Self-indulgent and disregards obligations to people;
- Factor I (High): Perception might be emotionally influenced;
- Factor O (High): Depressed mood and feelings of guilt;
- Factor Q4 (High): Elevated levels of anxiety.

For this study highly acceptable Cronbach alpha scores, ranging from 0.856 to 0.949, were obtained for the subscales of the PDS questionnaire. This compares favourably with the Cronbach alpha of previous research (Foa, Cashman, Jaycox & Perry, 1997).

It was observed that adolescents exposed to community related interpersonal violence endorsed each of the PTSD symptoms more frequently than the adolescents not exposed to such violence. For example, 20.7% of adolescents that experienced community related interpersonal violence reported that they are reliving the trauma and 42.4% reported that they have intrusive images. The results of a t-test for the PDS scale as a whole as well as the subscales (Avoidance and Arousal scales), confirm that adolescents in Sample 1 experienced more PTSD symptoms than adolescents in Sample 2 ( $M=21.85$  versus  $M=15.04$ ;  $p \leq 0.01$ ). The relative high scores of Sample 2 on the PDS should be noted as this group was not exposed to such violence but still experiences some post-traumatic stress. One must take into cognisance that the general climate

of South Africa as a country is that of violence and conflict, creating a highly stressful environment to live in. The typology of interpersonal violence discussed in chapter one differentiates four modes in which violence may be imposed: physical; sexual; and psychological attack; and neglect. The latter has not been assessed in this particular study and could contribute to higher PDS scores in Sample 2.

To test the hypothesis whether adolescents who experience high levels of PTSD express their personality different from others, the personality profiles of three groups (Sample 1 with high PTSD, Sample 1 with low PTSD and Sample 2) were compared by means of a MANOVA.

The Test of between-subjects effects ( $p < 0.000$ ) determined significant differences across the three groups. This research thus identifies differences in the expression of personality between adolescents of Sample 1 experiencing higher levels of PTSD and the adolescents who did not experience community related interpersonal violence (sample 2) on Factors G (-), I (+) and Q4 (+). This result was significant despite the relatively small sample who experience high PTSD ( $N = 23$ ).

A low G- ( $p < 0.042$ ) score in a personality profile suggest low superego strength or lack of acceptance of the moral standards of a group.

A high I+ ( $p < 0.002$ ) score on a personality profile implies that the adolescents' perception might be emotionally influenced; they become socially sensitive and worry about their practical needs. This might explain the change in adolescents' behaviour.

A high Q4+ ( $p < 0.001$ ) score on a profile usually indicates that nervous tension is situational; influenced by the environment. A Q4+ score could also indicate that tension is a transitory state. In this case the adolescent is reacting to some transitory situation and his score is expected to eventually return to its former level. Both extremes on Factor Q4 can be achieved by motivational distortion, because many of the factor items are transparent, making distortion fairly easy. This happens for example, in cases where the adolescent expects some secondary gain from being either tense or relaxed. However, most individuals are able to discern whether tension is due to a passing state, or to an enduring part of their personalities. In this research



there is a tendency for participants who experienced violence as well as high levels of PTSD symptoms, to express their personalities different as measured on factors G, I and Q4.

The PDS questionnaire focuses on the symptoms presented when suffering from PTSD. It is likely that PTSD will be manifested differently across different stages of childhood, which is the time of rapid and uneven changes in many areas of functioning. There is however, little research investigating the typical features displayed by traumatized children at different developmental levels (Salmon & Bryant, 2002). As discussed in chapters two and three, the definition of PTSD includes persistent negative alterations in mood and cognition, flashbacks, nightmares and intrusive thoughts, avoiding thoughts and feelings, not being able to have loving feelings, diminished responsiveness to the external world as well as difficulty sleeping or concentrating, anxiety, hypervigilance, exaggerated startle response, irritability and anger (Hageman, Andersen & Jergensen, 2001; Neigh et al., 2013; Ozer & Weiss, 2004; Wakefield, 2013).

Studying the consequences of PTSD in adolescence are essential for future developmental areas such as attention, personality, perception of danger and regulation of cognition and affect, social skills, impulse control, learning disabilities as well as poor language and communication skills (Davis & Siegel, 2000; Murberg & Bru, 2005). Dysfunctional development of areas mentioned, leads to ineffective coping processing and reasoning skills in adulthood. The abovementioned development and functioning of the adolescent is vital for the successful transition from adolescence to adulthood. The results of this study emphasise the importance of further research to investigate the possible effect of the impact of community related interpersonal violence.

### **6.3.1 Deductions related to hypothesis 2: personality and PTSD scores**

This research found statistically meaningful differences in the expression of personality between adolescents who had been exposed to community related personal violence who experience higher levels of PTSD and adolescents who did not experience community related interpersonal violence.

## 6.4 FINDINGS RELATED TO HYPOTHESIS 3: PERSONALITY AND COPING STRATEGIES

Based on the literature study the following hypotheses were formulated:

H0: The coping style (positive or negative coping) of adolescents exposed to community related interpersonal violence will not mediate the development of posttraumatic stress and differences in the expression of personality.

H1: The coping style of adolescents exposed to community related interpersonal violence will mediate the development of post- traumatic stress and differences in the expression of personality. Thus, adolescents exposed to community related interpersonal violence utilizing adaptive/positive coping styles will differ in the experience of posttraumatic stress and with regard to the impact on personality factors than adolescents exposed to community related interpersonal violence utilizing maladaptive/negative coping styles.

Firstly, the results of the analysis of the KIDCOPE data indicated an average Cronbach alpha of 0.613 of the scale as a whole. The reliability scores were slightly lower for the positive and negative coping strategies (0.585 and 0.557). The small number of items included in each scale could play a role in the lower reliability scores. The lower reliability can also be related to different coping skills being measured by the questionnaire.

Secondly, the KIDCOPE were analysed in terms of positive and negative coping to gain some understanding of which coping strategies adolescents used. The skills adolescents mostly used after exposure to community related interpersonal violence were a mixture of positive and negative coping skills. For example: avoidance strategy (90.2%); positive reframing (try to see the good side of things, 88%); problem-solving (try to solve the problem by thinking of answers, 87%) were mostly used. The skills the adolescents reported to use the least after exposure to community related interpersonal violence were: not in control (35.9%); blame others (39.1%); blame of self (47.8%).

The strategies adolescents used after exposure to community related interpersonal violence that helped them the most to cope, were the use of positive coping skills: Social support (41.3%); positive reframing (28.3%); problem-solving (27.2%). Their positive coping skills, which was used the most and helped them most, could have assisted them in dealing with the trauma (Lazarus & Folkman, 1984). The skills adolescents used after exposure to community related interpersonal violence that helped the least were some of the negative coping skills (avoidant coping): Not being in control (3.3%); emotional outlet (5.4%) and blaming others (6.5%). They thus did not experience benefit from avoidant coping. Previous research indicated that adolescents who are more active, sociable and emotionally positive have been found to be more resistant to the effects of stress (Skinner & Zimmer-Gembeck, 2007). Various researchers (Davis & Siegel, 2000; Weisaeth, 1998) postulated that adolescents who will most likely cope with stressors must be able to have an internal locus of control, have a strong sense of self-efficacy, be optimistic, work towards attainable goals and not allowing themselves to be overwhelmed by their fear and frustration. This, however, could not be tested as there were no significant correlations between positive and negative coping and PTSD symptoms and the scales of the 16PF. Because of the lack of correlations between variables no further analysis could be done.

It can therefore be concluded that the coping style of adolescents exposed to community related interpersonal violence did not mediate the development of posttraumatic stress or differences in the expression of personality. Therefore the *null hypothesis* stating that the coping style of adolescents exposed to community related interpersonal violence does not mediate the development of posttraumatic stress and differences in the expression of personality is *accepted*. It can be concluded that the coping style of adolescents exposed to community related interpersonal violence did not mediate the development of posttraumatic stress or differences in the expression of personality in these research findings.

Possible explanations for the lack of relationships between coping styles and PTSD and personality may be the following:

A possible explanation is that the coping questionnaire could not show this relationship. The reliability of the scale as a whole was low but acceptable. The reliability of the two subscales

positive and negative coping was lower. This shows that the different coping strategies measured did not form a unity. The adolescents could have used one strategy but not the others which complicated the analysis. The small sample size of adolescents exposed to community related interpersonal violence and those that developed symptoms of PTSD could have influenced the results.

It should be noted that the researcher did not measure the coping skills of adolescents exposed to community related interpersonal violence during the time of exposure. This research involved an ex post facto measure which could not establish the relationship between the variables. This may be one of the reasons for the lack of correlations.

The researcher could furthermore not compare the two groups, as only Sample 1 completed the KIDCOPE questionnaire. There may have been several other factors that played a role in the fact that a small percentage (23%) of those exposed to community related interpersonal violence developed some symptoms of PTSD and the majority did not. The low number of adolescents that showed symptoms of PTSD can possibly play a role in these findings. Cognitive appraisal mechanisms and coping processes of the adolescent may play a role in determining the outcome through their effects on neuroendocrine stress systems (Olf et al., 2005). The interaction of risk factors along with the severity of the trauma appears to influence who will and will not develop PTSD (Davis & Siegel, 2000). Individual variations in vulnerability along with coping capacity often play a role (Weisaeth, 1998). Other factors like resilience, availability of social support and protective factors (such as IQ and temperament) can facilitate the development of the type of coping responses and perceptions, which lower the sensitivity to stressors. Personality processes (including intelligence and cognitive styles of information processing) are correlated with coping styles (Ebata & Moos, 1994; Skinner & Zimmer-Gembeck, 2007). Therefore, the reason to combine personality and coping styles in this study was postulated. Furthermore, risk factors and vulnerability of adolescents were included and discussed in chapter two, in order to focus on factors that emphasize or reduce the disposition to psychopathology or increase beneficial outcomes.

In general, limited research investigates the typical features displayed by traumatized children at different developmental levels. Therefore, this study focused on the developmental phase of the

adolescent to expand the comprehension of the complexity of PTSD. Variability of findings concerning adolescent PTSD might thus be expected due to the uncertainty about the specific symptoms and the reliability of assessment tools. Factors that should be taken into account regarding PTSD are age-related changes in knowledge (which might influence the adolescents understanding and appraisal of traumatic events), level of language development, emotion regulation, memory retrieval and cognitive inhibition (Salmon & Bryant, 2002).

Empirical studies (Skinner & Zimmer-Gembeck, 2007) with children and adolescents suggest that temperament do shape coping processes in several ways, contributing to individual differences in environmental sensitivity, stress reactivity, threat appraisals, initial emotional reactions, preferred ways of coping and ease of modifying coping strategies in the face of changing demands.

Previous research denote that coping that was more avoidant in nature predicted more PTSD symptoms over time (Krause et al., 2008). There are thus not specific coping strategies that can be effective for all. The effect of coping strategies used depends on the personality structure of the person involved. Although a more substantial relationship between coping and PTSD symptomatology was expected after the exposure of community related interpersonal violence, it was anticipated that the coping style of adolescents exposed to community related interpersonal violence will significantly mediate the development of posttraumatic stress and differences in the expression of personality. However, in this study the coping styles did not have a unique impact on the development of PTSD or expression of personality.

#### **6.4.1 Deductions related to hypothesis 3: personality and coping strategies**

This research found that the coping style of adolescents exposed to community related interpersonal violence did not mediate the development of posttraumatic stress. The coping strategies per se did also not mediate differences in the expression of personality.

## **6.5 AGGREGATE FINDINGS**

The research embarked upon to test hypotheses 1 was concluded and indicated through statistical analysis and associated considerations that adolescents exposed to sudden, unexpected community related interpersonal violence appear to be more vulnerable to emotional, physiological, social, behavioural and cognitive difficulties and that this can have a negative impact on their functioning.

The research embarked upon to test hypotheses 2 was concluded and found statistically meaningful differences in the expression of personality between adolescents who had been exposed to community related personal violence and adolescents who did not experience community related interpersonal violence. The first group were experiencing higher levels of PTSD.

The research embarked upon to test hypotheses 3 was concluded and found that the coping style of adolescents exposed to community related interpersonal violence did not mediate the development of posttraumatic stress. The coping strategies per se did also not mediate differences in the expression of personality.

## **6.6 LIMITATIONS TO THE STUDY**

The findings of this study highlights the severe negative impact of community related violence, such as hi-jacks and robberies, on adolescent victims, the study was based on a limited sample in a fairly homogenous setting in Johannesburg only. It was initially intended to capture a large sample, exclusion criteria and pragmatic considerations netted a relatively small sample. This severely limits the extent to which results can be generalised. The sample was drawn from a typical middleclass environment and adolescents from communities with less protection may present different results if sampled for similar research.

It should be appreciated that this research aimed to only breach a hiatus in the research literature and was not intended to supply a full battery of answers. It was intended to make use of an opportunity to gain some insight with limited access and resources. The study was therefore not focussed on gathering general detail regarding, say, adolescents' personal experiences during and following their exposure to community related interpersonal violence. It is, for instance, not known exactly how long ago each incident was – it is only known that it was during the past five years of adolescence. One does not know the seriousness of the incidence and the direct implications it had on the adolescent and his or her family. It is also not known what specific type of support the adolescents had after exposure to the trauma. The only support reported was whether adolescents exposed to community related interpersonal violence made use of professional help. Family and friends support, intervention programmes and group meetings were not explored. More information about the incident and the frequency of incidents could have provided more information to understand the reaction of the adolescents and the gathering of such information should be considered during similar research henceforth.

Although the victims of community related interpersonal violence in this research showed conclusively more symptoms of PTSD, adolescents who have not been exposed to such violence also experienced some PTSD symptoms. As the focus was on community related interpersonal violence, data on other aspects of the respondents' lives were not collected. There might have been many other variables at the time that could have influenced the lives of both Sample 1 and Sample 2. If a qualitative component was added to the study, the researcher could have done a wider exploration of the experiences of adolescents to understand the context of their lives and the possible influences of other variables. Furthermore, some adolescents in Sample 2 also experienced some PTSD symptoms which could have influenced the outcomes of the results of this study. It is therefore important to consider a complex trauma history as a risk factor for PTSD symptoms. The clear presence of PTSD symptoms in adolescents who were not exposed to community related interpersonal violence ran somewhat counter to expectations. With this hindsight it can be deduced that it would have been advisable to subject both groups to the KIDCOPE questionnaire and to compare results statistically. There are lessons to be learnt from this oversight.

No information was gathered regarding the official reaction to the violence and the influence of knowledge regarding such reaction on the subsequent personality expression of the adolescent victims. Knowledge regarding whether a proper police investigation was launched and whether perpetrators were apprehended and appropriately dealt with might have played a role in the way an adolescent would come to terms with the events and regain some lost sense of security.

To understand individual different reactions and possible causal patterns a longitudinal study involving a larger cohort would be required in order to obtain before and after measures of the adolescents exposed to community related interpersonal violence. Such a design might possibly be impractically elaborate, but would enable the assessment of the extent of significant differences in the adolescents' expression of personality after exposure to community related interpersonal violence. Such methodology might also contribute to the comprehension of the differences of unique sensitivity of adolescents being exposed to community related interpersonal violence as well as the diversity in brain functioning.

In this study reliability criteria were barely met and results in future similar studies may be bolstered by including more types of assessment. It is therefore recommended that the assessments should not be limited to personality assessment but should include cognitive, behavioural and physiological assessment. The qualitative investigation of the above mentioned, may provide further insights into the expression of personality of adolescents exposed to community related interpersonal violence.

## **6.7 RECOMMENDATIONS**

The purpose of research is to inform action and to produce knowledge that is applicable outside the research setting (Cohen et al., 2000). The research results alerts the reader to the impact of community related interpersonal violence on adolescents which is bound to play a role in the development and progression of psychological symptoms. This reaction may result in dysfunctional daily living impacting on scholastic, affective, cognitive and social operations and potentially the alteration of the expression of personality. This research is directing attention to



be cognisant to the nature and frequency of exposure to community related interpersonal violence and trauma in adolescents and the impact of these.

The following recommendations are made based on the research results:

### **6.7.1 Primary school intervention**

- Teachers should be trained to understand the basics of neuropsychology, physiology and psychophysiology to augment an understanding of trauma, post-traumatic stress disorder and personality development. This would help the teachers to identify adolescents who experience traumatic reactions after exposure to violence. All adolescents exposed to trauma should be referred to primary mental health services;
- Studies of brain development and behaviour are essential and will most likely unlock the door to earlier identification, more successful treatment and enhancing the understanding of posttraumatic stress disorder adolescents encounter when exposed to community related interpersonal violence;
- Interventions in schools (more specifically, in Life Orientation classes) may grant learners the opportunity to identify within themselves which behaviours they are prone to;
- Safety skills training should form an essential part for adolescents surviving community related interpersonal violence, coaching to anticipate and recognize harmful situations.

### **6.7.2 Primary mental health**

Primary mental health caregivers part of institutions need to identify adolescents exposed to community related interpersonal violence just after exposure to reduce the impact of community related interpersonal violence thus preventing the development of PTSD.

### 6.7.3 Further research

This research explored the adolescents' reaction to community related interpersonal violence and created the awareness that the experience may have a serious effect on their development. To further this research the following recommendations are made;

- A larger and representative study sample should be used in order to generalize the results to the greater population;
- A comprehensive risk analysis (including the time of occurrence and other traumatic experiences) should be taken into account and a more comprehensive battery for personality development and posttraumatic stress disorder should be used so that more specific information can be attained and used to understand the aetiology of posttraumatic stress disorder and the expression of personality accordingly;
- A more sensitive measure must be used to evaluate the coping skills of the adolescents exposed to community related interpersonal violence;
- Medical measures (e.g., EEG and MRI, cortisol measures) should be included to effectively enhance comprehension of the brain-behaviour relationship;
- The role of social support systems together with the type of coping skills adolescents used to function effectively should be incorporated and further investigated;
- During further research it will be advisable to gather more detailed information such as
  - adolescents' personal experiences during and following their exposure to community related interpersonal violence;
  - the phase of adolescence or, indeed, the exact age(s) at which the incidence or incidences of community related interpersonal violence occurred;
  - the nature of the incident(s) and the violence involved;

- the measure of support rendered to the victim from various sources;
- which other variables related to the lives of the victims influenced the post-traumatic expression of personality;
- what was the official reaction to the incident(s) and how efficient was that from the viewpoint of the adolescent and how did that influence PTSD symptoms.

It may be an option to gather such information by using qualitative research methodology.

## 6.8 CONCLUSION

A fundamental assumption of modern neuroscience is that all psychological functions ultimately emerge from the functioning of the brain (Panksepp, 1998). To understand the functioning of the brain is to understand human behaviour. Our observation only extends to emotion and thought and the expression thereof resulting in behaviour. This research study focused on only three of the areas: the coping styles, personality characteristics (locus of control, assertiveness, etc.) and the function of ego defences and protective factors.

Firstly, the results of this study suggest some significant differences in the expression of personality for adolescents exposed to incidents of community related interpersonal violence compared to adolescents not exposed to such violence. Statistical significant differences were found for factors G, I and Q4. It may be that certain individual traits, marking the uniqueness of the adolescents (dissimilar reaction to trauma), contributed to the identification of these differences. Secondly, it was identified that the group of adolescents that experienced community related interpersonal violence also experienced more PTSD symptoms than the comparison group. Additionally, it was found that there is a significant tendency for the personality profile of adolescents exposed to incidents of community related interpersonal violence, who experienced high levels of posttraumatic stress, to differ from those who have not experienced such violence, with regard to factors G, I and Q4. Although Sample 1 Low PDS

score and Sample 1 High score PDS differed somewhat, significant differences was found for the adolescents not exposed to violence and those exposed to violence and having symptoms of PTSD.

Thirdly, it was established that within the context of this study, positive and negative ways of coping did not play a significant role in the adolescents' experience of PTSD and the expression of personality. In addition to the methodological issues, this outcome may be attributed to the fact that this test functions more effectively as a screening tool for overall coping (Lezak, Howieson & Loring, 2004). Research is required to evaluate coping closer to the time of the actual event. Rather than relying on general methods of coping styles (e.g., methods that evaluate how an individual reacts to a variability of stressors), utilize situation-specific methods (e.g., ones especially designed for interpersonal violence). However, studies conducted by Pereda et al. (2009) confirmed that the KIDCOPE can be valuable to identify the problems of adolescents from different social backgrounds and to analyse coping strategies at an early age.

In general there can be no doubt that adverse early life experiences will have negative effects on both physical and psychological adaptations and health. During the critical developmental processes in adolescents, detrimental defence mechanisms could develop resulting in negative adaptive functioning; increasing the risk for emotional distress, dysfunctional responses and unhealthy coping strategies.

This study contributes to psychology by raising the awareness of the effect of community related interpersonal violence on the development of adolescents and emphasising the link between exposure to community related interpersonal violence and expression of personality. This study concludes that exposure to community related interpersonal violence can have a marked impact on the psychological well-being of the adolescents. It is thus suggested that adolescents exposed to violence receive treatment soon after the incident to avoid the development of PTSD symptoms that may intensify the negative implications of exposure to interpersonal violence. The high levels of violence exposure of adolescents in their communities and schools and the associated increase in behaviour problems suggest the need for developing school and community intervention programs to identify and treat adolescents exposed to violence and to examine the sources of resilience and community strengths that extend beyond the individual.

Further research into the effect of the exposure to violence may provide insight into the brain-behaviour relationship. It should be remembered that psychological functioning is not attributed to isolated brain structures but emerged through the dynamic interactions between different areas and systems. Furthermore, the original target group for this study was the middle class income population and suburb with relatively good security. To enhance the research results in this study and to accumulate one's understanding of this critical difficulty in South Africa, is to expand the area of concern, including more schools in the wider community as well as the rural areas. The influence on the victim of community related interpersonal violence regarding justice and prosecution of the perpetrator must be taken into cognisance when evaluating the victim.

The combination of continually evolving methodological and technological advances will, hopefully, bring us closer to the goal of better understanding the implications of experiences of community related interpersonal violence and earlier intervention to alleviate negative consequences of community related interpersonal violence. There can be no doubt that neuropsychology will bring us one step closer to the understanding of the sensitive intertwined relationship between brain, body and behaviour; hence diverse physiological structures, together with the brain, are involved in the stress response that needs to be investigated.

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## APPENDIX A

### ETHICS AND RESEARCH STATEMENT

#### UNIVERSITY OF PRETORIA

While research has produced many positive social and educational outcomes, it has also raised disturbing questions about the conduct of researchers with respect to ethics, values and community. The purpose of ethical review, therefore, is to ensure that human respondents participate in research freely and without unreasonable risk. Where there is some degree of risk, the process of ethical review has to ensure that the potential benefits outweigh the risk and that the participation of human respondents enjoys the full and informed consent of these respondents.

The broader goals of the ethical review of research proposals in the Faculty of Psychology are the following:

- to develop among students and researchers a high standard of ethics and ethical practice in the conceptualisation and conduct of educational research.
- to cultivate an ethical consciousness among scholars especially in research involving human respondents.
- to promote among researchers a respect for the human rights and dignity of human respondents in the research process.

The ethical review process is guided by the following principles common to research involving human respondents:

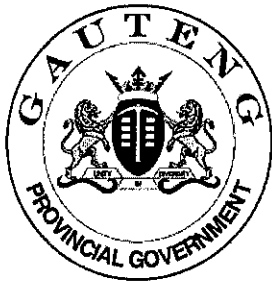
- the principle of *voluntary participation* in research, implying that the participants may withdraw from the research at any time.
- the principle of *informed consent*, meaning that research participants must at all times be fully informed about the research process and purposes, and must have given consent to their participation in the research.

- the principle of *safety in participation*; put differently, that the human respondents must not be placed at risk or harm of any kind, e.g., research with young children.
- the principle of *privacy*, meaning that the *confidentiality* and *anonymity* of human respondents must be protected at all times.
- the principle of *trust*, which implies that human respondents will not be subjected to any acts of deception or betrayal in the research process or its published outcomes.

The process of ethical review is not intended to add bureaucratic burden to the research process. Rather, this process is intended to protect the researcher as well as the participating human respondents. At a higher level, the process is also intended to higher the quality of research in the Faculty of Psychology - where research is conceived not simply as a set of techniques, but as a well-considered, ethically grounded process that builds values such as trust, respect, empathy and dignity among both the researcher and the researched. In such a process, participants are treated as authentic ‘respondents’ in the research endeavour and not simply as ‘objects’ to be studied.

.....  
MARLEEN CLAASSEN

.....  
DATE



**UMnyango WezeMfundo**  
**Department of Education**

**Lefapha la Thuto**  
**Departement van Onderwys**

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Tuesday, 09 December 2008

Ms. Claasen Marleen  
PO Box 18  
KLIPRIVIER  
1871

Dear Ms. Claasen Marleen

**PERMISSION TO CONDUCT RESEARCH: PROJECT**

The Gauteng Department of Education hereby grants permission to conduct research in its institutions as per application.

Topic of research : "The expression of personality among adolescents exposed to interpersonal violence."

Nature of research : PhD [Psychology]

Name of institution : University of Pretoria

Upon completion of the research project the researcher is obliged to furnish the Department with copy of the research report (electronic or hard copy).

The Department wishes you success in your academic pursuit.

Yours in Tirisano,

A handwritten signature in black ink, appearing to be 'Shadrack Phele'.

p.p. Shadrack Phele [MIRMSA]

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University of Pretoria

P.O. Box 18

Kliprivier

1871

23 August 2007

## REQUEST FOR INFORMED CONSENT

The Principal

Mr. G. de la Hunt

Hoërskool Jeugland

Kempton Park

Dear Sir

I am a registered PhD student with the University of Pretoria, conducting research into the expression of emergent personality among adolescents exposed to interpersonal violence.

It concerns violence that is interpersonal; occurring outside the house (non-domestic); is non-sexual; involves 'commonplace' events such as hijacks, robbery and threats of physical assault, and is experienced directly rather than vicariously (seeing on TV/movies, hearing, reading about from others).

Because personality traits only reach relative stability at the age of 18, I intend including only Grade 12-learners' data (those who have already attained the age of 18). Since these learners' academic achievements have been evaluated by means of an external national examination, using this data would enhance objectivity. The research project aims at understanding of how social, emotional, and cognitive influences interact in multifaceted ways, together with certain cortical/neural systems affected by trauma, to determine adolescents' overall functioning, i.e., socially, cognitively, interpersonally, emotionally and academically. This knowledge base might improve best practice, i.e., better equip teachers and health professionals to plan intervention programmes.

During 2006 staff members of your school compiled an *anonymous* databank, consisting of Grade 12-learners' information on their academic achievements, incidents of trauma that they were exposed to, as well as their 16-PF profiles (where applicable). In terms of the rules governing these activities at your school, these learners (age 18 and above) already gave their informed consent at the time of assessment towards the use of this database for purposes of intervention and future research.

Since the above-mentioned database now belongs to your school, I hereby request your consent towards using the following anonymous data from your school's database as compiled for purposes of educational guidance ("opvoedkundige leiding") in 2006:

- The 16-PF results (learners 18 and above at the time of assessment in 2006);
- The end-of-year academic results as published nationally;
- The record of traumatic incidents (interpersonal violence) as reported by these Grade 12-learners in 2006.

The data will be treated confidentially and anonymously, and no learner will be identified, since this research project aims at constructing an anonymous profile of adolescents exposed to interpersonal violence. No individual will be singled out during data analysis and interpretation. The findings of this research will be published as a thesis towards completion of the Doctorate in Psychology. The findings might also be published in accredited academic journals. No one-on-one participation is needed, and this project does not require personal human contact between the researcher and individuals included in the databank.

Your consent will be subject to the following:

- The school's name will not be identified, although the province (Gauteng) will be identified;
- No individual learner will be identified;
- The researcher will not contact any individual learner, and no further human contact will be requested;
- The databank will be treated as an anonymous survey, subject to confidentiality;
- The researcher will not disclose any information from the databank to third parties not involved in the research project;
- Upon completion of this research project, all the information will be destroyed in a responsible fashion, since the information is already in your school's safekeeping.

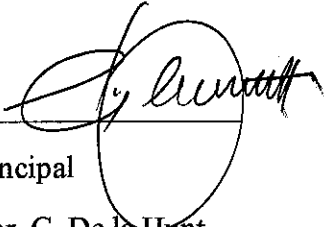
If there are any inquiries during the research process you could contact the researcher at 083 660 6067, or my supervisor, Prof H Naude, at 082 478 5588.

Marleen Claassen

**INFORMED CONSENT**

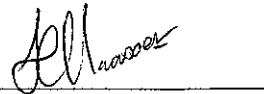
I, George de la Hunt have read the above mentioned and understand the rights inherent to this agreement. I hereby consent to the anonymous use of said databank for purposes of this research project.

Signed this 14 day of August 2007 at Kempton Park.



Principal

Mnr. G. De la Hunt



Researcher

Marleen Claassen