

**VALIDATION OF INSTRUMENTS INVESTIGATING THE RELATIONSHIP
BETWEEN STRESS, PSYCHOLOGICAL STRENGTHS, COPING AND OVERALL
PSYCHOLOGICAL WELL-BEING AMONG SCHOOL-GOING ADOLESCENTS IN
THE CAPE METROPOLE.**

By

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DECLARATION

I declare that “Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole” is my own work. It has not been submitted before for any degree or examination in any other university, and all the sources I have used or quoted have been cited and referenced as per the referencing guidelines recommended by the American Psychological Association (7th edition).

Dumani Noxolo

September 2023



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DEDICATION

Dedicated to my late Grandparents (*Nokifika Czarina Lusiki and Nowelile Esther Ngetu*) and late Uncle (*Ayakha Conor Lusiki*).

Losing you during this journey has been a great pain, however; your love, support, and prayers have kept me going. Phumlani ngoxolo, boHlubi.



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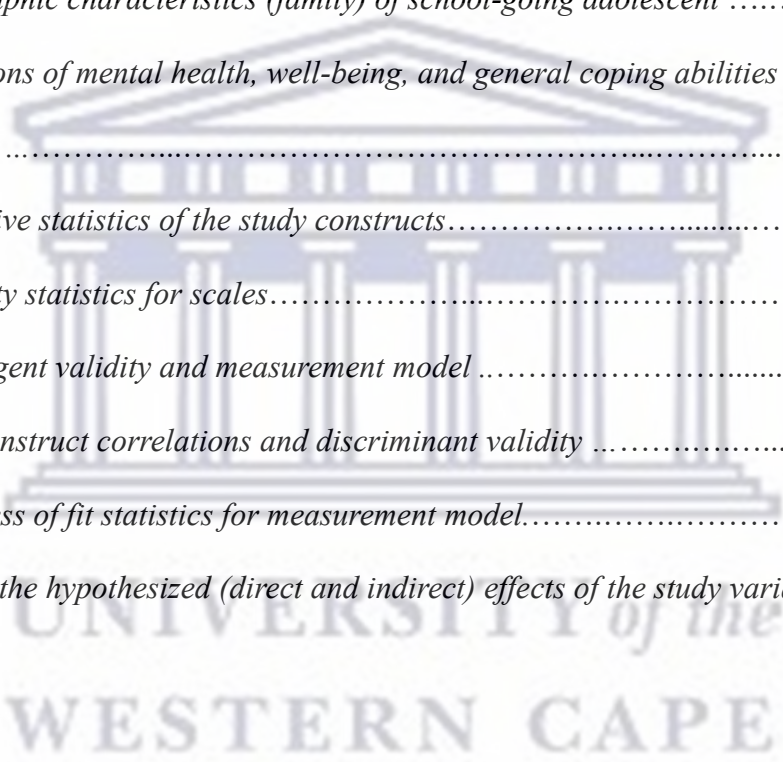
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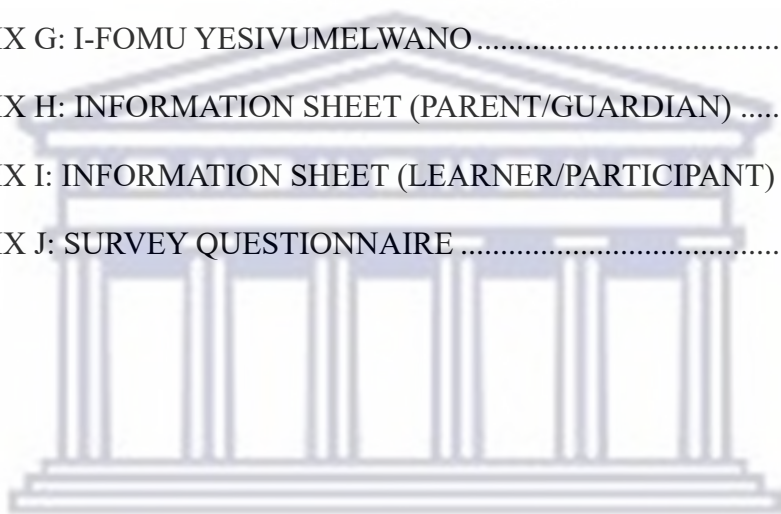
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LIST OF ABBREVIATIONS

WHO	World Health Organization
SASH	South African Stress and Health
ASII	Adolescent Stress Identification Inventory
SEM	Structural Equation Model
PLS-SEM	Partial Least Squares Structural Equation Model
PSS	Perceived Social Support
RSS	Received Social Support
CMHPs	Common Mental Health Problems
AERA	American Educational Research Association
APA	American Psychological Association
NCME	National Council on Measurement in Education
TTSC	Transactional Theory of Stress and Coping
WC	Western Cape
BDI-II	Beck Depression Inventory–Second Edition
BAI	Beck Anxiety Inventory
DSM-III:	Diagnostic and Statistical Manual of Mental Disorders, Third Edition
BHS	Beck’s Hopelessness Scale



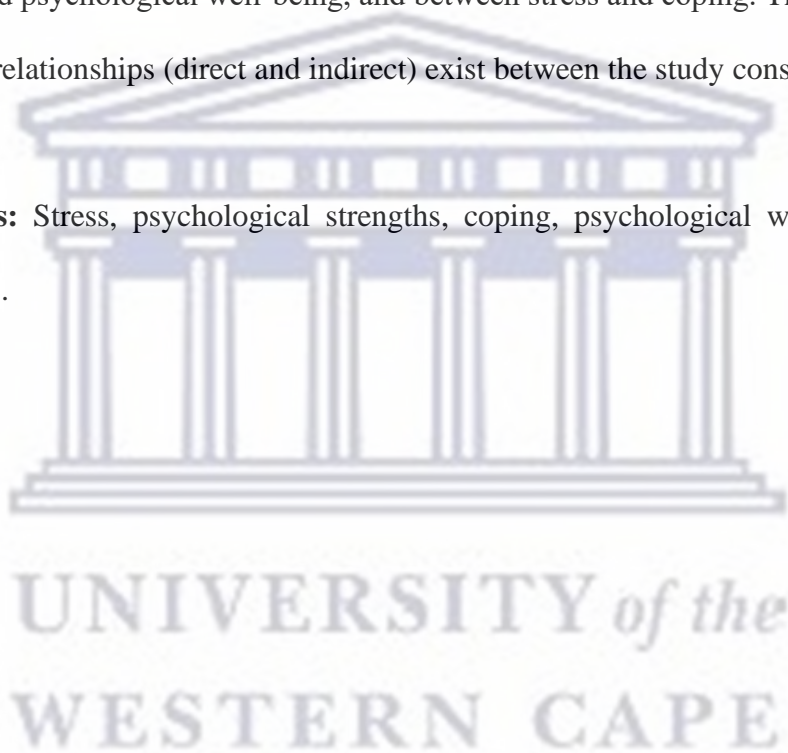
CSI	Coping Strategy Indicator
MSPSS	Multi-dimensional Scale of Perceived Social Support
CYRM-12	Child and Adolescent Resilience Measure
RSES	Rosenberg Self-Esteem Scale
PWB	Psychological Well-being
BMREC	Biomedical Research Ethics Committee
WCED	Western Cape Education Department
SPSS	Statistical Package for Social Sciences
CFA	Confirmatory factor analysis
CFI	Comparative Fit Index
RMSEA	Root Mean Square Error of Estimation
SRMR	Standardised Root Mean Square Residual
SADAG	South African Depression and Anxiety Group
FAMSA	Family and Marriage Society Of South Africa.

ABSTRACT

Adolescence is documented as a time inevitably characterized by stress and turmoil. From international research, there seems to have been an increase in scholarly attention to aspects of the mental health and psychosocial well-being of the adolescent population. However, literature in this field documents a lack of instruments measuring mental and psychological health validated in the South African context, especially among the children and adolescent population. Numerous calls have been made to develop reliable and valid measures of these issues in late childhood and adolescence. In line with this, the aim of this study was to validate multiple self-screening scales within the South African context and additionally, to investigate the relationship between stress, psychological strengths, coping, and overall psychological well-being among high school-going adolescents from Grades 8 to 11, and aged between 13-19 years in the Cape Metropole. Using a quantitative research approach, this 2-phase study used a cross-sectional validation design on a sample of 220 (in addition to the first 30 participants who partook in the initial cognitive testing phase) school-going adolescents, aged 13 to 19 years ($M = 15.25$ years, $SD = 1.46$). Validity theory and the Transactional Theory of Stress and Coping (TTSC) developed by Lazarus and Folkman were used as the theoretical frameworks to guide the study. A *Demographic questionnaire*, *Beck's Depressions Inventory – Second Edition (BDI-II)*, *Beck's Anxiety Inventory (BAI)*, *Beck's Hopelessness Scale (BHS)*, *Coping Strategy Indicator (CSI)*, *Multi-dimensional Scale of Perceived Social Support (MSPSS)*, *Child and Adolescent Resilience Measure (CYRM-12)*, *Rosenberg Self-Esteem Scale (RSES)*, and *Psychological Well-Being (PWB)* instruments were used. The statistical software package of SPSS (version 28) and MPlus (version 7) were used to conduct statistical analyses. The results confirmed satisfactory reliability and validity for these instruments in the South African context. Structural equation

modeling hypotheses-testing also demonstrated an acceptable fit between the theoretical model and observed/empirical data. Additionally, the results indicated direct relationships among some of the study constructs. For example, a significant negative relationship between stress and psychological strengths, a significant positive relationship between psychological strengths and coping, and a significant positive relationship between psychological strengths and psychological well-being. The findings also demonstrated that psychological strengths served as a mediator between stress and psychological well-being, and between stress and coping. These findings suggest that interrelationships (direct and indirect) exist between the study constructs.

Keywords: Stress, psychological strengths, coping, psychological well-being, school-going adolescents.



CHAPTER 1:

1.1 Introduction: Background to study

International research shows an increase in scholarly attention to aspects of mental health and psychosocial well-being of the adolescent population (Cooke et al., 2016; Panter-Brick et al., 2018). A growing body of literature, both locally and internationally strongly shows exposure to severe stress can have detrimental consequences on an individual's overall mental health (Harrison et al., 2021; McMahon et al., 2020; Pascoe et al., 2020). In psychological research, stress is considered to be one of the variables of great concern due to its impact on people's health and overall well-being (Freire et al., 2016). From a developmental perspective, adolescence is characterized by biological, psychosocial, and cognitive changes that manifest from puberty throughout adolescence (Stang & Story, 2005), and many of these changes can impact their psychological well-being (McMahon et al., 2020). This stage represents a transition from childhood to adulthood (Casey et al., 2011). This period also brings a variety of potential stressors that include academic demands, pressure to fit in with peers, the onset of romantic relations, increased need for independence, conflict with parents, and potential concerns about one's future (Anniko, 2018).

Although adolescence is characterized by rapid changes and is often described as a period of 'stress and storm', most adolescents typically do not develop persistent difficulties with stress (Anniko, 2018; Cholakottil et al., 2018; Parikh et al., 2019). Therefore, the original psychoanalytical thesis of adolescence as a time inevitably characterized by stress and turmoil as proposed (see G. S. Hall's 1904 view and others alike) remains a subject of debate (Casey et al., 2011). This is mainly because only a small number of adolescents experience adolescent turmoil

(an estimate of 20%), while most adolescents typically maintain pleasant relations with peers and families and are content with their social and cultural values (Levesque, 2011).

Stress is a universal phenomenon experienced by almost anyone irrespective of age, and although all age groups are vulnerable to it, adolescents are more vulnerable to it and its effects (McMahon et al., 2020). Although research in the past focused on the adult population, there has been a major shift focused on studying stress in children and adolescents (Persike & Seiffge-Krenke, 2012). Both childhood and adolescence have been flagged as the most common times for the onset of mental illness (Casey et al., 2011; Parpio, 2013). Globally, the literature indicates a lifetime prevalence rate ranging from 5% to 70 % for depression, anxiety, and stress among adolescents and young adults worldwide (Cholakotttil et al., 2018). While Sandal et al. (2017) argues that the prevalence rate of mental disorders for children and adolescents ranges from 1% to 51% globally. This is an alarming prevalence rate and as a result, Kumar et al. (2019) note that the presence of psychiatric disorders (such as anxiety, depression, and stress) within the adolescent population is a matter of concern. In agreement, the Centre for Stress Management also asserts that stress among the student population worldwide has become a subject of major concern (as cited in Thenga et al., 2015).

Researchers report that multiple risk factors contribute to stress predisposition, and these include exposure to adversity, academic and financial pressures, pressure to conform with peers, exploration of identity (Kim, 2021; Suldo et al., 2008), and in the context of the COVID-19 pandemic, lockdown regulations, isolation, decreased peer interactions and uncertainty about the future (Racine et al., 2021; Wang et al., 2021). In South Africa, children and adolescents face even more serious challenges (Heckler et al., 2012), ranging from experiencing poverty, abuse, violence, crime, and inadequate health care (Harrison, 2014; Harrison et al., 2021). These

challenges have been linked with experiences of stress in children and adolescents (Harrison, 2014), and have a profound impact on individuals and their functioning at physiological, social, educational, and psychological levels (Harrison, 2014; Willers, 2009). For example, one of the major psychological effects that individuals experience in response to chronic stress is reduced psychological well-being (Willers, 2009).

Stress is a high-risk predisposing factor for mental disorders and is estimated to affect about one in five children from the ages of 9 to 17 (Suldo et al., 2008). Globally, mental health disorders account for at least 45% of the burden of disease in young people between the ages of 10 - 24 years, with depression and anxiety flagged as the leading causes of mental disorders (Ajaero et al., 2018). In line with this, Sandal et al. (2017) argue that the World Health Organization (WHO) reports also demonstrate that for community-based studies the overall prevalence rate for mental disorders is around 20% in several national and cultural contexts. In South Africa, the estimated adjusted prevalence rate for mental disorders in adolescents ranges between 15–17% (Das-Munshi et al., 2016) and 17% for children and adolescents in the Western Cape (Kleintjies et al., 2006). A study by Ward et al. (2018) documenting the lifetime prevalence of depression in 5,631 South African adolescents (aged 15–17) reported a prevalence of 2.6% (males: 3.1% vs. females: 2.0%). Similarly, the nationally representative South African Stress and Health (SASH) study also demonstrates that nearly 20% of the South African youth between the ages of 18 and 34 years suffer from depression and stress-related conditions annually (Ajaero et al., 2018). It is worth noting the SASH study conducted in 2004 remains the main source of mental health prevalence data in South Africa, however, this study excluded children and the majority of the adolescent population, and data on the prevalence of mental health issues in this group is lacking (Jacob & Coetzee, 2018). Despite the alarming rate of

mental illness, prevalence studies for mental illness in children and adolescents in South Africa are characterized by small and unrepresentative samples and/or by the use of diagnostic measuring scales that have not been validated in the local context (Flisher et al., 2012).

As a result, numerous calls have been made to develop reliable and valid measures for mental illness in late childhood and adolescence (Panter-Brick et al., 2018), which – from notable studies of both high school learners and college students includes stress, the role of coping, psychological strengths and psychological well-being. Rose (2006) notes that literature indicates that numerous instruments aimed at investigating stress are available internationally, however, no such instrument had been specifically developed for application in the South African context until Kruger in 1992 developed the Adolescent Stress Identification Inventory (ASII) to identify stress in South African adolescents. The paucity in validated health outcome measures across diverse populations can be associated with several measurement problems (such as test bias and misdiagnoses or inaccuracy) when these health measures are used across diverse populations (Makhubela, 2022), and from the perspective of positive psychology, it is not only essential to assess mental health but is also essential to evaluate people's coping strengths. In the South African context, however, there seems to be a lack of validated measures for these purposes in many of the South African official languages (Wissing et al., 2010). Since language is a medium for cultural meanings, it is essential for measures of mental health to be validated in the mother tongue of the participants (Wissing et al., 2010), as this will limit language barriers and the likelihood to misdiagnose individuals. It is against this background that the present study aimed to quantify, using Structural Equation Modelling (SEM), the relationship between stress, psychological strengths, coping, and overall psychological well-being among high school-going adolescents from Grades 8 to 11, and aged between 13-19 years in the Cape Metropole.

1.2 Problem statement

There is a growing body of literature, both internationally and locally that indicates that extensive research has been conducted on the subject of stress (see Clemente & Hezomi, 2016; Harrison et al., 2021; Pascoe et al., 2020; Roy et al., 2017; Sandal et al., 2017; Shahmohammadi, 2011; Thenga et al., 2015) In agreement with this, Jia and Loo (2018) note that epidemiological studies examining the prevalence rate of stress across different age groups, from adolescents to the elderly have been conducted. In some of these studies, the focus is given to stress in the adolescent population, specifically school-going adolescents (see Pascoe et al., 2020; Sandal et al., 2017; Shahmohammadi, 2011; Thenga et al., 2015). However, although there's a plethora of research examining the prevalence of stress (both in clinical and non-clinical settings), there seems to be a lack of such studies using instruments validated in the mother tongue of the partakers within the South African context. Therefore, given this paucity in studies evaluating stress in the mother tongue of participants, this study aimed to validate measuring instruments within the South African context and additionally- to investigate the relationship between stress, psychological strengths, coping, and psychological well-being among adolescents (aged between 13 and 19 years) in Grades 8 to 11 in selected schools in the Cape Metropole, Western Cape. Literature on the subject of stress indicates that there is a relationship between stress, coping strategies, psychological strengths, and psychological well-being (Biswas-Diener et al., 2011; Harrison et al., 2021; Shahmohammadi, 2011; Shawl & Mehraj, 2017; Yusoff, 2010); therefore using a Structural Equation Model (see Figure 1), this relation between the hypothesized variables (direct and indirect) will be explored to help identify constructs that are more appropriately conceptualized as inputs or mediators of psychological well-being.

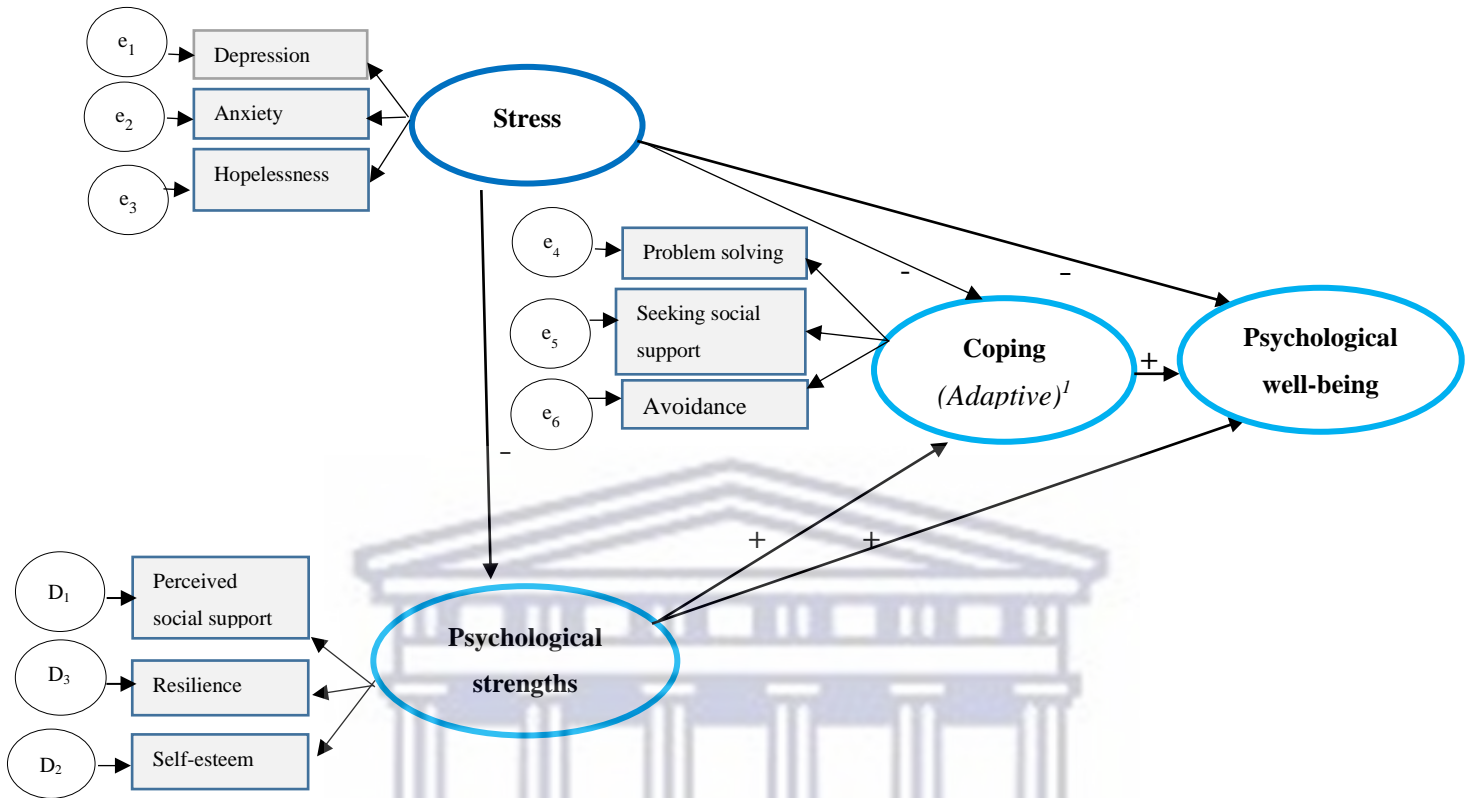


Figure 1. Diagram illustrating the hypothesized direct and indirect relationship between main constructs.

Note. This figure demonstrates the relation between the hypothesized variables under investigation (in terms of the direct and indirect relationships). To test the nature and strength of the relationship between our variables, a Structural Equation Model (SEM), more specifically, Partial Least Squares SEM (PLS-SEM) was used.

¹ Research flags avoidance-oriented coping strategies as providing short-term and temporary relief from stress, often leading to increased stress levels (e.g., Folkman & Lazarus, 1991; Ukeh & Hassan, 2018). As such, these coping strategies could be viewed as both adaptive and maladaptive.

1.3 Operational definitions of main concepts

1.3.1 Stress

Stress refers to the body's reaction to demands identified as threatening and exceeding its daily resources (affecting an individual's ability to cope), and it can have both physical and psychological effects (Abdelmageed et al., 2022). Stress can be indicated by different emotions ranging from physical pain, anxiety, fear, despair, sadness, hopelessness, and frustration (Shahmohammadi, 2011).

1.3.2 Psychological Strengths

Psychological strengths refer to psychological mechanisms and resources inherent in individuals that enables them to handle and cope with stressors more effectively (Biswas-Diener et al., 2011) and promote well-being (Macaskill & Denovan, 2014). Harrison et al. (2021), identify psychological strengths as both internal and external health-promoting factors that include resilience, perceived social support, and self-esteem. The present study also looked at these three variables as psychological strengths.

1.3.2.1 Resilience. Resilience refers to positive adaptation in the context of adversity (Wisner, 2011). In other words, this means having the ability to successfully cope and overcome adversity. This positive adaptation during adversity has been noted to have a direct impact on the mental state of adolescents (Harrison et al., 2021). For example, Zhang et al. (2019) note that research indicates that resilience as a stress-coping resource contributes to psychological health and is positively related to people's mental health – this then suggests that resilience might be an essential psychological strength that could be seen as instrumental in mediating mental and psychological problems in adolescents.

1.3.2.2 Perceived Social Support. Social support is a multidimensional construct and varies based on the type of social support provided (see Feeney & Collins, 2015). Historically, the construct has been used to refer to the provision (or seeking) of instrumental, informational, or emotional aid in response to adversity (Feeney & Collins, 2015). While received social support (RSS) is important, perceived social support (PSS) is equally important (Wethington & Kessler, 1986). Perceived social support refers to the amount of support individuals believe they can mobilize from their network (Helgeson, 1993). Perceived social support has been consistently linked to mental health and psychological well-being (Khan & Husain, 2010), and has been identified as an essential protective factor during times of adversity (Poudel et al., 2020). In the present study, perceptions of social support were measured across three sources: family, friends or peers, and significant other. These also form basis of the Multidimensional Scale of Perceived Social Support (a 12-item questionnaire developed by Zimet et al., 1988), a measure that was used in the current study.

1.3.2.3 Self-esteem. Self-esteem can be defined as positive or negative attitudes that one has towards themselves, and perceptions of self-worth and competence in one's ability to successfully face adverse circumstances (Harrison et al., 2021). Nguyen et al. (2019) argues that self-esteem has been reported to have a significant impact on important life outcomes including health and social outcomes during adolescence and adulthood. Similarly, Liu et al. (2021) notes that high self-esteem has been flagged as an essential protective factor for mental and psychological health, while low self-esteem has been associated with a range of mental illnesses. For example, a study by Dolenc (2015) indicates that higher or positive self-esteem affects how adolescents cope or experience stressful situations, with individuals with high self-esteem experiencing adverse situations as less stressful or as having more control over them – thus

suggesting that self-esteem might be an essential psychological strength that could be instrumental in mediating mental and psychological problems in adolescents.

1.3.3 Coping Strategies

The Transactional Theory of Stress and Coping (Lazarus & Folkman, 1984) identifies coping as a key component in buffering and adapting to stressors. Coping strategies as defined by Hudson (2016) refer to cognitive and behavioral efforts employed by individuals to manage both external and internal issues they believe to exceed their resources. Hudson (2016) further classifies these coping responses into three categories that include: temporary, effective (adaptive, functional, and integrative), and destructive coping responses (dysfunctional or maladaptive). This study makes reference to three coping strategies (i.e., problem solving, seeking social support, and avoidance) as proposed by Amirkhan's (1990, 1994) taxonomy of coping, which form the basis of the Coping Strategy Indicator (CSI), a measure that was used in the current study.

1.3.4 Psychological Well-being

Psychological well-being (PWB) is a multifaceted and multi-dimensional concept. Sagone and De Caroli (2014) define psychological well-being as a set of psychological structures involved in positive human functioning that include several resilience-related aspects such as maturity, purpose in life, and self-efficacy. Psychological well-being is characterized by self-actualization, optimal functioning, a positive sense of self, positive relations with others, personal growth, a sense of purpose, and mastery of one's environment (Lin, 2015).

1.3.5 School-going Adolescents

For the purposes of this study, school-going adolescents refer to individuals currently enrolled in a high school, particularly in Grades 8 to 11 and aged between 13 and 19 years.

1.4 Rationale

The correct approach to conceptualizing and measuring health and well-being is a subject of a centuries-long debate dating back to the ancient Greeks (Cooke et al., 2016). Although numerous studies about mental health are filled with documentation of measures that have been ‘validated’ across different contexts, methods for establishing this confidence vary widely and there is an overall lack of consensus about best practices for establishing cross-cultural equivalence (Sweetland et al., 2014). This might prove challenging, especially in Sub-Saharan Africa, which is filled with a diversity of languages and cultures. An instrument used satisfactorily in one African setting may or may not have the same applicability in another setting or with a different population, even within the same country (Sweetland et al., 2014).

The lack of these culturally relevant mental health assessment tools compounds difficulties in screening mental issues and further exacerbates these disparities (Mutumba et al., 2014). This, therefore indicates a need for population-specific validation studies, as proper assessment of constructs has significant implications for understanding the commonalities and distinctions of affective experiences across cultures and may also be crucial for treatment considerations (Lee et al., 2016). From the results of her study, Barnes (2015) also notes that it is evident that we still struggle to understand the development and use of psychological strengths and coping strategies within the South African context. Harrison et al. (2021) also highlights a lack of research that focuses on whether psychological strengths and coping strategies of at-risk adolescents mediate the influence of stress, such as symptoms of anxiety and depression on their overall mental health. Barnes (2015) therefore recommends that thorough research into this field should remain a priority in order to gain knowledge and insight into the world of South African adolescents, as this will enable researchers to develop programmes to increase adolescents’

coping abilities and their psychological strengths, raise awareness about stress, especially among the student population. Moreover, the “measurement and promotion of school-going children’s well-being is a desirable social and political objective” (Bhat, 2018, p. 606). This is also in line with the need expressed by some (e.g. World Bank as cited in Harrison et al., 2021), for effective psychological interventions to be closely tied to investigating the mental states and experiences of individuals, including children and adolescents, globally.

1.5 Overview of study

This study was made up of two phases. Phase 1 comprised of the cognitive testing of the measuring scales used in the present study, and Phase 2 consisted of piloting these measuring scales. Overall, this study was concerned with the validation of multiple self-report scales measuring the relationships between stress, psychological strengths, coping, and overall psychological well-being among high school-going adolescents from Grades 8 to 11, and aged between 13-19 years in the Cape Metropole. Below is a flow diagram that graphically shows the different phases of this study.

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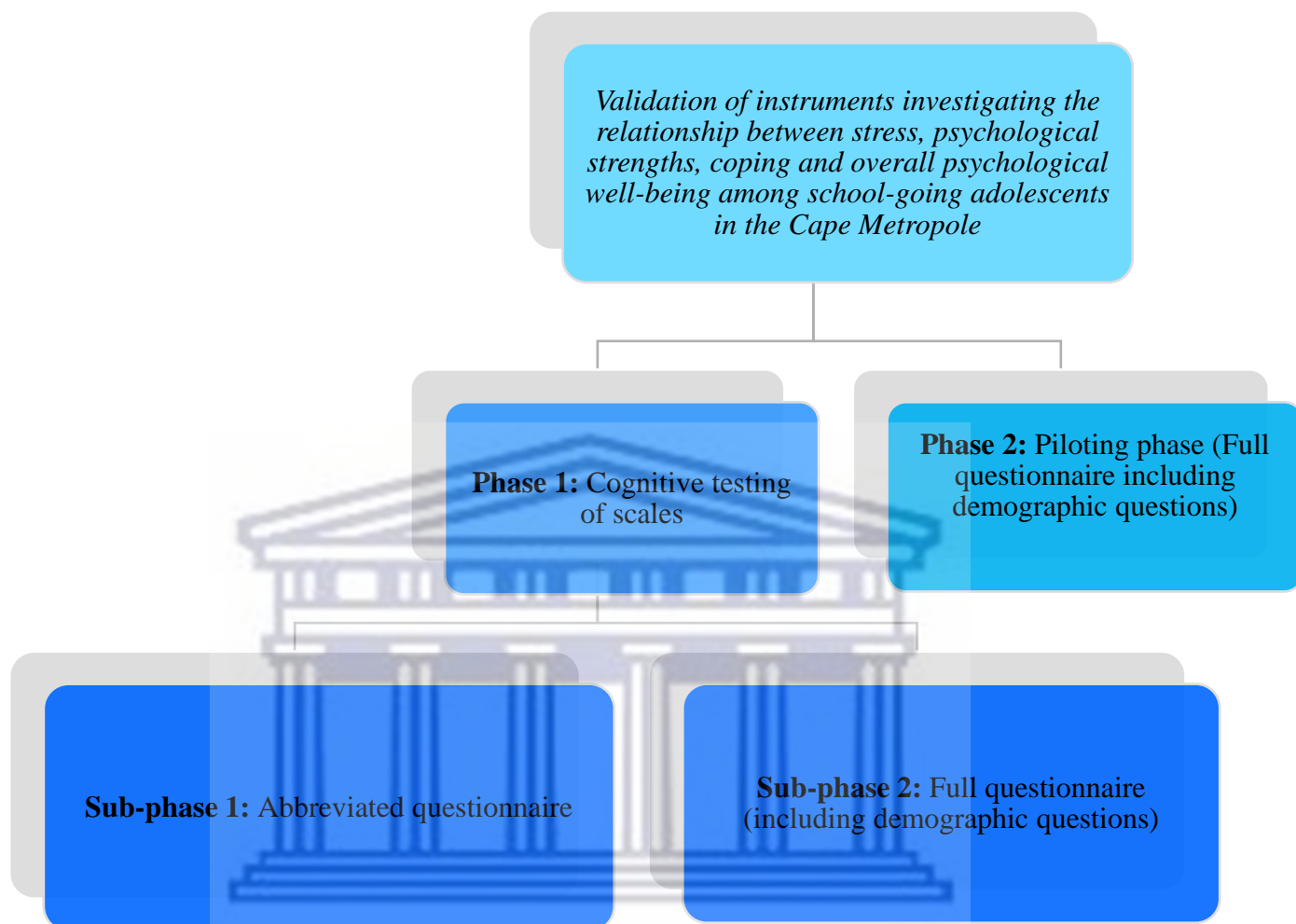


Figure 2. Flow diagram locating different phases of the current study.

1.6 Chapter Overview

This thesis is made up of seven chapters, each focusing on various aspects of the research. Chapter one, the introduction, provides a brief introduction to the main considerations of the thesis, including the background, problem statement to the issue being addressed and discussed, and the rationale of the research.

CHAPTER 2

Literature Review

2.1 Introduction to Chapter

This chapter explores literature and relevant themes pertaining to the research topic. It covers various aspects of the thesis such as the background information on stress, its prevalence, and the impact of stress on adolescent psychological well-being. Finally, it covers the link between stress, coping strategies, psychological strengths, and psychological well-being in adolescents. **2.2 Literature Review**

2.2.1 Stress in adolescence: Major threat to public health. Life's major events occur during adolescence – the biological, cognitive, and social changes that are occasionally accompanied by stress (Camara et al., 2017). As demonstrated in the previous chapter, a considerable amount of research demonstrates that exposure to acute and chronic stressors is common during adolescence (Pascoe et al., 2020; Roy et al., 2017; Sigfusdottir et al., 2017; Thenga et al., 2015). Stress refers to the body's nonspecific response or reaction to demands, events, or circumstances viewed as taxing and (or) exceeding the individual's resources to cope and a threat to their well-being (Lazarus & Folkman, 1984; Yusoff et al., 2011). Research in the field of stress links it to the onset and perpetuation of mental health issues, from the presentation of anxiety symptoms to lower levels of well-being (Pascoe et al., 2020), and may result in a negative impact on the physical and psychological well-being of adolescents (Abdelmageed et al., 2022; Freire et al., 2016; Hezomi & Nadrian, 2018). Mental health problems in childhood and adolescence pose a major threat to public health (Flisher et al., 2012).

Mental health conditions account for approximately 16% of the global burden of disease and injury in people aged 10–19 years (World Health Organization [WHO], 2021a). With

prevalence data estimating that among every seven young people between the ages of 10 -19, one person suffers from mental illness (WHO, 2021b). Mental health as defined by the World Health Organisation refers to a “state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community” (Kaur & Bashir, 2016, p. 2). It can be noted from this definition that stress is linked to and does affect overall mental health. This conclusion is supported by literature demonstrating that stress has a deleterious impact on psychological well-being and mental health (Abdelmageed et al., 2022; Freire et al., 2016; Sigfusdottir et al., 2017).

Given that the World Health Organisation (WHO) notes a high prevalence of mental health conditions in adolescents (aged 10 – 19 years), and the link between stress and mental health, stress in this age group has been flagged as a subject of concern worldwide – particularly student stress (Thenga et al., 2015). Although stress can be devastating – with negative outcomes at any age, adolescents are however at a greater risk due to the developmental changes that occur during this stage (Coward, 2018). The present day adolescents are especially vulnerable and susceptible to stress (Roets & Lewis, 2002), with stressors from school, uncertainty about the future, interpersonal relationships (i.e., persistent family conflicts, peer pressure, and romantic relationships), arising financial pressure, emerging responsibilities of adulthood and acute stressful events, such as losing a sibling or parent (Camara et al., 2017; Roets & Lewis, 2002; Roy et al., 2017; Sigfusdottir et al., 2017). School-going adolescents in secondary and tertiary education contexts face numerous ongoing normative stressors, which can be defined as normal day-to-day stresses such as ongoing academic demands (Pascoe et al., 2020). These ongoing

academic demands have been flagged as a significant source of stress in the student population (Pascoe et al., 2020).

2.2.2 Student stress: Prevalence and impact on psychological well-being. Learners suffer from stress just as much as adults but often do not have the same maturity or capacity to cope with it, and resultantly educators and parents may think that learners are just ‘naughty’, sensitive, or irresponsible (Thenga et al., 2015). It is estimated that about one in five children between the ages of 9 to 17 years are affected by stress (Suldo et al., 2008). For example, a Malaysian cross-sectional study by Yusoff (2010), with a sample of 100 secondary school students (aged 16) found that 26.1% of the respondents were distressed. Similarly, a descriptive cross-sectional study by Sandal et al. (2017) investigating the prevalence of depression, anxiety, and stress in school-going adolescents (aged between 13 to 18 years) in New Delhi found a prevalence rate of 47.9%, 65.3%, and 51.8% respectively. Other studies that report high prevalence rates for stress in school-going adolescents (with depression, anxiety, and hopelessness as indicators) include (Anjum et al., 2022; Das-Munshi et al., 2016; Duke et al., 2011; Girma et al., 2021; Islam et al., 2021; Jayashree et al., 2018; Jorns-Presentati et al., 2021; Osborn et al., 2020; Sandal et al., 2017; Strydom et al., 2012; Ward et al., 2018) in South Africa, Bangladesh, Ethiopia, India, Kenya, and the United States.

Although a common condition for adolescents to also experience, their ability to manage their stress symptoms or address stressors they encounter may be pivotal to protecting their mental health state, as it may buffer the impact of experienced stress on mental health (Harrison et al., 2021). If left unmanaged, stress has deleterious consequences on an individual’s daily functioning (Roets & Lewis, 2002), from presenting an increased risk of mental illness and interpersonal and psychosocial difficulties in children and adolescents (Heckler et al., 2012), to

impact on the adolescent's self-realization capacity (Roets & Lewis, 2002), to loss of sleep - which in turn introduces difficulties in paying attention in class, lower academic grades, issues relating with others, use of problematic coping strategies and increased stress levels (Pascoe et al., 2020). Therefore, to cope with the effects of stress and to aid in the development and maintenance of psychological well-being, adolescents draw on different resources - with numerous studies undoubtedly stating the significance of psychological strengths and coping strategies (Abdelmageed et al., 2022; Harrison et al., 2021; Thenga et al., 2015; Willers, 2009).

2.2.3 Coping strategies and psychological strengths of adolescents: Implications for psychological well-being. Empirical research in the field of stress illustrates that to cope with the experiences of stress, adolescents use different coping strategies (Cicognani, 2011; Cui et al., 2021; Ioannou et al., 2019; Konaszewski et al., 2021). Forming bases of the widely accepted Transactional Theory of Stress and Coping (described more in detail in the next chapter), Lazarus & Folkman (1984) refer to coping as cognitive and behavioral efforts used to manage events cognitively appraised as demanding or taxing of the individuals' resources. Before the actual coping, the experience of the stressor has to be cognitively appraised and then the coping occurs thereafter. Cognitive appraisal occurs in two phases: the primary appraisal and secondary appraisal (Freire et al., 2016). The primary appraisal assesses what impact (positive or negative) will the threat have on the well-being of the individual, and the secondary appraisal assesses the coping resources available (Freire et al., 2016). These coping resources and strategies are important for adolescents to handle everyday normative stressors.

Throughout the literature, the most common coping strategies noted are problem solving or problem-focused, seeking social support, and avoidant coping strategies (Freire et al., 2016; Harrison et al., 2021; Li, 2009; Tandon et al., 2013) – these coping strategies also make up

Amirkhan's (1990) Coping Strategy Indicator (CSI) – a self-report scale used in the current study. Problem solving coping involves cognitive, emotional, or behavioral efforts aimed at managing stress-producing situations (Ukeh & Hassan, 2018), while the seeking social support coping strategy involves cognitive, emotional, or behavioral strategies aimed at seeking instrumental and emotional support (Freire et al., 2016). Conversely, the avoidance coping strategy consists of cognitive, emotional, or behavioral strategies aimed at avoiding or withdrawing from having to deal with the problem or negative emotions that would result from the stressful situation (Freire et al., 2016). While avoidance strategies may relieve the immediate effect associated with distress and produce desirable short-term effects, they often lead to longer-term issues (Ukeh & Hassan, 2018).

Although coping is dependent on the appraisal of the threat, it is also important to note that this process is also dependent on the situational context (such as social support or social networks), individual characteristics, and resources available for the adolescents (Cicognani, 2011). Moreover, research demonstrates that the use of certain coping strategies cannot be assumed to be consistent across domains (Cicognani, 2011). For example, previous studies have demonstrated that adolescents tend to employ more avoidance coping when dealing with family-related stressors, more approach or problem-focused coping when dealing with school-related stressors, active coping strategies when dealing with peer-related stressors and cognitive-reflective strategies when dealing with future-related issues (Cicognani, 2011; Markova & Nikitskaya, 2017). A study by Persike and Seiffge-Krenke (2015), investigating how adolescents between the ages of 11 to 18 years from 18 countries around the world cope with stress, also found similar results. Most of the adolescents in the study preferred to use active coping strategies (such as seeking support or advice) and some used internal coping strategies (such as

brainstorming ways to deal with stress), especially when dealing with peer or parental stress. This study compared these coping strategies per country and found a strong preference for using active coping strategies across adolescents from all regions (Persike & Seiffge-krenke, 2015).

It is also worth noting that while other individuals might use positive and adaptive coping strategies (such as problem solving and seeking social support strategies), others may use negative and harmful coping strategies to deal with stressful events. For example, in a South African study by Thenga et al. (2015), with a sample of high school-going adolescents from Grades 10 to 12, the findings demonstrated that most of the students (96.3 %) used the problem avoidant coping strategy to cope with stress, while another 96.3 % of the respondents indicated that they use substances such as drugs and alcohol as ways of coping. This confirmed findings from studies by Hearon (2015) and Shahmohammadi (2011) in which adolescents are shown to sometimes use negative coping strategies (such as alcohol and drugs) to cope with stress.

The extent to which a stressor affects individuals' physical, psychological, and behavioral outcomes is accounted for, in part, by one's available coping resources and strategies (Ukeh & Hassan, 2018), and based on the intensity and duration of the stress – different coping strategies may operate differentially on adolescents' affect (Wang et al., 2021).

2.2.4 Psychological strengths and psychological well-being. While the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) identifies coping as a key component in buffering and adapting to stressors, people's coping processes are informed and influenced by the resources they perceived to be available to them (Biswas-Diener et al., 2011). Also known as psychological strengths, these resources can either be external or internal. In the current study, these resources are considered as resilience, perceived social support, and self-esteem.

2.2.4.1 Resilience. As a psychological strength, resilience is a dynamic and interactive process made up of overlapping individual resources that include personal, environmental, and biological protective factors (Phillips et al., 2019). In its simplest form, resilience refers to one's ability to positively adapt and transform in the face of adversity and is essential for people's psychological well-being (Klainin-yobas et al., 2021). Previous research has also illustrated that resilience can play a vital role as a stress-mediating resource – by decreasing experiences of stress and feelings of adversity, and increasing well-being (Liu et al., 2021; Sagone & Caroli, 2014). In line with this premise, a 2-phase Polish study by Konaszewski et al. (2021) investigating the relationship between resilience and mental well-being in adolescents between 13 to 18 years, the findings illustrated that resilience was significantly and positively linked to life satisfaction and negatively related to depression. Life satisfaction and risk of depression were used as indicators for mental health in the study.

2.2.4.2 Perceived Social Support. Similar to resilience, research indicates there is a significantly strong relationship between perceived social support and psychological well-being (Alshammari et al., 2021; Glozah, 2013; Kurudirek et al., 2022; Poudel et al., 2020; Roohafza et al., 2014). Social support refers to perceived or real instrumental, financial, emotional, and/or informational assistance provided by family, peers, or the community (Camara et al., 2014; Tandon et al., 2013). This definition includes different aspects of social support i.e., sources and types of social support, and differentiates between perceived or actual support received. As put forward by Wethington and Kessler (1986), perceived social support (PSS) is more important than the actual received social support (RSS). This is because when individuals perceive or believe that other people are available to provide the needed support when sought (Holt-Lunstad & Uchino, 2015); their confidence in their abilities to deal with stressful situations increases

(Cong et al., 2021); thus promoting them to seek support from others and encouraging the use of effective coping strategies (Harrison et al., 2021). While adolescence is characterized by the increased need for autonomy, perceived social support plays an essential role in contributing to well-being during this phase (Alshammari et al., 2021).

Research reports that perceived social support acts as a buffer and protective factor during stressful events (Alshammari et al., 2021; Harrison et al., 2021), and thus can impact stress appraisal and psychological outcomes. One explanation for this as per the stress-buffering model, is that perceived social support has a protective role against stressful events by decreasing perceptions of the situation as less threatening and increasing the belief that others can and will provide necessary resources – which in turn may alter the individual’s perceived ability to cope with the stressful situations and thereby prevent certain events from being appraised as threatening and stressful (Roohafza et al., 2014). Moreover, when individuals perceive themselves as having good support from their social networks, they are more likely to have a positive sense of self and increased confidence in their abilities to cope with stressful events (Cong et al., 2021; Roohafza et al., 2014).

An example of a study demonstrating the association between perceived social support and psychological well-being is a Turkish study by Kurudirek et al. (2022). The study investigated the association between adolescents’ perceptions of social support and their psychological well-being during the COVID-19 pandemic in a sample of 378 adolescents between the ages of 13 to 18 years. The results demonstrated that there is a significant positive and strong association between adolescents’ perceptions of social support and their psychological well-being. In line with this, other studies have also demonstrated that in adolescents whose lives are marked by adversity, higher levels of perceived social support are associated with subsequent

enhanced mental well-being and the absence of psychiatric problems, and protects against a range of common mental health problems (CMHPs) such as depressive symptoms in adolescents (Alshammari et al., 2021; Khan & Husain, 2010; Liu et al., 2021; Poudel et al., 2020).

However, despite the plethora of research focusing on perceived social support, it remains a mystery how perceived social support may directly or indirectly influence psychological well-being (Ioannou et al., 2019). It is, however, proposed that it could be through its effects on self-worth, sense of belonging, and security, which are components of positive self-esteem (Ioannou et al., 2019). This is in line with some studies that have linked increased levels of perceived social support with higher levels of self-esteem in adolescents and in turn psychological well-being (Alshammari et al., 2021; Poudel et al., 2020).

2.2.4.3 Self-esteem. Self-esteem refers to the subjective evaluation of one's sense of worth – and is closely associated with psychological well-being and mental health (Du et al., 2017). It focuses on the “evaluative and affective dimension of the self-concept” (Liu et al., 2021, p.1). In other words, self-esteem is the affective evaluations (positive and negative) one makes in reference to their self-worth. This is usually an evaluation of how the individual does something in relation to how others do or by comparing their performance to others (Nozick, 1974) – a trait featured in the self-esteem instrument (i.e., Rosenberg Self-Esteem Scale) used in the present study. The significance of self-esteem and its association on adolescent mental health and wellbeing is well documented (see Kernis, 2006; Liu et al., 2021; Nguyen et al., 2019). For instance, studies have associated high levels of self-esteem with positive psychological well-being and health outcomes in adolescence and adulthood (Gardner & Webb, 2019; Nguyen et al., 2019; Xiang et al., 2019). Nonetheless, interest in the pathway (relation) between self-esteem and well-being is increasingly becoming a subject of research investigation, with this construct

even being seen as a protective factor, a moderator, a mediator, or just a result of well-being (Fanaj & Melonashi, 2014). An explanation for this may be that individuals with increased levels of self-esteem may view themselves from a positive perspective and thus are more likely to be confident and optimistic (Liu et al., 2021). This, therefore means that when faced with stressful situations, adolescents with positive attitudes towards one's self are less likely to be overwhelmed than individuals who do not, because adolescents with a positive attitude towards themselves would be more confident in their abilities to cope with different adversities (Xiang et al., 2019).

Previous studies have associated lower levels of self-esteem with symptoms of depression, anxiety, and suicide (Busch et al., 2021; Nguyen et al., 2019). However, empirical research has also shown that higher levels of self-esteem can be linked with positive health outcomes (Gardner & Webb, 2019; Nguyen et al., 2019; Xiang et al., 2019). For example, a Chinese longitudinal study by Xiang et al. (2019) investigating the association between school stress, self-esteem, and psychological well-being among high school students found a negative association between stress and psychological well-being and a positive reciprocal relationship between self-esteem and psychological well-being. This, as noted by Xiang et al. (2019) could be due to the fact that individuals who have a positive attitude towards themselves tend to be more confident in themselves and their abilities and thus impacting their psychological well-being and vice versa.

These findings highlight that with the increase in the prevalence of mental illness, more focus on prevention is required by developing individuals' psychological strengths to foster resilience so they can cope better with life stress (Macaskill & Denovan, 2014). Among the plethora of research; resilience, perceived social support, and self-esteem are some of the

psychological strengths that have been identified to act as protective factors for adolescents predisposed to stress (Harrison et al., 2021) and have an influence on an individual's ability to cope (Barnes, 2015).

2.3 Chapter Overview

This chapter discussed literature around the constructs of interest (i.e., stress, coping strategies, psychological strengths, and psychological well-being in adolescents). The chapter starts by surveying the literature on stress and stress in adolescents. In addition to this, the relationship between stress, coping strategies, psychological strengths and psychological well-being in adolescents was discussed.

The next chapter, Chapter Three outlines the theoretical framework adopted for the current study. It further goes on to present the aim and objectives of the study.



Chapter 3

Theoretical Framework and Aims and Objectives

3.1 Introduction to Chapter

Chapter one of this study highlighted the paucity in research validating self-report instruments that can be used to identify and measure mental and psychological health in adolescents and children in the South African context. Due to the lack of such instruments in the South African context, and because the overall aim of this study was to validate multiple self-report screening scales within the South African context, the Validity Theory was used to guide this study. Since the purpose of the study was two-fold, in addition to the validity theory, the Transactional Theory of Stress and Coping (TTSC) was used as a theory to investigate the relationship between stress, coping, psychological strengths, and overall psychological well-being of school-going adolescents in the Cape metropole. Both theories are crucial for the validation of these instruments and the investigation of the relationship between variables of interest.

3.2 Theoretical Framework

3.2.1 Validity theory. The Validity theory was used in this study. Validity and reliability are important constructs to consider when developing and assessing the psychometric properties of any measuring instrument. While the importance of validity has been recognized for years, its scope and use have evolved over the years. It was once used as a narrow concept focusing on the relationship between test scores and criterion measures, but now it is used as a broader concept that embraces the use and interpretation of test scores and the social implications of these scores (Sundström, 2009). In its simplicity, the concept of validity is used to refer to the extent to which a measurement instrument measures what it is intended to measure (Tavakol & Dennick, 2011).

Other scholars such as Messick have used validity to refer to the “integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores or other modes of assessment” (1989, p. 13). In other words, validity is concerned with issues of authenticity and whether an instrument measures what it aims to measure. For example, an instrument developed to measure depression should be measuring just that, and not anxiety or hopelessness.

Conversely, the *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA] & National Council on Measurement in Education [NCME], 2014) use validity to refer to the “degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests” (p. 11). Validity is concerned with the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores (AERA, APA & NCME, 2014). It is clear from the mentioned definitions that validity is less concerned about the properties of the instrument, but rather that the instrument actually measures what it intended to measure and that its appropriate for that particular use – thus validating the meaning derived from the scores. In other words, for an instrument to be considered ‘*valid*’, it must measure something with high reliability, and that something must be closely related to the function it is used to measure (Sullivan, 2011).

Over the years there have been several ways to explore and gather evidence about the validity and reliability of instruments and their test scores. Amongst these different ways, Messick (1989) identified six distinguishable aspects of validity or procedures of validity evidence, namely: 1) content (construct relevance and representativeness); 2) substantive (appropriate domain content and processes), 3) structural (the internal structure of the instrument

has to be consistent with the internal structure of the construct domain); 4) generalisability (representative coverage of the content and processes of the content domain); 5) external factors (the extent to which the relationship between the instrument score and other measures or behaviors reflects relations in the construct); and 6) consequential aspects of validity (accumulation of evidence in support of positive consequences). These six aspects function as general validity criteria or standards for all educational and psychological measures (Messick, 1989) - and these are endorsed and set out in the *Standards for Educational and Psychological Testing* (AERA, APA & NCME, 2014).

The various aspects of validity mentioned above are crucial as they ensure comprehensive coverage of the construct's validity. Therefore, by considering multiple sources of evidence, researchers can establish a more robust case for the construct validity of their measurement instruments (Sullivan, 2011). While all these aspects of validity are significant, Messick (1989) cautions that not all methods can be applied in every validation study or across all groups of studies. Only necessary and relevant procedures should be selected and followed when gathering evidence for or against the proposed use and interpretation of scores of psychological measures. Therefore, in line with the scope (and aim) of this study, the following statistical processes (forming bases of the six procedures indicated above) will be explored: scale means and variances, reliability indices (e.g., internal homogeneity), validity indices (such as construct and discriminant validity) and factor structure as recommended by Paunonen and Ashton (1998) regarding the validation processes.

3.2.2 The transactional theory of stress and coping (Lazarus & Folkman, 1984).

In addition to the validity theory, the Transactional Theory of Stress and Coping (TTSC) was used to guide this study. The transactional theory of stress and coping is one of the fundamental

theories of psychological stress research. Stress is viewed as an imbalance between the individual and the environment or event (Mark & Smith, 2008). Specifically, the transactional theory of stress and coping regards psychological stress as that which "...the individual appraises as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus and Folkman, 1984, p. 19). It can be seen from this definition that stress can be linked to well-being. This theory views the transaction between stress and the environment as involving two processes, i.e., *cognitive appraisals* and *coping*.

3.2.2.1 Cognitive appraisals and coping. Coping is a process and before the actual coping, the perceived threat has to be cognitively appraised and then the coping occurs thereafter (Berjot & Gillet, 2011). The appraisal process involves two interdependent cognitive mechanisms: primary and secondary cognitive appraisals (Krohne, 2002). Primary appraisal involves the individual evaluating what is at stake and what impact does the stress have on their well-being (Freire et al., 2016). That is, does the stressor pose any threat to the individual's well-being, such as whether the stress will have a positive, irrelevant, or negative outcome (Biggs et al., 2017). The secondary appraisal relates to coping behaviours and involves evaluating available coping resources (Krohne, 2002). The evaluative component within this appraisal focuses mainly on the available coping resources and the likelihood that the use of these resources will accomplish the desired effect (i.e., relief from appraised threat) (Miller & McCool, 2003).

In this sense, coping refers to efforts, both action-oriented and intrapsychic attempts to manage (reduce, tolerate, or master) environmental and internal demands perceived or appraised as threatening and taxing (Freire et al., 2016; Lazarus & Launier, 1978). Similarly, Folkman and Lazarus (1994) note that coping consists of "cognitive and behavioral efforts [used]

to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). In other words, coping is what the individual does to manage the demands of a stressful situation. In a later definition, they added that these cognitive and behavioural efforts are constantly changing "as a function of continuous appraisals and reappraisals of the person–environment relationship" (Folkman & Lazarus, 1991, p.210). Coping is characterized by two functions i.e., to resolve or manage the problem caused by the stressor (problem-focused coping) or to regulate the emotions associated with the threat (emotion-focused coping; Berjot & Gillet, 2011).

Therefore, looking at the fundamental principles of the transactional theory of stress and coping, this framework was utilized to guide this study as it looks at stress (with anxiety, hopelessness, and depression as indicators) and how school-going adolescents appraise an event (as indicated by the demographic question the CSI scale) and thus employ coping strategies (both internal and external) and psychological strengths (with resilience, self-esteem and perceived social support as indicators) – and how these affect their overall psychological well-being. In this study, the following dimensions of psychological well-being (as per the PWB scale) will be considered: self-acceptance, feelings of competence, positive relationships, feelings of competence, and having meaning and purpose in life (Diener et al., 2009a).

3.3 Aim and Objectives

The overarching aim of this study was to validate multiple self-screening scales within the South African context and, additionally, investigate the relation between stress (with anxiety, depression, and hopelessness as indicators), psychological strengths (perceived social support, resilience, and self-esteem as indicators), coping and overall psychological well-being among

school-going adolescents in Grades 8 to 11, aged between 13-19 years. This aim was reached by focusing on the following objective aims:

- 3.3.1 To establish the reliability and construct validity of multiple self-screening scales (Beck Depression Inventory–Second Edition, Beck Anxiety Inventory, Beck’s Hopelessness Scale, Coping Strategy Indicator, Multi-dimensional scale of perceived social support, Child and adolescent resilience measure, Rosenberg Self-esteem scale, Psychological well-being) within the South African context.
- 3.3.2 To determine the relationship between stress and psychological strengths
- 3.3.3 To determine the relationship between stress and coping
- 3.3.4 To determine the relationship between stress and psychological well-being
- 3.3.5 To determine the relationship between coping and psychological well-being
- 3.3.6 To determine the relationship between coping and psychological strengths
- 3.3.7 To determine the relationship between psychological strengths and psychological well-being
- 3.3.8 To determine if coping mediates the relationship between stress and psychological well-being.
- 3.3.9 To determine if psychological strengths mediated the relationship between stress and psychological well-being.
- 3.3.10 To determine if coping mediates the relationship between stress and psychological strengths.

3.4 Chapter Overview

Chapter three, the theoretical framework, and aims and objectives, provides a brief introduction to the two theories (i.e., validity theory and the transactional theory of stress and coping) that guided the current study. Additionally, the aim and objectives of the study are also outlined.

The next chapter, Chapter Four outlines the research methodology adopted for the current study, including the research design, research context, sample, data collection, and data analyses techniques that were followed.



CHAPTER 4

Research Methods

4.1 Introduction to Chapter

This chapter provides an overview of the research methods used to conduct the current study, including a detailed overview of the executed research activities incorporated into the empirical research process. This includes the research design, description of the research context, sample and sampling method, data collection and procedures, data analysis, and ethical guidelines that were followed. Additionally, the chapter explores the psychometric properties of the different self-reporting scales used to measure stress, psychological strengths, coping strategies, and psychological well-being in the current study.

4.2 Research Design

In accordance with the aim and objectives of this study, a quantitative methodological framework was used. Quantitative methodology is well-suited to investigating and quantifying the nature of the statistical relationships between variables (Creswell, 2008) and, as articulated by Yilmaz (2013), allowed the researcher to use pre-constructed objective instruments to investigate these statistical relationships between variables. A cross-sectional validation design was used in this study. Due to its nature, in this study, the cross-sectional design was relevant in that the researcher collected data at a single point in time from a diverse group of participants with the intention of examining the relationship between the study variables and establish the psychometric properties of multiple measurement instruments (i.e., validity and reliability; Kesmodel, 2018). Moreover, due to the nature of cross-sectional designs, the results of the

validation study are obtained promptly. This allows researchers to make necessary adjustments or improvements to the measurement instrument if and when required.

4.3 Research Context

The current study was conducted in the Western Cape (WC)², Cape Metropole, which is made up of racially, linguistically, and culturally diverse inhabitants who are primarily Afrikaans, isiXhosa, and English speakers (Statistics South Africa, 2012). Two schools were selected in areas considered as middle class. As per the Department of Education quintile system or classification (see Western Cape Provincial Notice, 2022), both schools included in this study are classified under quintiles 2 and 4 as no-fee institutions. The schools were selected based on language, income level (middle class), and level of classes (high school).

4.4 Sample and Sampling

The study sample for this study was made up of 250 participants (school-going) between the ages of 13 to 19 years and in Grades 8-11 from selected schools within the Cape Metropole, Western Cape province of South Africa. The initial target sample for this study was 400 (150 for phase-1 and 250 for phase-2) participants, however; due to the COVID-19 pandemic (including lockdown regulations and adaptations), this target number was not reached. The final study sample was made up of 250 participants (a detailed description of the sampling for each phase is provided below under procedures). While this number is a bit lower than the targeted number, it is still within the recommended limit for Structural Equation Modelling (SEM). For example, Wang and Wang (2020) argue that numerous authors recommend a sample size of at least 150

² Also known as *Wes-kaap* in Afrikaans and *iNtshona-Koloni* in isiXhosa (Statistics South Africa, 2012).

participants for SEM. The lowest and highest age in the sample was 13 and 19 ($M = 15.25$, $SD = 1.46$).

A purposive sampling method was used. Purposive sampling's main objective is to produce a sample that has specific attributes of a population that is of interest to the researcher, as they will provide the most effective means to theoretically address the research aim and questions (Lavrakas, 2008). Purposive sampling is used with the intention of collecting a wide range of responses by sampling across all factors likely to influence outcomes (Bacon-Shone, 2015). The Cape Metropole consists of several schools, however, due to the time constraints and the impediments imposed by the COVID-19 restrictions (which limited the researcher's access to the school earmarked for research), two schools participated in the study based on: language, income level (middle class) and level of classes (high school). During participant selection, all students in the class were invited to voluntarily partake in the study (based on the study selection criteria of age and level of class). Due to the COVID-19 school protocols, this was manageable as the researcher was advised to access students during school hours and while they were still in class. Those that expressed interest in the study were then provided with the information sheet and consent/assent form. After parental consent (for students below 18 years) and consent for students 18 years and above were obtained, the participants were then given the questionnaire to complete.

4.5 Measuring Instruments

The instruments were translated to the target languages (isiXhosa and Afrikaans) and back to the original (English) language using the back-translation (Brislin method; Brislin, 1976) to identify and attend to language and problematic items. The Brislin method entailed the translation of the measures from English to both isiXhosa and Afrikaans and independent back-

translation of the measures from the target languages (isiXhosa and Afrikaans) back to English, to verify the accuracy of the original translations. Forward and backward translations to the targeted languages were done by first-language speakers of the isiXhosa and Afrikaans languages. The isiXhosa version was completed collaboratively by the researcher (student), a translator, and the supervisor. For the Afrikaans version, a translator and a researcher (who is a registered Psychometrist with the Health Professions Council of South Africa) were involved in the translation process. While ensuring linguistic equivalence (i.e., absence of direct correspondence and translation) between isiXhosa and Afrikaans for specific English terms denoting psychological or somatic conditions posed a concern, discussions with native speakers and consulting dictionaries in both isiXhosa and English were crucial in mitigating this issue. After considerable discussions and effort, accurate translations were achieved.

4.5.1 Demographic Questionnaire.

The demographic questionnaire was self-constructed and based on some demographic variables identified through literature that have been linked to assessing psychological well-being and experiences of stress in adolescents, more specifically, school-going -adolescents (Anniko et al., 2019; Camara et al., 2017; Harrison et al., 2021; Kim, 2021; Makhubela & Mashegoane, 2016; Thenga et al., 2015). Questions concerning the following demographic variables were asked in the current study (see Appendix H): age, sex, population group, school grade, religious affiliation, family life (who the participants stay with i.e., parent(s) and siblings, and perceptions of family finances), and information about their mental health, well-being, and general coping abilities.

4.5.2 Beck Depression Inventory–Second Edition (BDI-II: Beck et al., 1996).

This 21-item, 5-point Likert scale (BDI-II) requires respondents to measure depressive symptoms (such as sadness, self-dislike, changes in appetite, etc.), with each item being scored from 0 to 3 (with 0 denoting absence of symptoms, and 3 denoting the symptom presence)(Makhubela & Mashegoane, 2016). The BDI-II total score ranges from 0 to 63, where scores ranging between 0–13 are considered to indicate minimal levels of depression, 14–19 is mild depression, 20–28 is moderate, and 29–63 is severe levels of depression (Beck et al., 1996). Items in this scale cover 21 aspects, for example, the first item focusing on sadness covers symptoms that include “I do not feel sad”, “I feel sad much of the time”, “I am sad all the time” and “I am so sad or unhappy that I can't stand It”. The reliability, convergent, discriminant, and factorial validity of the BDI-II scale has been established for screening depressive disorders in adolescents from the ages 13 and upwards (Dolle et al., 2012; Kim et al., 2014; Lee et al., 2017). The BDI-II demonstrated strong psychometric properties, with a Cronbach alpha coefficient of .92 in a sample of high-school adolescents (Osman et al., 2008). In South Africa, the BDI-II has shown a Cronbach's alpha of .84 and test–retest reliability of $r = .55$ in a sample of university students (Makhubela & Mashegoane, 2016). For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the BDI-II has demonstrated a very good reliability co-efficient with a Cronbach alpha of .88. The Cronbach alpha cut-off scores to be used for this study have been noted in Table 1 below.

4.5.3 Beck Anxiety Inventory (BAI; Beck & Steer, 1993a).

This 21-item, 5-point Likert scale (BAI) requires respondents to measure anxiety symptoms such as “wobbliness in legs”, “fear of losing control” and “scared”. Each item on the BAI is scored from 0 to 3, with 0 denoting the absence of symptoms, and 3 denoting the

symptom presence (Muntingh et al., 2011). The BAI's total score ranges from 0 to 63, where scores ranging between 0–7 are considered to indicate minimal levels of anxiety, 8–15 is mild, 16–25 is moderate, and 26–63 is severe levels of anxiety (Beck et al., 1988). The internal consistency for the BAI, using Cronbach's alpha is 0.92 (Beck et al., 1988). The instrument was validated using a sample of 160 psychiatric outpatients with various anxiety and depressive disorders, diagnosed with the Structured Clinical Interview for DSM-III (Muntingh et al., 2011). Using a translated version of the BAI in Korea – with a sample of 1022 community-dwelling people aged 19 years and over, results indicated an adequate Cronbach's alpha of .91 (Lee et al., 2016), in contrast to .75 reported by Beck et al. (1988). For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the BAI demonstrated an excellent reliability coefficient with a Cronbach alpha of .90.

4.5.4 Beck's Hopelessness Scale (BHS; Beck & Steer, 1993b).

The BHS is a 20-item self-report scale administered to respondents to measure the construct of hopelessness, with respondents answering on a true-false rating scale to measure negative attitudes about the future (Szabó et al., 2016). The BHS's total score ranges from 0 to 20, where scores ranging between 0–3 are considered to indicate minimal levels of hopelessness, 4–8 as mild, 9–14 as moderate, and 15 and above indicate severe levels of hopelessness (Beck & Steer, 1993b). Items on this scale include statements such as “when things are going badly, I am helped by knowing they can't stay that way forever” and “My future seems dark to me”. Szabó et al. (2016) reports that the BHS was administered to 293 psychiatric participants who had suicidal ideation and the item-total correlations ranged from .39 to .76. Internal consistency of the scale was assessed via KR-20 coefficients and was found to be excellent (0.93). For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape

Metropole, the BHS demonstrated an acceptable reliability coefficient with a Cronbach alpha of .79.

4.5.5 Coping Strategy Indicator (CSI; Amirkhan, 1990, 1994).

The Coping Strategy Indicator (CSI) is a 33-item self-report scale that is used to measure coping strategies used by people when faced with stressful everyday situations. The scale starts by first requesting demographic information where participants are asked to describe a recent (within the last six months or so) stressful event. This scale measures coping based on 3 dimensions (each with 11 items): Problem Solving (i.e., “Brainstormed all possible solutions before deciding what to do”), Seeking Social Support (i.e., “Let your feelings out to a friend”) and Avoidance (i.e., “Tried to distract yourself from the problem” or “Avoided being with people in general”). In a study conducted by Ager and MacLachlan (1998) among Malawian students, the CSI seeking social support, problem solving, and avoidance subscales demonstrated α 's of .83, .81, and .63 respectively. For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the CSI subscales also demonstrated good and acceptable values of reliability with Cronbach's alpha: $\alpha = .78$ (for problem solving); $\alpha = .80$ (for seeking social support); and $\alpha = .68$ (for avoidance).

4.5.6 Multi-dimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988).

The MSPSS is a 12-item self-report scale scored on a 7- point Likert scale that measures perceived social support from three sources; and these are family (i.e., “My family really tries to help me”), friends (i.e., “My friends really try to help me”), and significant other (i.e., “There is a special person who is around when I am in need”) (Zimet et al., 1988). In a study conducted by Canty-Mitchell and Zimet (2000) with a sample of 237 adolescents from two public schools in a

large urban Midwestern city, the results demonstrated a Cronbach alpha of .93, while the family, friends, and significant other subscales demonstrated α 's of .91, .89, and .91 respectively. In South Africa, the MSPSS has also demonstrated good test-retest reliability and a reliable three-factor structure in a sample of high school students in Cape Town (Bruwer et al., 2008). The Cronbach α coefficients for this study ranged from 0.86 to 0.90 for the subscales and 0.86 for the entire scale. For the present study on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the MSPSS demonstrated excellent reliability with a Cronbach alpha of .90 for the entire scale. Furthermore, the respective reliability coefficients of .85, .81, and .83 for family support (Items 3, 4, 8, 11), friend support (Items 6, 7, 9, 12), and significant-other support (Items 1, 2, 5, 10) subscales were yielded.

4.5.7 Child and Adolescent Resilience Measure (CYRM-12; Liebenberg et al., 2013).

Developed by the International Resilience Project (coordinated by Michael Ungar et al. at Dalhousie University in Canada), this 12-item (reduced version of the CYRM-28), 5-point Likert scale is a self-report scale that measures the resources (individual, relational, communal, and cultural) available to individuals that may strengthen their resilience. Items on this scale include statements such as “My parent(s)/ caregiver(s) know a lot about me”, “I try to finish what I start” and “I enjoy my community’s traditions”. Higher scores indicate higher levels of resilience (Resilience Research Centre, 2016). The final validated CYRM incorporates both cultural homogeneity and heterogeneity in how individuals, families, and communities support successful development among youth aged 13-23 years (Ungar & Liebenberg, 2011), and has a good content validity, with a coefficient of .84 on school-going adolescents (Liebenberg et al., 2013). The CYRM-12 has also demonstrated acceptable reliability with Cronbach alphas of .85 and .81 in a sample of South African adolescents in the Cape Metropole (Crowley et al., 2022). For the

present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the CYRM-12 demonstrated a good reliability co-efficient with a Cronbach alpha of .83.

4.5.8 Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965).

The RSES is a 10-item self-report scale assessing global self-worth on a 4-point Likert scale, with higher scores indicating higher levels of self-esteem and vice versa (Martin et al., 2006). Items of the RSES include statements such as “I feel that I have a number of good qualities”, “I take a positive attitude toward myself” and “I certainly feel useless at times”. In a study by Baranik et al. (2008), with a sample of college students from different countries- in a wide range of contexts, including the United States of America (.86), Germany (.75), South Africa (.68), and Kenya (.84), the internal consistency results as measured by Cronbach’s alpha indicated adequate to high-reliability results. For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the RSES demonstrated a barely acceptable reliability coefficient with a Cronbach alpha of .60.

4.5.9 Psychological Well-being (PWB; Diener et al., 2009a).

The PWB is an 8-item, 7-point Likert self-report scale developed by Diener et al. to measure the multidimensional construct of psychosocial well-being not included in Ryff’s scale (Lin, 2015). Items on this scale include statements such as “My life is full of purpose and meaning”, “I actively bring happiness and well-being to others” and “I have great hope about my future”. The item responses on the PWB range from 1 (strongly disagree) to 7 (strongly agree), with sum scores ranging from 8 (strong disagreement with all items) to 56 (strong agreement with all items; Diener et al., 2009b). The PWB scale has been validated in adolescents in different contexts, for example, a Romanian study by Negovan (2010) with a sample of 449

students, the results demonstrated high internal consistency of .84. A Taiwan-translated version of the PWB demonstrated an even higher internal consistency of .91. However, it is also worth noting that while the PWB has been validated in different contexts and demonstrates acceptable reliability and validity (as seen in some of the examples above), additional confirmatory factor analysis (CFA) still needs to be done to establish model fit as previous work has been focused on exploratory factor analyses (EFA) (Lin, 2015). Moreover, as far as this study is concerned, there seems to be a lack of validation studies using the PWB scale in South African languages. For the present data on high school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the PWB demonstrated an excellent reliability coefficient with a Cronbach alpha of .89.

Ideally, it is recommended that all measuring instruments undergo psychometric testing (i.e., reliability and validity testing) before being used in clinical settings, research projects, or evidence-based practices (Mayo, 2015). The importance of this is well documented (see Bolarinwa, 2015; Straub et al., 2004 for review). In this study, Cronbach's alpha was used to examine the reliability (internal consistency) of all the self-reporting scales used in the current study. In line with George and Mallery (2003) and Nunnally and Bernstein (1994), Cronbach's alpha coefficients around 0.7 or greater are generally considered acceptable. Moreover, Cronbach alpha's equal to or above 0.60 are considered acceptable during the piloting study phase or in exploratory research (Hair et al., 2021; Straub et al., 2004). In order to show a more detailed description of Cronbach's alpha values, Cronbach's alpha cut-off points for reliability as proposed by Cooper and Schindler (2003), George and Mallery (2003), and Hair et al (2016), are presented in Table 1 below. these cut-off points reflect some homogeneity among these scholars.

Table 1

Cronbach's Alpha Cut-Off Values for Reliability

<i>Degrees of Reliability</i>	Cooper & Schindler (2003)	George & Mallery (2003)	Hair et al (2016)
<i>Very high/ Excellent</i>	$\alpha \geq .9$	$\alpha \geq .9$	$\alpha \geq .9$
<i>High/ Good</i>	$.7 \leq \alpha < .9$	$\alpha \geq .8$	$0.8 < \alpha < 0.9$
<i>Acceptable</i>		$\alpha \geq .7$	$0.7 < \alpha < 0.8$
<i>Questionable/moderate</i>	$.6 \leq \alpha < .7$	$\alpha \geq .6$	$0.6 < \alpha < 0.7$
<i>Poor/ Low</i>	$.5 \leq \alpha < .6$	$\alpha > .5$	$\alpha < 0.6$
<i>Unacceptable/ Very low</i>	$\alpha < .5$	$\alpha < .5$	

4.6 Procedure

Following ethical clearance from the Biomedical Research Ethics Committee (BMREC) and institutional clearance from the Western Cape Education Department (WCED), official permission to conduct the research was obtained from the school principals and relevant stakeholders. Two schools participated in the study based on the inclusion criteria. Study documents i.e., information sheet(s) and parental consent (Appendix E) and assent (for participants younger than 18, Appendix D), and consent forms (Appendix C) for participants between 18 and 19 years were distributed to parents/ guardians and participants after schools and participants had agreed to participate. Both the information sheet and consent/ assent forms were available in English, isiXhosa, and Afrikaans (these were submitted to BMREC for noting after the translation was completed). During data collection days, questionnaires (in English, Afrikaans, and isiXhosa languages) were administered by the researcher in a classroom setting during school hours. An estimated time of about 60 minutes was set aside to complete the questionnaire, and this included breaks and icebreakers (to avoid questionnaire fatigue) in between. Completed questionnaires were assigned an identity number, coded according to the

school, and subsequently captured. Thereafter data was cleaned and screened for accuracy of data entry in preparation for data analysis. It should be noted that as this was a two-phase study, more detailed procedures for each phase are provided below:

4.6.1 Phase 1: Cognitive testing. Prior to the piloting phase, the questionnaire was translated into isiXhosa and Afrikaans using the back-translation (Brislin method; Brislin, 1976) and compared to the English version to identify and attend to language and problematic items. During this stage (the first sub-phase of cognitive testing), the questionnaire was abbreviated. In other words, five items per standardized questionnaire were selected (while the entire demographic questionnaire was included) and administered to a sample of $n = 30$ participants. For the abbreviated questionnaire, items were selected randomly from the beginning, middle, and at end. Based on the participant's first language, the sample comprised English ($n = 10$), isiXhosa ($n = 10$), and Afrikaans ($n = 10$) respondents.

After the abbreviated questionnaire was administered and completed, $n = 15$ (five participants for each language from the $n = 30$) participants were selected and interviewed to solicit feedback on how they experienced the items i.e., whether any items were difficult for them, or easy, and what they think could be done to adapt the items they experienced as challenging. These questions were asked to establish if the translated versions of the questionnaires posed any difficulties and if the respondents had any difficulties comprehending the items, language, and ambiguity of the constructs being measured.

The second sub-stage of the cognitive testing phase included administering the entire questionnaire, including the demographic questionnaire. It is worth noting that participants that participated in the first stage of the cognitive testing did not partake in the second stage of the

cognitive testing phase. Due to COVID-19 regulations at schools of pupils attending in groups and on different weekdays, this was easy to achieve.

4.6.2 Phase 2: Piloting phase. During the abbreviated stage cognitive phase, there were no challenges or issues raised by the participants, and therefore there were no changes made to the questionnaire. It should be noted that during this piloting phase, the entire questionnaire (including the demographic questionnaire) was administered to the participants. It is also worth noting that participants that participated in the cognitive testing phases did not partake in the piloting phase. Due to the COVID-19 pandemic and lockdown restrictions (which resulted in schools restricting access to learners), data for the second sub-stage of the cognitive testing and piloting phase were combined, resulting in a total of $n = 225$ participants. From the $n = 225$, a total of five completed questionnaires were excluded as they did not meet the age criteria of the study (i.e., between the ages of 13 to 19 years). These included a 12-year-old, three 20-year-olds, and a 21-year-old. The final sample size out of which the quantitative data analyses were conducted to quantify the nature of the statistical relationships between variables under study was $n = 220$.

4.7 Data Analysis

Data analysis was conducted to address the hypothesized model (see Figure 1 in Chapter 1) and the aim and objectives of the current study. Data analysis for this study was done using the Statistical Package for Social Sciences (SPSS) version 28 and MPlus statistical software package version 7. SPSS was used to run the descriptive (demographic statistics) and inferential statistics, i.e., evaluation of internal consistency (using Cronbach alphas). MPlus was used for CFA to test model fit and the hypothesized structural relationships (direct and indirect) between study constructs through Structural Equation Modelling (SEM). Before conducting data analysis, data

preparation was done on the completed questionnaires by coding, capturing, cleaning, and reviewing the captured data for inaccuracy.

Descriptive statistics such as the frequencies and percentages, mean, and standard deviation, were used to provide data summarization of demographic characteristics of respondents. Cronbach alphas were used to determine the internal consistency (i.e., reliability) of the self-report screening scales used in this study. Confirmatory factor analysis (CFA) was carried out to assess the validity of the self-report screening scales. SEM was used to report on the measurement model (factor analysis) and the structural model (path analysis). This was done by hypothesis testing (model fit) and by exploring the hypothesized relationship between the study constructs (structural model). The following goodness-of-fit indices: the chi-square/degree of freedom (χ^2/df) likelihood ratio statistic, the comparative fit index (CFI), the root mean square error of estimation (RMSEA, with associated 90% confidence interval), and the standardised root mean square residual (SRMR) were used to evaluate the overall model fit. The information concerning the model fit category, their level of acceptance and supporting literature are presented below in Table 2.

Table 2

Fit indices

Name of category	Index name	Shorthand	General rule for acceptable fit	Literature
<i>Absolute Fit</i>	Root Mean Square of Error Approximation	RMSEA	< .05 ≤ .08; acceptable	(Hu & Bentler, 1999; Wang & Wang, 2020)

	Standardized Root Mean Square Residual	SRMR	$< .05 \leq .08$; acceptable.	(Cho et al., 2020; Hu & Bentler, 1999)
	Goodness of Fit Index	GFI	$> .90$	(Hair et al., 1998)
<i>Incremental Fit</i>	Adjusted Goodness of Fit	AGFI	$> .90$	(Hair et al., 1998)
	Comparative Fit Index	CFI	$\geq .90$	(Hu & Bentler, 1999)
	Tucker-Lewis Index	TLI	$> .90$	(Hu & Bentler, 1999)
	Normed Fit Index	NFI	$> .90$	(Byrne, 2009; Hair et al., 1998)
<i>Parsimonious Fit</i>	Chi-Square/Degree of freedom	Chisq/df	p -value above 0.05 & $(\chi^2/df) < 3$	(Bagozzi & Yi, 1988)

In the present study the following criteria as recommended by Meyers et al. (2013) was used to measure model fit: the chi-square (χ^2) likelihood ratio statistic, the comparative fit index (CFI), the root mean square error of estimation (RMSEA, with associated 90% confidence interval)) and the standardised root mean square residual (SRMR). The chi-square (χ^2) likelihood ratio statistic is considered the most important measure of overall fit and is the only statistically based measure of goodness-of-fit available in SEM (Hair et al, 1998), as it tests for the difference between the theoretical model and the empirical model (Meyers et al., 2013). A

good fitting model is indicated by a non-significant χ^2 result and means that the theoretical model does fit the empirical data.

The comparative fit index (CFI) assesses the model fit by comparing the data with the estimated or hypothesized model (Wong, 2002). The CFI index ranges from 0 (which indicates that the model is poor) to 1 (which indicates that better level of goodness-of-fit). It is recommended that the CFI index be at least .90 for it to be considered a good model fit (Byrne, 2009; Hu & Bentler, 1999). The root mean square error of estimation (RMSEA) is used to test goodness-of-fit. Sometimes referred to as 'badness-of-fit', RMSEA is an absolute fit index, in that it assesses how far a hypothesized model is from a perfect model (Wong, 2002). The RMSEA scores range between 0 to 1, with scores between .05 and .08 suggesting acceptable model fit (Hu & Bentler, 1999). The RMSEA is accompanied by its related 90% confidence interval (CI) as can be seen in the results below. The standardised root mean square residual (SRMR) is also an absolute fit index that is used to compare the fit of two different models with the same data (Weston & Gore, 2006). The SRMR scores smaller than 0.05 indicate a good model fit, while scores below .08 are still acceptable (Hu & Bentler, 1999).

4.8 Ethics Considerations

Ethics in research play a crucial part and researchers need to follow strict rules and guidelines (Kosslyn & Rosenberg, 2005). As a researcher and health professional, it is my obligation to protect and inform participants of their rights. Ethical approval [BM20/4/20; see Appendix A] for this study was granted by the Research Ethics Committee of the University of the Western Cape and permission to gain access to the different schools was obtained from the Western Cape Education Department (see Appendix B), prior the commencement of data

collection. Permission to gain access to the school grounds was obtained from school principals and educators. Informed parental consent for children younger than 18 years was obtained from parents and guardians as the study worked with participants aged between 13-19 years old.

Individual informed consent was obtained from pupils 18 years and older, while assent was obtained from children younger than 18 years. Information about the study, including the nature and goal of the study and its possible advantages and disadvantages were shared with respondents. Participants were informed of their right to voluntary participate and that they maintained the right to refuse to participate, including the right to withdraw anytime without consequences. To ensure the anonymity of the subjects, participants were not required to write their names on the questionnaires and instead, codes were used. To adhere to confidentiality, only people in the research team had access to the completed study documents (i.e., consent forms and questionnaire) and the filled-in questionnaires were locked in a secured room where only the researcher and supervisor had access. This was a medium to high-risk study as it was on an emotive topic of stress, coping, and psychological well-being– for some participants this could have been emotionally evocative, and it was done on mostly child participants. Therefore, in a case where participants needed psychological services, these services were mentioned that they were available [i.e., school counseling services and on instances where this is not available, contact details for the South African Depression and Anxiety Group (SADAG), a non-profit organization that offers free telephonic counseling, and services of a government social worker at the local clinic]. However, during the data collection phase, none of the students required counselling services, and students that indicated having suicidal ideation and witnessing abuse were asked by the researcher if they needed counseling (of which they indicated they had been taken to counseling by parents either to a counselor or church counselling). These cases were

then referred to the teacher (and the researcher left her contact details with the schools to call should any of the participants indicate a need for counseling services in the future). During the time of data collection, the researcher also received a call from a parent of a participant requesting family counseling services, the researcher referred them to the closest FAMSA. After data collection, data was captured and stored as an encrypted password-protected file on the researcher's computer, and the physical documents were stored in a secured locked cabinet in the supervisor's office. The data obtained during this study will be safely stored and kept for at least five years. The information and results from this study will be disseminated through publications and presented at relevant conferences (this information was also shared with participants).

4.9 Overview of Chapter

This chapter, the research methodology, provides a brief introduction to the methodology considerations of the current study, including the methodological framework, research design, description of the research context, sample and sampling method, data collection and procedures, data analysis, and ethical guidelines that were followed. The psychometric properties of the different instruments used in the current study were also discussed.

The next chapter, chapter four presents the results obtained from the data analyses in the current study.

CHAPTER 5

Results

5.1 Introduction to Chapter

This chapter presents the empirical results of the data in relation to the hypothesized model (see Figure 1) as illustrated in Chapter 1. As indicated in previous chapters, the study sought to validate multiple self-screening scales within the South African context and, additionally, investigate the relation between stress, psychological strengths, coping, and overall psychological well-being among school-going adolescents in Grades 8 to 11, aged between 13-19 years. Moreover, the study sought to determine the direct and indirect associations between stress, psychological strengths, coping and psychological well-being. Both the Statistical Package for Social Sciences (SPSS) version 28 and MPlus (version 7) were used to run analyses for this study. SPSS was used for the inferential statistics to describe the sample characteristics and MPlus statistical package was used to explore the association between research constructs as hypothesized in Figure 1 in Chapter 1.

This section will begin by providing results for the first phase of the piloting stage (i.e., abbreviated questionnaire) and thereafter provide results for the full questionnaire. The results for the full questionnaire (stage 2 of cognitive testing and piloting phase) include frequencies, Cronbach alpha's, item analysis, dimensionality analysis, confirmatory factor analysis, and fitting the structural model with Partial Least Squares Structural Equation Modeling (PLS-SEM).

5.2 Cognitive Testing Results for Current Study

As indicated in the previous chapters of this study, the study covers 2-phases of a 4-phase study. The first phase (i.e., cognitive testing of the self-reporting scales) consisted of abbreviated

questions (and feedback session) and administering the entire questionnaire to participants.

Below, Table.3 presents the demographic characteristics of the participants that participated in the first sub-phase of the cognitive phase (i.e., abbreviated questionnaire). During this sub-phase, ($n = 30$) participants were asked to complete an abbreviated version of the questionnaire.

Table 3

Demographic characteristics of the abbreviated questionnaire participants

Participant	Age	Gender	Grade	Home language	Language of questionnaire administered
1.	15	Female	8	isiXhosa	isiXhosa
2.	13	Female	8	isiXhosa	isiXhosa
3.	14	Male	8	isiXhosa	isiXhosa
4.	16	Female	9	IsiXhosa	isiXhosa
5.	15	Male	9	isiXhosa	isiXhosa
6.	16	Female	11	isiXhosa	isiXhosa
7.	17	Female	11	isiXhosa	isiXhosa
8.	16	Male	11	isiXhosa	isiXhosa
9.	16	Female	10	isiXhosa	English
10.	18	Male	10	isiXhosa	English
11.	14	Male	8	Shona	English
12.	16	Female	10	isiXhosa	isiXhosa
13.	15	Male	10	Sesotho	English
14.	15	Female	9	isiXhosa	isiXhosa
15.	16	Female	10	isiXhosa	English

16.	17	Female	11	isiXhosa	English
17.	14	Male	8	isiXhosa	English
18.	13	Female	8	Afrikaans	English
19.	16	Male	9	isiXhosa	English
20.	17	Male	11	isiXhosa	English
21.	16	Male	10	Afrikaans	Afrikaans
22.	14	Female	8	Afrikaans	Afrikaans
23.	16	Male	8	Afrikaans	Afrikaans
24.	14	Male	8	Afrikaans	Afrikaans
25.	14	Male	8	Afrikaans	Afrikaans
26.	17	Male	9	Afrikaans	Afrikaans
27.	15	Female	10	Afrikaans	Afrikaans
28.	14	Female	9	Afrikaans	Afrikaans
29.	16	Male	11	Afrikaans	Afrikaans
30.	18	Female	11	Afrikaans	Afrikaans

Note. n = 30

This table demonstrates the demographic characteristics of the participants ($n = 30$) who participated in the first sub-phase of the piloting phase. Participants completed an abbreviated version of the full questionnaire.

After the ($n = 30$) participants completed the abbreviated questionnaire, $n = 15$ participants (5 who completed the English, 5 who completed the isiXhosa, and 5 who completed the Afrikaans version) were selected randomly and asked for feedback about the questionnaire. The questions sought to evaluate if the respondents had any difficulties comprehending the items on the scales,

and questions that evaluated the language and ambiguity of the constructs being measured. The results of this feedback session are presented in Table 4.

Table 4

Suggested changes to abbreviated questionnaire

Feedback shared by participants	Changes made based on participant feedback
<i>Feedback on English questionnaire</i> None given	None
<i>Feedback on isiXhosa questionnaire</i> None given	None
<i>Feedback on Afrikaans questionnaire</i> None given	None

As indicated in Table 4 above, no feedback was given by the selected participants ($n = 15$) for the abbreviated questionnaire (in all three languages), therefore no changes were made to the full questionnaire in preparation for the piloting phase.

5.3. Main results: Cognitive and piloting phases

After the first sub-phase of the cognitive phase (i.e., abbreviated questionnaire), participants were asked to complete the full questionnaire (including the demographic questions). This sub-section combines data for the second sub-phase of the cognitive phase (i.e., full questionnaire) and the piloting phase (resulting in $n = 220$ participants). This section presents results and data analyses techniques for these two phases.

5.3.1 Data cleaning and testing assumptions for multivariate analysis

Before the analyses, all data was examined through SPSS for accuracy of data entry, missing values, recoding (of items that needed recoding), fit between their distributions, and the assumptions of multivariate analysis. Negatively phrased items (i.e., items 3, 5, 8, 9, and 10) of the *Rosenberg Self-esteem scale* (RSES) were reverse-coded in order to make sure that higher scores indicated higher levels of global self-esteem. In addition to RSES, the positively-framed items 1, 3, 5, 6, 8, 10, 13, 15, and 19 from the Beck's Hopelessness Scale (BHS) were, in line with the scoring instructions, also reverse coded. This was done to ensure that all items in the scale referred to the theme or variable of hopelessness about the future.

The first assumption that was explored is related to the PLS-SEM sample size. While the targeted sample size of $n = 400$ respondents was not achieved, it is recommended that a sample of 100 to 200 for SEM analysis is deemed acceptable (Wang & Wang, 2020). The final sample size of this study ($n = 250$, out of which 220 were used for SEM) is within the acceptable range, and as such can be considered as appropriate and adequate. Skewness and Kurtosis results are presented in Table 8.

5.3.2. Demographic profile and other characteristics

To explore the sample characteristics, demographic statistics were conducted. These included frequencies and percentages. The results are presented in Table 5 below.

Table 5*Demographic characteristics of school-going adolescent*

Variable	Category	Frequency	%
Age (year)	13	18	8.2
	14	59	26.8
	15	59	26.8
	16	44	20.0
	17	21	9.5
	18	12	5.5
	19	7	3.2
Gender	Male	74	33.6
	Female	144	65.5
	Other	2	.9
Population group	African	204	92.7
	Coloured	13	5.9
	White	1	.5
	Other	2	.9
Grade	Gr 8	96	43.6
	Gr 9	72	32.7
	Gr 10	11	5.0
	Gr11	41	18.6
Home Language	English	16	7.3
	Afrikaans	11	5.0
	isiXhosa	186	84.5
	Sesotho	2	.9

	Other (specify)	5	2.3
Religion	Christian	127	58.0
	Islam	4	1.8
	African ancestors	83	37.9
	Hindu	1	.5
	Other (specify)	4	1.8

Note. n = 220

As indicated in the table above, the study sample for the administration of the entire questionnaire was a total of $n = 220$ participants. From the sample, the lowest age was 13 years and made up 8% of the sample, and the highest age was 19 years and made up 3% of the sample ($M = 15.25$, $SD = 1.46$). The most frequent age in the sample was 14 and 15 years with 59 participants each, both making up 26.8% of the sample. With regard to gender, females made up the majority of the sample with 144 participants (65.5%), while only 74 participants (33.6%) identified as male and 2 participants (.9%) as other. Gender was not specified by participants who identified as other.

With regard to the population group, the majority of the participants identified as Africans ($n = 204$ or 92.7%), while 13 participants (5.9%) identified as coloured, 1 participant identified as white, and 2 participants identified (.9%) as other. The population group was not specified by participants who identified as other. With regard to the school grade, most of the participants ($n = 96$ or 43.6%) were from grade 8, while grade 10 had the least number of participants ($n = 11$ or 5.0%). Grades 9 and 11 had 72 (32.7%) and 41 (18.6%) participants respectively.

With regard to language, the majority of the participants ($n = 186$ or 84.5%) identified as isiXhosa speakers. Only 16 (7.3%) and 11 participants identified as English and Afrikaans speakers respectively. The Sesotho language had the least number of participants, with only 2 (.9%) participants, relative to the 5 participants (2.3%) that identified as 'other'. The 5 participants that selected 'other' all identified as Shona speakers. With regard to religion, the majority of the participants ($n = 127$ or 58%) identified as Christians, while 83 (37.9%) identified as believing in African ancestors. There was only 1 person (.5%) who identified as Hindu. Additionally, 4 individuals (1.8% of the sample) identified as Islam, and another 4 individuals (also accounting for 1.8% of the sample) chose 'other' as their religious identification. The participants that selected their religion as 'other' did not specify a religion.

In addition to the general demographic questions such as age, gender, and grade, participants were also asked questions about family life. These results are presented in Table 6.

Table 6

Demographic characteristics (family) of school-going adolescent

Variable	Category	Frequency	%
Who do you live with?	Only with mother	77	35.3
	Only with father	3	1.4
	With both parents, but no other children	20	9.2
	With mother or father, and other children	91	41.7
	There are no adults in my house	3	1.4
	With other	24	11.0

	relatives		
How do you feel about your family's financial situation?	We never struggle to pay the bills.	63	28.6
	We sometimes struggle to pay the bills.	131	59.5
	We always struggle to pay the bills	26	11.8
In the past month, have you skipped a meal because there wasn't enough food?	No	160	72.7
	Yes	60	27.3

With regard to the question 'Who do you live with', 77 participants (35.3%) indicated that they lived with mother only, while 3 participants (1.4%) specified living with only father and 20 participants (9.2%) indicated that they lived with both parents but no other children (sex of parents was not specified). The majority of the sample, with 91 participants (41.7%) reported that they 'lived with mother or father, and other children'. Other participants, 3 (1.4%) and 24 (11.0%) indicated that they either lived with no adults in their house or lived with relatives, respectively.

In relation to the question 'how do you feel about your family's financial situation', 63 participants (28.6%) indicated that they 'never struggle to pay the bills', while most of the participants ($n = 131$ or 59.5%) indicated they 'sometimes struggle to pay the bills'. A further 26 participants (11.8%) indicated they 'always struggle to pay the bills'. In addition to this question, the question asking, 'In the past month, have you skipped a meal because there wasn't enough food?' to access perceptions of family socioeconomic background was asked. From the sample, 160 participants (72.7%) reported that they have not skipped a meal and 60 participants (27.3%) reported that they have skipped a meal in the past month.

Table 7

Perceptions of mental health, well-being, and general coping abilities among school-going adolescents

Variable	Category	Frequency	%
When it comes to my mental health and overall well-being, I would say that:	I am psychologically healthy; I feel mentally stable and well.	140	63.6
	I feel a little psychologically healthy, a little mentally stable and well.	54	24.5
	I feel a little psychologically ill, mentally unstable and unwell.	13	5.9
	I am not psychologically healthy, mentally stable or well	13	5.9
When it comes to my ability to deal with stress, I would say that:	I am always able to cope well when I need to	94	42.7
	I sometimes am able to cope well when I need to	73	33.2
	I am sometimes unable to cope well when I need to	36	16.4
	I am never able to cope well when I need to	17	7.7

In addition to asking questions about the participant's socioeconomic background, the demographic questionnaire also asked questions focusing on the participant's perceptions about their mental health, psychological health, and overall well-being. With regard to perceptions about mental-health and overall well-being, the majority of the participants ($n = 140$ or 63.6%) indicated that they are psychologically healthy, feel mentally stable, and well. While 54 participants (24.5%) indicated that they 'feel a little psychologically healthy, a little mentally

stable and well' and 13 participants (5.9%) indicated that they 'feel a little psychologically ill, mentally unstable and unwell' and 13 participants (5.9%) from the sample indicated that they do not feel psychologically healthy, mentally stable, or well.

Participants were also asked questions focusing on their ability to cope with stress. From the sample, the majority of the participants ($n = 94$ or 42.7%) reported that they are 'always' able to cope well when needed to, while 73 participants (33.2%) noted that they are 'sometimes' able to well when needed to, and 36 (16.4%) participants indicated that they are 'sometimes unable' to cope well when needed to. Only 17 participants (7.7%) participants reported that they are 'never' able to cope well when needed to.

5.4 Prevalence of Stress in High School-going Adolescents

The following section will present the results for the prevalence of stress (with depression, anxiety, and hopelessness as indicators) in high school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole.

5.4.1. Depression. Using depression as a construct (and indicator) to measure stress in adolescents, the *Beck Depression Inventory–Second Edition (BDI-II: Beck et al., 1996)* was used. As per the BDI-II cut-off scores, the prevalence of the various categories of depressive symptomatology was as follows: $n = 122$ (55.5%) minimal depressive symptoms, $n = 40$ (18.2%) mild depressive symptoms, $n = 34$ (15.5%) moderate depressive symptoms, and $n = 18$ (8.2%) severe depressive symptoms. These results indicate that at least 41.9 % of the participants presented with mild to severe depressive symptoms, relative to the 55.5% of the participants that presented with minimal depressive symptoms.

5.4.2. Anxiety. Using anxiety as a construct (and indicator) to measure stress in adolescents, the *Beck Anxiety Inventory (BAI; Beck & Steer, 1993a)* was used. As per the BAI cut-off scores, the prevalence of the various categories levels of anxiety were as follows: $n = 71$ (35.5%) minimal levels of anxiety, $n = 49$ (24.5%) mild anxiety, $n = 45$ (22.5%) moderate anxiety and $n = 35$ (17.5%) for severe levels of anxiety. These results indicate that at least 64.5% of the participants presented with mild to severe anxiety symptoms, relative to the 35.5% that presented with minimal levels of anxiety.

5.4.3. Hopelessness. Using hopelessness as another construct (and indicator) to measure stress in adolescents, the *Beck's Hopelessness Scale (BHS; Beck & Steer, 1993b)* was used. As per the BHS cut-off scores, the prevalence levels of hopelessness were as follows: $n = 88$ (42.9%) considered within the normal range, $n = 79$ (38.5%) mild hopelessness, $n = 34$ (16.6%) moderate hopelessness, and $n = 4$ (2.0%) severe hopelessness. These results indicate that at least 57,1% of the respondents presented with mild to severe levels of hopelessness, relative to the 42.9% that reported what is considered within the normal range of hopelessness.

5.5. The Overall Use of Coping Strategies

To measure participants' coping, the *Coping Strategy Indicator (CSI; Amirkhan, 1990, 1994)* was used. As indicated in the previous chapter, this scale measures the degree to which three coping strategies (i.e., problem solving, seeking social support, and avoidance) have been used in response to a specific stressful life experience. The CSI scale starts by requesting respondents to identify a stressful event occurring within the last 6 months and to consider the manner in which they coped with it. In the present study the stressful events noted by respondents ranged from mental health issues (low self-esteem, stress, depression, and suicidal attempts), academic issues (inability to concentrate in class, repeating a class, drop in academic

performance, struggling with tests or exams, or being a “slow learner”), loss of loved ones (parents, grandparents, siblings, and friend), family financial issues (struggling to buy school things, hunger, parents struggling to get a job or pension or not having lunch money for school), domestic issues or witnessing and experiencing abuse or crime (parental disputes or fights, witnessing gender-based violence and witnessing robbery at home), relational issues (conflict with peers, romantic partners, and family members), health issues (such as being sick, involved in car accidents and hospitalization of loved ones), peer pressure, teenage pregnancy, drop-in sports performance and worry about future.

In coping with the issues listed above, the CSI score results indicated that at least 62.3% ($n = 137$) of the respondents made a predominant use of the avoidant coping strategy, relative to the 13.2% ($n = 29$) who made a predominant use of the seeking social support strategy and the 3.2% ($n = 7$) who made a predominant use of the problem solving strategy. Furthermore, the CSI scores also demonstrated that some respondents had more than one dominant coping strategy, with at least 12.3% ($n = 27$) making combined use of both the seeking social support coping and avoidant coping strategies, whereas for 4.5% ($n = 10$) coping was characterized by an oscillation between the problem solving and avoidance coping strategies, and for the remaining 2.3% ($n = 5$), coping was typified by vacillatingly making equal use of all three coping strategies (i.e., problem solving, seeking social support and avoidance).

5.7. Descriptive Statistics of Measures Used in the Present Study

To explore instrument characteristics; the means, standard deviations, skewness, and kurtosis for all dimensions under investigation in the current study, that is, stress, psychological strengths, coping, and psychological well-being were examined. For the study constructs to not violate the normality assumption, a suggested rule-of-thumb recommends that the skewness

variables must lie within the range of ± 2 and a kurtosis within the range of ± 7 (Byrne, 2009; Hair et al., 1998). The study constructs, as seen in Table 8 below fall within these ranges and thus suggest that the data sufficiently meets the requirements of normality for maximum likelihood estimation.

Table 8

Descriptive Statistics of the Study Constructs

Construct	Mean	Std. Deviation	Skewness	Kurtosis
<i>Stress</i>				
BDI-II	13.71	10.31	.86	.45
BAI	14.60	11.50	.88	.52
BHS	4.92	3.71	.82	.31
<i>Coping</i>				
CSI	69.41	10.84	-.40	-.21
<i>Psychological Strengths</i>				
MSPSS	55.84	17.44	-.45	-.60
CYRM12	43.97	10.13	-.46	-.45
RSES	28.00 (27.67)	4.55	.13	.88
<i>Psychological well-being</i>				
PWB	40.85	12.00	-.89	-.01

Notes: BDI-II = Beck's Depressions Inventory – Second Edition, BAI = Beck's Anxiety Inventory, BHS = Beck's Hopelessness Scale, CSI = Coping Strategy Indicator, MSPSS = Multi-dimensional Scale of Perceived Social Support, CYRM-12 = Child and Adolescent Resilience Measure, RSES = Rosenberg Self-Esteem Scale, PWB = Psychological Well-Being scale.

5.8. Reliability Indices (e.g., Cronbach Alpha and Internal Homogeneity). In relation to the aim of the study i.e., to validate several measuring instruments, the reliability and validity (also jointly known as psychometric properties) of the scales were explored. The results for the psychometric properties of the scales used in this study are presented below.

Table 9

Reliability Statistics for Scales

Construct	Scale	No. of items	α
Stress	BDI-II	21	.88
	BAI	21	.90
	BHS	20	.79
Coping	CSI	33	.81
	<i>CSI_Problem solving</i>	11	.78
	<i>CSI_Seeking Support</i>	11	.80
	<i>CSI_Avoidance</i>	11	.68
Psychological strengths	MSPSS	12	.90
	CYRM12	12	.83
	RSES	10	.60
Psychological well-being	PWB	8	.89

Notes: *Coping Strategy Indicator entire scale internal consistency is indicated in bold this table.

Notes: BDI-II = Beck's Depressions Inventory – Second Edition, BAI = Beck's Anxiety Inventory, BHS = Beck's Hopelessness Scale, CSI = Coping Strategy Indicator, MSPSS = Multi-dimensional Scale of Perceived Social Support, CYRM-12 = Child and Adolescent Resilience Measure, RSES = Rosenberg Self-Esteem Scale, PWB = Psychological Well-Being scale.

In terms of the reliability indices, the majority of scales (i.e., BDI-II, BAI, CSI, MSPSS, CYRM-12, and PWB) used in the present study indicated between good to excellent reliability

coefficients, relative to the two (i.e., BHS and RSES) that demonstrated acceptable and adequate reliability. For the measures with subscales, the CSI subscales demonstrated good to acceptable Cronbach's alpha: $\alpha = .78$ (for problem solving); $\alpha = .80$ (for seeking social support); and $\alpha = .68$ (for avoidance). The CSI (entire scale) also demonstrated good reliability with a Cronbach alpha of .81. The MSPSS scale also demonstrated an excellent reliability coefficient of .90, while the subscales demonstrated good reliability coefficients of .85, .81, and .83 for family support, friend support, and significant other, respectively. For the measures without subscales, the BDI-II had a coefficient of .88, the BAI a coefficient of .90, the BHS a coefficient of .79, the CYRM-12 a coefficient of .83, the RSES a coefficient of .60 and the PWB with a coefficient of .89. All the aforementioned coefficients preceded the preliminary confirmatory factor analyses.

5.9 Structural Equation Modeling

Structural Equation Modeling (SEM) is made up of two components: the first is the measurement model (factor analysis) and the second is the structural model (path analysis) (Hoyle, 1995). The measurement model demonstrates the association between observed variables and latent variables, while the structural model describes the interrelationships among the study constructs (Hair et al., 2021). The model may be called a composite or full structural model when both measurement and structural model are considered together (Weston & Gore, 2006). Based on the aim and objectives of this study, both the measurement and structural model were considered appropriate to ascertain the distinctiveness of study constructs and to investigate the interrelationships among the study constructs.

5.9.1 Evaluation of outer model (i.e., measurement model). The first phase of SEM includes evaluating the outer model (also known as the measurement model). The measurement model of SEM permits the researchers to appraise how well-observed variables combine to recognize the underlying hypothesized constructs (Hair et al., 2021). The statistical technique used to test the measurement model is Confirmatory Factor Analysis (CFA) – this is done to test competing measurement models before testing the underlying structural mediation model. CFA is a statistical technique that is generally used to evaluate the theoretical hypothesis that a relationship exists between observed variables (covariance) and their underlying latent constructs (Hu & Bentler, 1999; Suhr, 2006). In this study, CFA was used to evaluate construct validity i.e., unidimensionality of the latent variables, convergent validity as well as discriminant validity by assessing the measurement model developed for testing each of the main variables (Hair et al., 2020).

5.9.1.1 Construct validity. In its simplest form, construct validity evaluates and ascertains that an instrument assesses and measures the construct it aims to measure (Strauss & Smith, 2009). As the scientific process of validation evolved over time, so has the way different types of validity are understood and explored (see Sireci, 2007; Strauss & Smith, 2009 for review). While the concept was originally introduced by Meehl and Challman in the 1954 Technical Recommendations (Strauss & Smith, 2009), recently the term has been viewed as a unifying form of validity for psychological measurements, subsuming both content and criterion validity, which traditionally had been treated as distinct forms of validity (Landy 1986). In order to assess the construct validity, there are two methods which are suggested by Fornell and Larcker (1981). Firstly, by assessing convergent validity, and secondly through discriminant validity (both are described below).

Convergent validity is a measure of internal consistency. In this study, convergent validity was used to verify the extent to which indicators of the latent variables correlate with each other. This is done to ascertain that the items hypothesized to measure each latent variable measure that specific variable and do not measure another latent variable (Fornell & Larcker, 1981; Hulland, 1999; Rahman et al., 2013). This means that tests or items measuring the same or similar constructs should be highly correlated. As suggested by Aibinu et al. (2011), the convergent validity of constructs can be determined by calculating individual item reliability, Cronbach's alpha, Composite reliability (CR), and Average Variance Extracted (AVE). *individual item reliability* (unidimensionality) explores the extent to which measurements of the latent variable measured with multiple-item scales reflect mostly the true score of the latent variables relative to the error (Rahman et al., 2013). Individual item reliability is assessed by calculating standardized factor loadings where items with loadings of less than 0.4 (a threshold commonly used for factor analysis results) or 0.5 should be dropped (Hulland, 1999). Cronbach's alpha scores were accessed as discussed above.

Composite reliability (CR; also known as construct reliability) is a measure used to access the extent to which a construct is measured by its hypothetically-defined indicators (Rahman et al., 2013). The interpretation of CR scores is the same as that of Cronbach's alpha; where scores ranging from .60 to .70 are acceptable for exploratory research (Hair et al., 2021). On the hand, *Average Variance Extracted (AVE)* measures the amount of variance captured by the latent variable from its measurement indicators (or items) in comparison to the amount of variance that is due to measurement errors (Fornell & Larcker, 1981). While a minimum score of .5 (50%) or higher is considered an acceptable AVE (Hair et al., 2021), scores of .4 can also be considered acceptable because Fornell and Larcker (1981) argued that if AVE is less than 0.5, but

composite reliability scores are higher than 0.6, the convergent validity of the construct can still be considered as adequate. In the current study, convergent validity for the latent variable of stress, on the one hand, was measured using the three indicators of anxiety, depression, and hopelessness (as measured using the BAI, BDI-II, and BHS scales). Convergent validity for the latent variable of psychological strengths, on the other, was measured using the three indicators of perceived social support, self-esteem, and resilience (as measured using the MSPSS, RSES and CYRM-12). The results are presented in Table 10.

Table 10

Convergent validity and measurement model

Construct	Measurement items	Factor loading	Cronbach's alpha	CR	AVE
<i>Stress</i>	BDI-II	.915	.62	.71	.46
	BAI	.548			
	BHS	.500			
<i>Psychological Strength</i>	MSPSS	.618	.60	.60	.50
	CYRM12	.999			
	RSES	.336			
<i>Coping strategies</i>	CSI_PR	.869	.71	.72	.48
	CSI_SS	.592			
	CSI_AV	.571			

Notes: CR = Composite Reliability and Average, AVE = Variance Extracted

Secondly, construct validity was assessed through discriminant validity. Discriminant validity was used to determine the extent to which indicators for one construct are different from

indicators in another construct (Hair et al., 2020; Rahman et al., 2013). In other words, discriminant validity indicates heterogeneity between different constructs, that is, the extent to which they are not related. This means that items from one scale or construct should not load or converge too closely with items from a different scale or construct and that different latent variables which correlate too high may indeed be measuring the same construct rather than a different construct (Garver & Mentzer, 1999). This is assessed through inter-factor correlations, where low correlations or no correlations between variables indicate the presence of discriminant validity. Correlations close to zero (0) are preferable as they suggest that variables are unrelated (Sekaran, 2003). To establish discriminant validity in this study, the following two rules were followed: Firstly, by assessing correlations between constructs, where different constructs should not be too high (> 0.90) or low (< 0.10) (Hair et al., 1998). Secondly, by assessing the square root of AVE of each construct. Fornell and Larcker (1981) advise that the square root of AVE for each construct should be greater than the correlation with any other construct in the framework. Table 9 and Table 10 imply that construct (i.e., convergent and discriminant) validity of the study was satisfactory. The results are also presented in Table 11 below.

The factor analysis for stress using three constructs (Maximum Likelihood Estimator, Direct Oblimin Rotation): a single factor explaining 60.98% of the variance, and for psychological strengths, using three constructs: a single factor explaining 58.45% of the variance.

Table 11*Inter-construct correlations and discriminant validity*

	BDI-II	BAI	BHS	CSI	MSPSS	CYRM12	RSES	PWB
BDI-II	1							
BAI	.502**	1						
BHS	.457**	.274**	1					
CSI	.016	.109	-.282**	1				
MSPSS	-.125	-.083	-.314**	.457**	1			
CYRM12	-.260**	-.187**	-.429**	.341**	.593**	1		
RSES	-.325**	-.206**	-.395**	.127	.194**	.319**	1	
PWB	-.260**	-.127	-.436**	.380**	.563**	.592**	.422**	1

Note: $n = 220$. Significant correlations are in boldface. *** $p \leq .001$ – statistically significant. ** $p \leq .01$ – statistically significant. * $p \leq .05$ – statistically significant.

5.9.2. Evaluation and interpretation of inner model

After the evaluation of the measurement model i.e., the outer model, the second stage is the evaluation of the inner model (i.e., the structural model). The structural model can be assessed by evaluating the overall model fit. It is recommended that researchers should evaluate fit by accessing the following: (a) significance and strength of estimated parameters, (b) variance accounted for in endogenous observed and latent variables, and (c) how well the overall model fits the observed data, as indicated by a variety of fit indices (Weston & Gore, 2006). In the present study, the structural model (path analysis) was tested by using latent variable modeling as implemented by MPlus version 7.

Model fit evaluates if the theoretical hypothesized model fits the empirical data well, and generally, these are evaluated through the goodness-of-fit indices. Various fit indices in SEM can be used to determine whether the theoretical model fits the empirical data. Although there are no set rules for assessing the model fit per se, it is advised to use at least one fitness index from each category of model fit (Holmes-Smith et al., 2006). The results for the measurement model (robust maximum likelihood [MLR] estimates) in the current study are summarised and presented in Table 12. The results for the measurement model (robust maximum likelihood [MLR] estimates) in the current study are summarised and presented in Table 12.

Table 12

Goodness of fit statics for the measurement model

χ^2	(df)	p-value	CFI	RMSEA (CI)	SRMR
68.52	24	$p < .001$.93	.092, 90%CI [.067, .118]	.065

Note: χ^2 : Chi-square; df: degrees of freedom; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardised root mean square residual. Chi-square/RMSEA is significant at $p = .00$.

Based on measurement model (robust maximum likelihood [MLR] estimates) outputs, the ratio of χ^2 statistic to the degree of freedom (df) = 68.52 (24); $p < .001$, which indicates poor model fit. However, it is also worth noting that since χ^2 is sensitive to sample size in large samples, researchers should take note that it is not a reliable guide for model goodness (Hu & Bentler, 1998). Caution is given to researchers for even the modest sample sizes (Iacobucci, 2010). As a result, other fit statistics were then examined. The CFI was = .93, which is within the recommended cut-off value of $>.90$, the RMSEA = .092 (confidence interval 90%: .067, .118) is

slightly above the suggested cut-off of 0.08, and the SRMR = .065 which is within the recommended cut-off of .08. Overall, the fit indices provide evidence that the hypothesized model is an acceptable fit to the dataset. Since most of the fit indices met their common acceptable values, this verifies an acceptable fit of the measurement model with the dataset, confirming the discriminant validity of study constructs.

5.9.3. Evaluation of the research model. Finally, the significance of the structural model (path analysis) was examined. Based on the set of results, it was verified that there was a significant positive relationship between psychological strengths and coping ($B = .64, p < .001, 95\%CI [.25, 1.02]$). Likewise, the results also indicate a significant negative relationship between stress and psychological strengths ($B = -.70, p < .001, 95\%CI [-.95, -.45]$), and a significant positive relationship between psychological strengths and psychological well-being ($B = 1.25, p < .01, 95\%CI [.53, 1.97]$). All other relationships were not significant ($p > .05$). The indirect relationship between stress and psychological well-being, via psychological strengths, was significant ($B = -.78, p < .05, 95\%CI [-1.64, -.12]$), while the indirect relationship between stress and coping, via psychological strengths, was also significant ($B = -.45, p < .05, 95\%CI [-.80, -.09]$). None of the other indirect effects were significant ($p > .05$). The model explained 49.3% variance in psychological strengths, 35.7% variance in coping, and 88.5% variance in psychological well-being. The hypotheses test results are summarised in Table 13 and Figure. 3 below.

Table 13

Testing the hypothesized (direct and indirect) effects of the study variables

Hypothesized Associations (Paths)	Beta Coefficient	p-Value	Results
Stress and Psychological Strengths	-.70	$p < .001$	Significant
Stress and Coping		$p > .05$	Non-significant
Stress and Psychological well-being		$p > .05$	Non-significant
Psychological strengths and Coping	.64	$p < .001$	Significant
Psychological strengths and Psychological well-being	1.25	$p < .01$	Significant
Coping and Psychological well-being		$p > .05$	Non-significant
Stress and Psychological well-being, <i>via</i> Psychological strengths	-.78,	$p < .05$	Significant
Stress and Coping, <i>via</i> Psychological strengths	-.45	$p < .05$	Significant
Stress and Psychological well-being, <i>via</i> Coping		$p > .05$	Non-significant

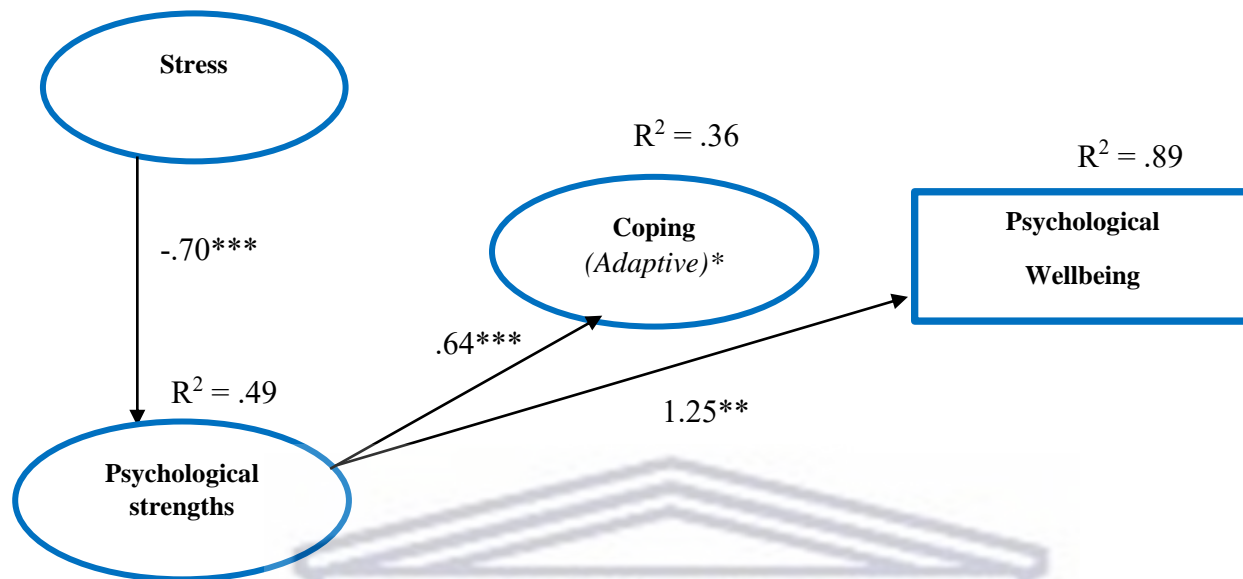


Figure 3. Structural equation model of the effects of study variables. Note: ** $p < .01$, *** $p < .001$; only significant paths are reflected in the equation (model).

5.10. Chapter Overview

This chapter offered the results gathered from the statistical analysis, which were used to in order to examine the psychometric properties of the measuring scales used in the study. Additionally, this chapter offers the outcomes of the results obtained when investigating the relationship between stress, psychological strengths, coping and overall psychological well-being in school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole. The results illustrated satisfactory psychometric properties for the measuring scales used to investigate the relationship among the study constructs. The results also demonstrated that interrelationships exist among the study constructs, and psychological strengths served as a mediator between stress and psychological well-being, and between stress and coping. The following chapter will offer an interpretative discussion of these results.

CHAPTER 6

Discussion of Findings

6.1 Introduction

As indicated in previous chapters, the overall aim of this study was to validate multiple self-screening scales within the South African context and, additionally, investigate the relation between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in Grades 8 to 11, aged between 13 and 19 years. This aim was reached by addressing following research objectives: 1) To validate multiple self-screening scales (i.e., BDI-II, BAI, BHS, CSI, MSPSS, CYRM-12, RSES, PWB) within the South African context; 2) To determine the relationship between stress and psychological strengths; 3) To determine the relationship between stress and coping; 4) To determine the relationship between stress and psychological well-being; 5) To determine the relationship between coping and psychological well-being; 6) To determine the relationship between coping and psychological strengths; 7) To determine the relationship between psychological strengths and psychological well-being; 8) To determine if coping mediates the relationship between stress and psychological well-being; 9) To determine if psychological strengths mediated the relationship between stress and psychological well-being; and lastly, 10) To determine if coping mediates the relationship between stress and psychological strengths.

The chapter will focus on the discussion of the results and provide a summary of the findings.

6.2. Stress Levels in High School-going Adolescents

The following section will present the prevalence of stress (with depression, anxiety and hopelessness as indicators) for high school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole.

6.2.1. Depression. The findings of the current study demonstrated that at least 41.9 % (more than one-third) of the respondents experienced mild to severe depressive symptoms. These findings are consistent with previous studies (Das-Munshi et al., 2016; Sandal et al., 2017; Nalugya-Sserunjogi et al., 2016; Sandal et al., 2017) that reported high levels of depressive symptoms in adolescents, more specifically school-going adolescents. For example, A South African study by Das-Munshi et al. (2016), using the Short Moods and Feelings Questionnaire (SMFQ) indicated a prevalence rate of 41% for depression. Similarly, a Bangladesh study by Islam et al. (2021), using the Bangla version Patient Health Questionnaire (PHQ-9), demonstrated that nearly one-third of respondents (26.5%) experienced moderate to severe depression (Islam et al., 2021). While an Ethiopian study by Girma et al. (2021), using the PHQ-9 depression severity scale indicated that 18.5% and 8.2% of the school-going adolescent respondents experienced moderate and moderate to severe depression, while 1.3% had severe depression.

Similarly, literature on adolescent depression in other countries indicates a prevalence of 15.3–37% in Egypt (El-Missiry et al., 2012), 14.7–72% in Iran (Sajjadi et al., 2013), 40% in India (Grover et al., 2019), 26.4% in Kenya (Erskine et al., 2017) and 21% in Uganda (Nalugya-Sserunjogi et al., 2016). A systematic review by Jorns-Presentati et al. (2021) reported prevalence rates of 41.2% for grade 8 students in Cape Town, and 44.6% for females and 41.1%

for males in Johannesburg in adolescents aged 15–19 years. A lifetime prevalence study with a household sample of 5 631 South African adolescents (aged 15–17 years) reported a prevalence of 2.6% (males: 3.1% vs. females: 2.0%) for depressive symptoms using the Trauma Symptom Checklist for Young Children (Ward et al., 2018). In addition to this, the nationally representative South African Stress and Health (SASH) study reports an annual prevalence rate of 20% for depression among adolescents in South Africa (Ajaero et al., 2018). Similarly, a meta-analysis of 29 studies including 80 879 youth globally conducted during the COVID-19 pandemic also indicated prevalence estimates of 25.2% and 20.5% for depression and anxiety, respectively in children and adolescents (Racine et al., 2021). These findings, in comparison to the pre-pandemic estimates of 12.9% for depression and 11.6% for anxiety – suggest that young people’s mental health difficulties during the COVID-19 pandemic likely doubled (Racine et al., 2021).

It is evident from the studies noted above, and the current study that the prevalence rates for depression in adolescents, more specifically school-going adolescents vary considerably. The reason for the apparent discrepancy between the findings of these studies and the extremely high prevalence of depression in the present study is not clear-cut and merits further investigation. One possible explanation for this could be due to limitations within this study (i.e., the small sample being not representative of all school-going adolescents in the Cape Metropole or South Africa) the study may be susceptible to issues of Type II error. Additionally, when considering South Africa’s dark past of apartheid, a lot of young people are faced with daily struggles and contextual risk factors that include exposure to violence, socio economic stressors, and poverty (Das-Munshi et al., 2016; Harrison et al., 2021). In the present study, socio-economic and poverty related-issues were investigated through questions asking about the family’s financial

situation and if in the past month, respondents had skipped a meal because there was not enough food – the results indicated that more than two-thirds (71.3% or $n = 157$) of the respondents thought their family sometimes or always struggled to pay the bills and nearly one-third of the respondents ($n = 60$) had skipped a meal because there was not enough food.

Also, considering that the data for the current study was collected during the COVID-19 pandemic, other possible explanations for the high prevalence of depression could be associated with the toll of the lockdown restrictions, loss of peer interactions, social distancing which led to isolation, and reduced contact with social supports networks (such as teachers, school peers or school coaches), and in some cases – the unavailability of psychological services usually provided by schools (Racine et al., 2021).

6.2.2 Anxiety. The results of the BAI cut-off scores indicated that almost two-thirds ($n = 129$, 64.5%) of the respondents reported experiences of mild to severe anxiety symptoms; relative to the 35.5% ($n = 71$) respondents who reported experiences of low anxiety levels. In other words, these results indicate that nearly two-thirds of the respondents reported anxiety symptoms above the minimal average levels (see Chapter 4). These results are consistent with previous research (Anjum et al., 2022; Islam et al., 2021; Sandal et al., 2017), that confirmed the high prevalence of anxiety found in adolescents, more specifically school-going adolescents. For example, a Bangladesh study by Islam et al. (2021) using the Generalized Anxiety Disorder (GAD-7) scale found that 81.9% of the respondents in their study were experiencing minimal to mild anxiety levels, and nearly one-third (18.1%) of the respondents were experiencing moderate to severe anxiety levels. Similarly, a multi-country study by Sabbagh et al. (2022) with adolescents and young adults between the ages of 11 to 23 years found that at least 57.6% of the participants presented with moderate to severe anxiety levels.

While there seems to be a lack of studies documenting the prevalence of anxiety in school-going adolescents in the South African context, a cross-sectional study by Mkhwanazi and Gibbs (2021) using the GAD7 scale (with a sample of young people aged 18–32 years from urban informal settlements in Durban, South Africa) found that at least 18.6 % of the women and 19.6 % of the men reported experiencing moderate or severe levels of anxiety. Another South African study by Strydom et al. (2012) screening for anxiety in 515 adolescents (aged 16–18 years) from schools in Bloemfontein found an overall prevalence rate of 61.2%, with 29.0% reporting mild symptoms and 32.0% reporting moderate to severe symptoms on the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS). Other studies documenting the high prevalence of anxiety in adolescents have reported an estimate of 80.85% in India (Sandal et al., 2017), 54.7% in India (Jayashree et al., 2018), 27.3% in China (Xiong et al., 2019), 26.9% in China (Zhang et al., 2021), 26.6% in Uganda (Abbo et al., 2013), 16% in South Africa (Das-Munshi et al., 2016), 40.2% of in South Africa (Mngoma et al., 2021), 37.99% in Kenya (Osborn et al., 2020), and 14.13% in Iran (Mohammadi et al., 2019).

The results in the current and previous studies are in line with the thesis that asserts that anxiety is amongst the most common mental health disorder in adolescents, with nearly one-third of adolescents experiencing a lifetime anxiety disorder and 8.3% of youth meeting the criteria for severe anxiety-related impairment (Parodi et al., 2022). The World Health Survey of anxiety symptoms in 2016 found that anxiety disorders were the sixth leading cause of disability in developed and developing countries (Stubbs et al., 2017). A systematic review and meta-regression by Baxter et al. (2013) demonstrated that the global pooled prevalence of anxiety disorders was 7.3%, indicating that at least one in 14 people around the world at any given time has an anxiety disorder, and one in nine will experience an anxiety disorder in a given year.

6.2.3 Hopelessness. The results of the BHS cut-off scores indicated that 42.9% ($n = 88$) of the respondents reported experiencing normal levels of hopelessness, relative to the 57,1% ($n = 117$) that reported mild, moderate, and severe levels of hopelessness. These results indicate that nearly two-thirds of the respondents reported hopelessness symptoms above the average levels, and are consistent with previous research (Centers for Disease Control and Prevention, 2017; Duke et al., 2011; Peltzer, 2009), that confirmed the high prevalence of hopelessness found in adolescents, more specifically school-going adolescents. For example, in a study by Whaling and Sharkey (2020) investigating the prevalence rates of hopelessness and suicidal ideation among adolescents by gang membership and Latinx identity, the findings demonstrated different but high prevalence levels of hopelessness for Latinx youth who identified as gang members (49.3%, 50.0%) versus Latinx youth who identified as non-gang members (34.2%; 34.6%).

Similarly, a study by Duke et al. (2011) found that one in four youth (25.1%) from grades 6, 9, and 12 reported levels of hopelessness at least enough to bother them in the previous month. Similar to the previous studies documenting anxiety and depression in adolescents, these findings paint an alarming picture of the high prevalence rate of mental issues in adolescence. The prevalence estimate of hopelessness symptoms in the current study of 42.9% (normal levels of hopelessness) and 57,1% (mild to severe levels of hopelessness) is also high and is likely to impair the adolescents' ability to achieve academically and affect other areas of functioning.

The findings from these studies (including the current study) continue to paint an alarming picture of the prevalence of stress and mental health issues in adolescents, both locally and internationally. Moreover, globally, it is estimated that 1 in 7 (14%) 10-19 year-olds experience mental health conditions (WHO, 2021b), with at least 1 in 10 having a specific psychiatric disorder in sub-Saharan Africa (SSA; Nabunya et al., 2020). Although, these issues

are documented to begin at the age of 14 years (Kessler et al., 2007), they continue to remain largely unrecognized and untreated, with little economic and human resources dedicated to the mental health of children and adolescents in the sub-Saharan Africa (SSA) region (Owen et al., 2016). This highlights the need for more resources to be dedicated towards the fight against mental health issues in adolescents because if these are left untreated they could have detrimental developmental issues that continue into adulthood.

6.3. Overall use of Coping Strategies

In order to cope with the adverse impact of stress, individuals use coping strategies available to them. In the present study, the CSI scale was used to explore coping in school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole. The CSI scale starts by requesting respondents to identify a stressful event occurring within the last 6 months and to consider the manner in which they had coped with it, and in the current study the events reported by respondents ranged from mental health issues (low self-esteem, stress, depression and suicidal attempt), academic issues (inability to concentrate in class, repeating a class, drop in academic performance, struggling with tests or exams, or being a “slow learner”), loss of loved ones (parents, grandparents, siblings and friend), family financial issues (struggling to buy school things, hunger, parents struggling to get a job or pension or not having lunch money for school), domestic issues or witnessing and experiencing abuse or crime (parental disputes or fights, witnessing gender-based violence and witnessing robbery at home), relational issues (conflict with peers, romantic partners and family members), health issues (such as being sick, involved in car accidents and hospitalisation of loved ones), peer pressure, teenage pregnancy, drop in sport performance and worry about future. These findings were consistent with literature indicating that adolescents, more specifically school-going adolescents face

various normative stressors that include academic demands, interpersonal relationships (i.e., persistent family conflicts, peer pressure, and romantic relationships), financial pressure, emerging responsibilities of adulthood, and acute events, such as losing a sibling or parent, and concerns or uncertainty about the future (Anniko, 2018; Camara et al., 2017; Pascoe et al., 2020; Roets & Lewis, 2002; Roy et al., 2017; Sigfusdottir et al., 2017).

To cope with these stressors, the CSI scores indicated that the majority of the respondents in the current study, nearly two-thirds (62.3%) predominantly made use of the avoidance coping strategy, exclusively. These findings are consistent with studies (Parikh et al., 2019; Shawl & Mehraj, 2017; Suldo et al., 2008; Thenga et al., 2015; Wang et al., 2021) that have found similar findings of adolescents' general preference to use the avoidance coping strategy. For example, a qualitative study by Parikh et al (2019) with a sample of 191 school-going adolescents in India between the ages of 11 to 17 years found a general preference for avoidant and emotion-focused coping across the sample. It is also worth noting that while a few of the respondents indicated using this specific coping strategy, the seeking social support coping strategy was the second most used (with 13.2% of the respondents making use of this strategy to cope with stressful events). In a study by Herres and Ohannessian (2015) looking at the coping strategies used by a sample of 982 grade 10 and 11 students in dealing with depression and anxiety symptoms, the results indicated that social support-seeking copers and active copers reported the highest levels of coping with a particular preference for support-seeking strategies.

In addition to this, the findings from this study also illustrated that some of the respondents in the sample made use of more than one coping strategy, with at least 12.3% using the seeking social support and avoidance coping strategies concurrently. These findings are in line with the thesis that adolescents use a range of coping strategies (Herres & Ohannessian,

2015). Although it is evident from the findings of the current study that majority (nearly two-thirds) of the respondent preferred to employ avoidance coping strategies such as “Tried to distract yourself from the problem”, instead of employing seeking social support and problem solving coping strategies that include “Talk[ing] to people about the situation because talking about it helped you to feel better?” and “Brainstorm[ing] all possible solutions before deciding what to do” strategies as per the CSI instrument. It is also worth noting, that while avoidance coping behaviors keep the individual from directly addressing the stressor, research on the subject of coping flag avoidance as maladaptive (Yoo, 2019). One explanation for this is that while it may relieve the immediate effect associated with distress and produce desirable short-term effects, it often leads to longer-term problems (Ukeh & Hassan, 2018). However, while avoidance coping strategies can be maladaptive, these coping strategies can at times be adaptive. For example, in some instances, the use of avoidance coping strategies might help ease the effects of a stressful situation because they enable the young person to focus instead on positive events when nothing can be done to change the stressor (Dashora et al., 2011).

These findings indicate that the adolescents from the study and previous studies used different coping strategies, sometimes interchangeably. This (as noted by Connor-Smith et al., 2000) is because adolescents respond to stress according to how they appraise it, with some dealing with the stressor directly; others may use strategies aimed at adapting to a challenging situation, while others might choose to avoid the stressor completely. This is in line with the transactional theory of stress and coping that views coping as a dynamic and evolving process.

6.4. Discussion of Main Findings

This sub-section discusses the empirical results (as presented in the previous chapter) of the data in relation to the hypothesized model (see Figure 1.) as illustrated in Chapter 1. Firstly, the sub-section will start by discussing the first aim: to validate multiple self-screening scales within the South African context. Secondly, results focusing on the interrelation between the hypothesized variables (direct and indirect) under investigation will be discussed as presented in the previous chapter.

6.4.1 Validity of instruments investigating the relationship between stress, psychological strengths, coping and psychological well-being. In relation to the overall aim of validating multiple cognitive measuring instruments in the South African context, with a sample of school-going adolescents (aged between 13 and 19 years) in Grades 8 to 11 in selected schools in the Cape Metropole, it was found that all the study instruments had good to excellent internal consistency. The internal consistency coefficients for the instruments were as follows: BDI-II .88, BAI .90, BHS .79, CSI .81, MSPSS .90, CYRM12 .83, RSES .60, PWB .90, and .76 (problem solving coping), .80 (seeking social support coping) and .70 (avoidant coping) for the CSI subscales. While Cronbach alpha values in the range of 0.60 - 0.80 are considered moderate, they are still acceptable, especially during the piloting study phase or in exploratory research (Hair et al., 2021; Straub et al., 2004). Additionally, the results demonstrated acceptable construct validity, that is, both convergent and discriminant validity for the instruments used in the current study for school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole. These results were in line with research that confirmed satisfactory to excellent reliability and validity for Beck's Depression Inventory-Second Edition, Beck's Anxiety Inventory, Beck's Hopelessness Scale, Coping Strategy Indicator, Multi-dimensional

Scale of Perceived Social Support, Child and Adolescent Resilience Measure, Rosenberg Self-esteem Scale, and Psychological Well-Being scale in other populations and contexts such school-going adolescents (Liebenberg et al., 2013; Osman et al., 2008), Korean community-dwellers (Lee et al., 2016), psychiatric participants (Szabó et al., 2016), Malawian students (Ager & MacLachlan, 1998), adolescents from a Midwestern city (Canty-Mitchell & Zimet, 2000), Romanian students Negovan (2010), and students from different parts of the world; including United States of America, Germany, South Africa and Kenya (Baranik et al., 2008). While there is a lack of studies validating the study instruments in the South African context, more specifically, in the South African languages, research in this context also demonstrates satisfactory reliability and validity for some of the instruments (see Makhubela & Mashegoane, 2016, 2017; Ward et al., 2003 for a review). As per the validity theory (see Chapter Three), the reliability and validity results of the instruments in the current study provide sufficient psychometric properties for the instruments used.

6.4.2 Interrelation between study constructs

This sub-section will discuss results in relation to the aim concerned with investigating the interrelation between the hypothesized variables (direct and indirect as indicated in Figure.1) under investigation as presented in the results section.

6.4.2.1 Direct Associations

This sub-section discusses the results of the direct association between stress, coping, psychological strengths, and psychological well-being. These hypothesized associations are depicted in Figure 1 in Chapter 1.

6.4.2.1.1 Stress to psychological strengths. In relation to the hypothesized direct association between stress and psychological strengths (see Figure 1 in Chapter 1), the results of the current study demonstrate a significant negative association. These findings were consistent with previous research published on the subject of stress and psychological strengths (Alshammari et al., 2021; Camara et al., 2017; Glozah & Pevalin, 2014; Jafflin et al., 2019; Lee et al., 2021; Masselink et al., 2018; Glozah, 2013; Nguyen et al., 2019) that found that higher levels of stress in adolescents can be associated with lower levels of perceived social support, self-esteem, and resilience— all of which are both internal and external health-promoting factors. For example, a study by Cong et al. (2021) found that high levels of depressive symptoms resulted in lower levels of self-esteem. Similarly, other studies also noted that perceived social support (Camara et al., 2017; Glozah, 2013), self-esteem (Jafflin et al., 2019; Jiang, 2020), and resilience (Phillips et al., 2019) – all psychological strengths play a major protective or mediating role for people’s mental health. As per the results of the present study, the hypothesized direct relation between stress and psychological strengths in the SEM (see Chapter 1) could be accepted.

6.4.2.1.2 Stress to coping. In the transactional theory of stress and coping, coping is key to buffering the adverse effects of perceived stress (see TTSC theory in Chapter Three). In the current study, this hypothesized direct association between stress and coping (see Figure 1 in Chapter 1) was explored, and the findings demonstrated a non-significant association. These findings are the opposite from what previous research on this subject has illustrated. For example, previous research (Hezomi & Nadrian, 2018; Thenga et al., 2015; Wang et al., 2021; Yusoff, 2010) supports the thesis that certain coping strategies such as (problem solving and seeking social support coping strategies) relieve the effects of stress and promotes positive

psychological well-being, whereas others (such as avoidance coping) worsen stress and promote negative well-being among adolescents. This is mainly because high levels of stress negatively affect adolescents' quality of life (Yusoff, 2010), and even more importantly, the effect it has on students' learning (Subramani & Kadiravan, 2017) and overall psychological well-being (Hezomi & Nadrian, 2018). Therefore, the use of coping strategies such as problem solving and support-seeking behaviors helps buffer these effects. One possible explanation for the contrary result concerning the association between stress and coping in this sample is that there may be other compelling factors that contribute to and assist adolescents in handling stress. As per the results of the current study, the hypothesized direct relation between stress and coping in the SEM (see Chapter 1) cannot be accepted.

The reason that coping strategies did not affect stress levels in school-going adolescents might be because the majority of the respondents in the current study indicated using the avoidance coping strategy (as seen above) to deal with stressful events. While avoidance is a coping strategy, it is a maladaptive way of coping with stress and has been said to provide temporary relief and at times often increase and exacerbate stress without helping the individual with dealing directly with stressors causing them stress (Folkman & Lazarus, 1991; Ukeh & Hassan, 2018).

6.4.2.1.3 Stress to psychological well-being. In relation to the hypothesized direct association between stress (with depression, anxiety, and hopelessness as indicators) and psychological well-being (see Figure 1 in Chapter 1), the results of the current study demonstrated a non-significant association. In other words, the findings of the current data of school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole demonstrated that stress did not affect or change their psychological well-being. These findings

are the opposite of what previous research (Hezomi & Nadrian, 2018; McMahon et al., 2020; Ngo et al., 2021) on the subject of stress and psychological well-being has found. These findings document the negative and damaging effect stress has on the psychological well-being of adolescents, specifically school-going adolescents. As per the results of the current study, the hypothesized direct relation between stress and coping in the SEM (see Chapter 1) could not be accepted.

The reason that stress did not affect or predict psychological well-being is that psychological well-being may be moderated by other demographic factors such as age and gender, and a variety of other factors that include self-esteem, resilience, perceived social support and coping strategies – which are some of the variables that were asked in the present study that could potentially affect psychological wellbeing, especially when considering the high impact of some of these variables in the final model of the present.

6.4.2.1.4 Coping to psychological well-being. In relation to the hypothesized direct association between coping (i.e., problem solving, seeking social support, and avoidance) and psychological well-being (see Figure 1 in Chapter 1), the results of the current study demonstrated a non-significant association. In other words, the findings of the current data of school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole demonstrated that coping strategies employed by the respondents did not necessarily affect or change their psychological well-being. These findings are different in comparison to previous studies (Glozah, 2013; Suldo et al., 2008) around the same subject. For example, a study by Cicognani (2011) found that decreased use of withdrawal coping strategies resulted in decreased psychological well-being. Overall, this indicates that adolescents that use coping such as avoidance coping more are more likely to have lower levels of well-being. This is mainly

because the repeated use of maladaptive coping strategies (like anger or withdrawal) may lead to psychopathology (Yoo, 2019). Conversely, the use of problem solving and social support-seeking coping behaviours has been linked to increased levels of psychological well-being (Parikh et al., 2019; Wang et al., 2021). As per the results of the current study, the hypothesized direct relation between coping and psychological well-being in the SEM (see chapter 1) could not be accepted.

One reason that coping strategies did not affect levels of psychological well-being in this study might be due to the lack of resources in the South African context. This might have had a significant effect on the extent to which adolescents perceived access to coping resources and how they used coping strategies. For example, limited access to resources has been linked to the use of maladaptive coping strategies (Hobfoll, 1988). These findings suggest the importance of developing interventions that can foster positive coping strategies in adolescents.

6.4.2.1.5 Psychological strengths and coping. In relation to the hypothesized direct association between psychological strengths and coping strategies (see Figure 1 in Chapter 1), the results of the current study demonstrated a significant positive association. These findings were consistent with previous studies (Allen et al., 2016; Graber et al., 2016; J. Li et al., 2020; Roohafza et al., 2014) that have reported a positive association between psychological strengths (with perceived social support, self-esteem, and resilience as indicators for the current study) and coping. This is likely because adolescents with high levels of self-esteem, resilience and social support were more likely to engage in coping behaviours that directly addressed their stressors. This association can also be the other way around, for instance; support seeking (which is a coping strategy) can enhance an individual's sense of worth (loved and cared for), which in turn increases or maintains their self-esteem (Cui et al., 2021). This is in with research associating perceived stress and coping with well-being – which found that these variables reciprocally

influence one another (Suldo et al., 2008b). For example, stress is both a predictor and an outcome of anxiety, depression, hopelessness, and maladaptive coping strategies (such as avoidance) used when dealing with stress. These exacerbate the stress, while the use of active coping strategies (such as problem solving) decreases the experience of perceived stress (Ukeh & Hassan, 2018; Yoo, 2019). As per the findings of the current study, the hypothesized direct relation between psychological strengths and coping in the SEM (see Chapter 1) could be accepted. This finding recommends the need for the provision of a good environment that teaches adaptive coping ways in adolescents (both at home and school) which might help them develop a positive sense of self in the form of high self-esteem, increase their beliefs about their social support networks being available and ready to help in times of adversity and increase their resilience in coping with stressful events.

6.4.2.1.6 Psychological strengths to psychological well-being. Similarly, when investigating the direct association between psychological strengths and psychological well-being as hypothesized in Figure 1 (in Chapter 1), the results of the current study demonstrated a significant positive association. These findings were consistent with findings from previous research (Alshammari et al., 2021; Poudel et al., 2020; Sagone & Caroli, 2014; Xiang et al., 2019), that have shown that high levels of psychological strengths (i.e., internal and external health-promoting factors such as resilience, perceived social support and self-esteem) reported higher levels of psychological well-being in adolescents. This means that school-going adolescents with a positive sense of self, with high levels of perceived social support networks and an increased ability to bounce back from adversity report increased psychological well-being levels and, in detail, autonomy, purpose in life, and self-acceptance than others (Diener et al., 2009) (aspects covered in the PWB scale used in this study). Ultimately, these adolescents tended

to have a positive outlook on life, were hopeful about the future, and tended to be more independent in comparison to others. These findings illustrate the importance of having a supportive environment that fosters a positive sense of self in adolescents in helping them develop positive outlook on life and well-being. As per the findings of the current study, the hypothesized direct relation between psychological strengths and psychological well-being in the SEM (see Chapter 1) could be accepted.

6.4.2.2 Indirect Associations between study constructs

In addition to the direct association between stress, coping, psychological strengths, and psychological well-being, research indicates that an indirect association (through mediators) also exists between these hypothesized study variables, and these were explored (as indicated in Figure 1 in Chapter 1). The findings of these are discussed below.

6.4.2.2.1 Stress and psychological well-being; via psychological strengths. The present finding revealed a negative significant indirect association between stress (with anxiety, depression, and hopelessness as indicators for the current study) and psychological well-being, with psychological strengths (i.e., perceived social support, self-esteem, and resilience as indicators for the current study) having mediating effects in the sample of school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole. The results were in line with previous research (Çakar, 2020; Mahamid et al., 2021; Xiang et al., 2019; Yarcheski et al., 2001) that found that stress was negatively associated with psychological well-being in adolescents, with psychological strengths as a mediator (i.e., perceived social support, self-esteem, and resilience). For instance, a longitudinal study by Xiang et al. (2019) found that self-esteem partially mediated the effects of examination stress on psychological well-being in

school adolescents at different points in time. Similarly, a study by Mahamid et al. (2021) found that resilience mediated the relationship between traumatic life events and psychological well-being in a sample of 240 Palestinian adolescents.

A study by Çakar (2020) also found that social support mediated the relationship between grief (a stressor) and psychological well-being in adolescents. These studies and the current study demonstrated that high levels of self-esteem, social support and resilience mediate the negative relationship between stress and psychological well-being. More importantly, these findings demonstrate that adolescents with high psychological strengths (i.e., perceived social support, resilience, and self-esteem) are less likely to have their psychological well-being impacted by the experience of a stress-provoking environment. In other words, these findings highlight that levels of psychological strengths are important for how well (or not) adolescents cope with stressful situations. As per these findings, this hypothesis (as indicated in Figure 1) could be accepted.

6.4.2.2.2 Stress and coping, via psychological strengths. In relation to the indirect association between stress and coping via psychological strengths, the findings from the data on school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole indicated a significant negative association between stress (with depression, anxiety, and hopelessness as pointers) and coping (i.e., problem solving, perceived social support, and avoidance) with psychological strengths (i.e., perceived social support, self-esteem, and resilience) as the mediating variable. These findings are in line with previous studies (Cong et al., 2021; Li et al., 2020) pointing out a link between stress (with depression, anxiety, and hopelessness as pointers) and coping (i.e., problem solving, perceived social support, and avoidance), with psychological strengths (i.e., self-esteem, social support, and resilience) as a

mediator. For example, a study by Li et al. (2020) demonstrated that resilience mediated the relationship between life events and coping, while self-esteem mediated the relationship between life events and coping through resilience in adolescents. These findings imply that psychological strengths might explain the relationship between stress and coping, to an extent. In other words, individuals with high levels of psychological strengths (resilience, self-esteem, and perceived social support) are likely to adopt adaptive positive coping strategies (such as seeking help from others and focusing on problem solving), which in turn may decrease their levels of stress. This is because one's positive sense of self, perceptions of good supportive social networks, and ability to adapt to adverse life events could lead to self-enhancement. This, in turn, leads to life satisfaction, affecting how individuals appraise and cope with stressful events, resulting in the use of more adaptive and positive coping strategies. Consequently, this could lead to positive psychological well-being (Sagone & Caroli, 2014; Xiang et al., 2019). The findings of the current study demonstrated a significant indirect association between stress and coping via psychological strengths, these findings do support the hypothesized (as indicated in Figure 1) relation between stress and coping *via* psychosocial strengths. As per these findings, this hypothesis could be accepted.

It can be seen from the findings of the current study and previous research that there is a (direct, indirect, and reciprocal) association between stress, psychological strengths, coping, and psychological well-being in adolescents. Although the path for this link is unclear, it appears that the role of psychological strengths and coping strategies is very important because they are considered as mechanisms that buffer life stressors and promote well-being. One explanation for this might be that according to Lazarus and Folkman's transactional theory of stress and coping (see Chapter 3) and the stress-buffering model, coping and psychological strengths (i.e.,

perceived social support, resilience, and self-esteem) play a significant protective role against psychological distress by decreasing perceptions of a situation as threatening and increase the belief that internal and external coping resources are available (Roohafza et al., 2014).

6.5 Summary of chapter

In chapter, the discussion summarised the findings presented in Chapter 5 and integrated them with existing literature on the subject. In the current study, direct significant relationships between stress (anxiety, depression and hopelessness) and psychological strengths (resilience, self-esteem and perceived social support), between psychological strengths and coping, and between psychological strengths and psychological well-being were found. These were accepted as hypothesized in Figure 1. Furthermore, indirect significant relationships were also found among some of the study variables. These include indirect relationships between stress and psychological well-being *via* psychological strengths, and between stress and coping *via* psychological strengths. These were also accepted as hypothesized in figure 1. The findings of the current and the integrated literature from previous studies demonstrate an interrelationship between the study variables, either through direct or indirect (mediating) effects.

CHAPTER 7

Conclusions, Limitations, and Research Implications

7.1 Introduction

This chapter, the final chapter of this thesis presents the overall conclusions, study limitations, and research implications of this study for researchers, practitioners, and the general public.

7.2 Conclusion

The general aim of this study was to validate multiple measuring instruments within the South African context and additionally- to investigate the relationship between stress, psychological strengths, coping and psychological well-being among school-going adolescents (aged between 13 and 19 years) in Grades 8 to 11 in selected schools in the Cape Metropole, Western Cape. This aim was reached by addressing specific research objectives.

Firstly, in relation to the overall aim of validating multiple cognitive measuring instruments in the South African context, with a sample of school-going adolescents (aged between 13 and 19 years) in Grades 8 to 11 in selected schools in the Cape Metropole, Western Cape, the results that were reported in the previous sections indicated that the instruments [i.e., Beck's Depressions Inventory – Second Edition (BDI-II), Beck's Anxiety Inventory (BAI), Beck's Hopelessness Scale (BHS), Coping Strategy Indicator (CSI), Multi-dimensional scale of perceived social support (MSPSS), Child and adolescent resilience measure (CYRM-12), Rosenberg Self-esteem scale (RSES), and Psychological well-being (PWB)] used in the current study demonstrated satisfactory reliability and validity for this sample. Secondly, as a result of analyzing the measurement model of this study, it was found that the model fit was acceptable for (χ^2/df), CFI, (RMSEA, with associated 90% confidence interval), and SRMR. This verifies

that the data for school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole fits the multi-dimensional proposed model between stress, coping, psychological strengths, and psychological well-being in the current sample. However, due to the study constraints (i.e., sample), it is worth noting that this data only verifies model fit for this sample. This result also implies that a more multi-dimensional approach is needed to examine the stress-coping process. Moreover, this consideration might contribute to a multi-dimensional stress-coping model that could develop a deeper understanding of the stress-coping process of adolescents.

In relation to the aim of investigating the relationship between stress, psychological strengths, coping, and psychological well-being among school-going adolescents (aged between 13 and 19 years) in Grades 8 to 11 in selected schools in the Cape Metropole, Western Cape, the results demonstrated that adolescents in the sample cope with a variety of stressors (ranging from school to relational stressors). These results also demonstrated an alarming prevalence rate for stress among this sample, with the majority of the participants using the avoidance coping strategy (as determined by the CSI scores) to cope with this stress. These findings point to a need to develop psychosocial interventions focused at facilitating adaptive coping strategies in adolescents. The findings that were reported in the previous sections also supported some of the proposed (direct and indirect) study hypotheses and some results refuted some of these hypotheses. Specifically, the findings provided empirical support for psychological strengths, in coping with stress as these would subsequently have a positive impact on the overall psychological well-being of school-going adolescents. Given that adolescents report alarming rates of stress levels (Pascoe et al., 2020; Roy et al., 2017; Sigfusdottir et al., 2017; Thenga et al.,

2015), there is a strong need for research investigating ways to decrease mental health problems as well as promote more adaptive coping strategies in this population.

7.3 Study limitations and Recommendations for future research

The findings of the current study should be carefully interpreted in light of the following limitations. Firstly, the current study only included a small sample of school-going adolescents in Grades 8 to 11, aged between 13-19 years from two schools in the Cape Metropole. As a result, the data from this study is not representative of school-going adolescents in Grades 8 to 11, aged between 13-19 years in the Cape Metropole, the Western Cape nor South Africa. Secondly, the study only sampled school-going adolescents, thus excluding the experiences of those adolescents from the same community who are not school-going. The exclusion of these adolescents does not constitute a representative sample, and therefore, it is not possible to determine whether the responses and themes generated were limited to the school-going experience or if adolescents who do not attend school would have provided similar responses. To address both these limitations, in the future, research should be more inclusive and diverse, include a larger representative sample, and delve into the experiences of adolescents regardless of whether they are not in the school context. For example, out-of-school adolescents can be accessed and sampled through street intercept research methods. By addressing this limitation and including a larger representative sample, the issue of sample size for SEM will also be addressed. While the recommended sample size for SEM is a minimum of approximately 200 participants, some SEM analysis techniques such as fit indices (such as chi-square (χ^2) likelihood ratio statistic) are sensitive to sample size (Cangur & Ercan, 2015), therefore, it is recommended that future studies should explore using a larger sample size.

Thirdly, due to the cross-sectional nature of the present study, the data gathered does not enable the determination of whether the relationships between variables could be observed over time. Therefore, future research could pursue longitudinal research that gathers data at different time points to determine changes in the relationships over time. Fourthly, as the current study used a quantitative method to investigate the relationship between the study variables (i.e., stress, coping, psychological strengths, and overall psychological well-being of school-going adolescents in the Cape metropole), the relationships between study variables could only be quantified without room for the exploration of the subjective experiences of stress, coping, psychological strengths and psychological well-being in adolescents. Therefore, future research could use between-methods triangulated data that also includes individual follow-up interviews with selected participants.

7.4. Research Implications

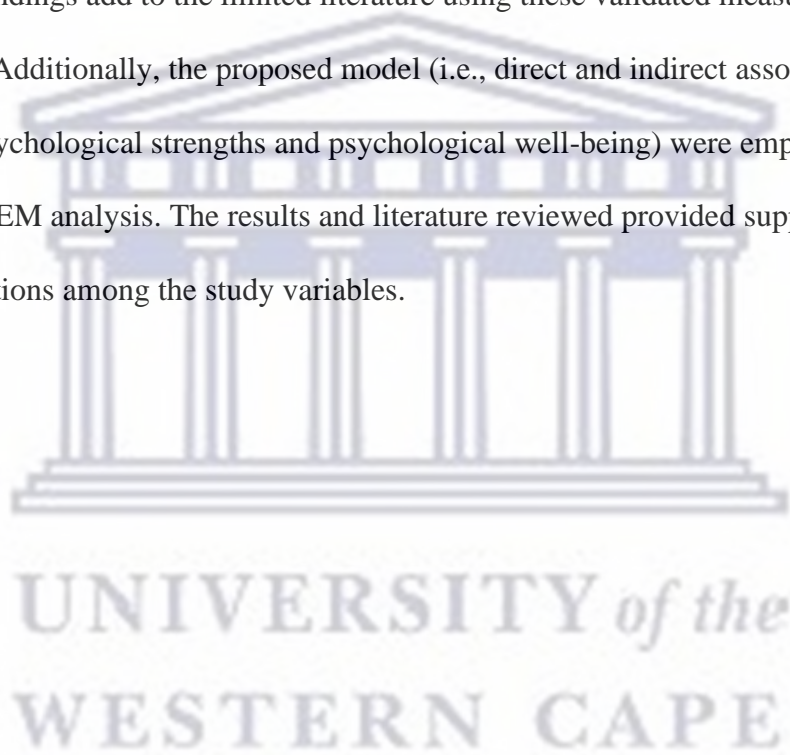
7.4.1. Practical implications for interventions

This research has implications for researchers and practitioners in the field of mental health, more specifically adolescent mental health in South Africa. This study could benefit the research community in profiling the prevalence of stress in school-going adolescents. This in turn could have implications and inform interventions related to mental health in adolescents. For example, this could be done by looking at the risk and protective factors – which were identified through the CSI, MSPSS, RSES, and CRYM-12 scales in this study.

7.4.2. Theoretical and methodological implications

As pointed out in the rationale section of this study, research in this field documents a paucity of instruments measuring mental and psychological health validated in the South African

context, especially in the languages of locals and among the children and adolescent population. Numerous calls have been made to develop reliable and valid measures of these issues in late childhood and adolescence. From this perspective, this study embarked on a rigorous and thorough statistical validation process of multiple cognitive (BDI-II, BAI, BHS, CSI, MSPSS, CYRM-12, RSES, and PWB) among high school-going adolescents from Grades 8 to 11, aged between 13-19 years in the Cape Metropole, and the results reported satisfactory reliability and validity. These findings add to the limited literature using these validated measures in the South African context. Additionally, the proposed model (i.e., direct and indirect associations between stress, coping, psychological strengths and psychological well-being) were empirically tested using CFA and SEM analysis. The results and literature reviewed provided support for the proposed associations among the study variables.



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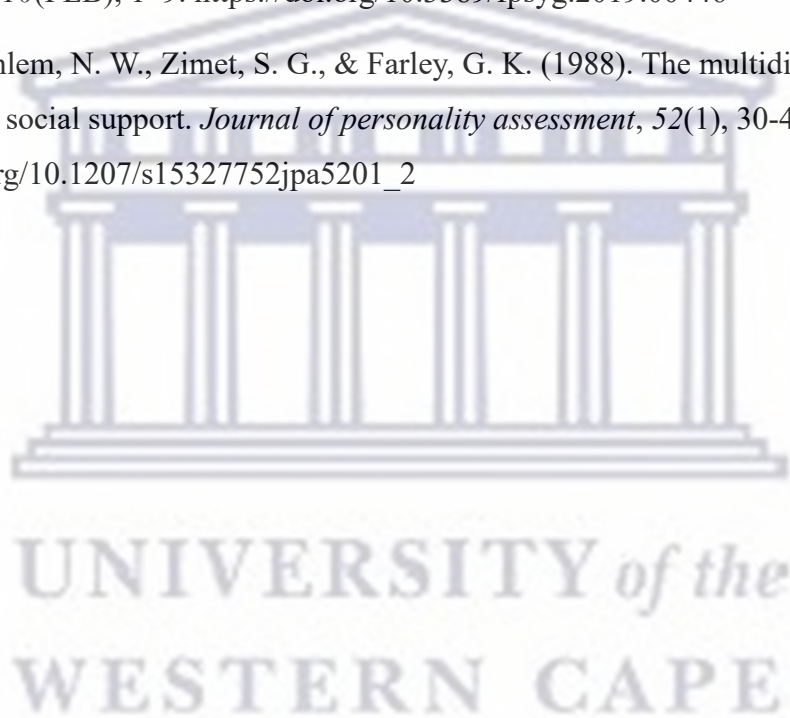
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APPENDICES

The logo of the University of the Western Cape, featuring a classical building with six columns and a pediment, rendered in a light blue color.

UNIVERSITY *of the*
WESTERN CAPE

Disclaimer³

³ Full version of self-screening scales included in this study have been removed as some instruments are not publicly available. To give a brief idea of the items in the scales, three items per scale were randomly selected.

APPENDIX A: ETHICS APPROVAL LETTER



UNIVERSITY of the
WESTERN CAPE



10 June 2020

Ms N Dumani
Psychology
Faculty of Community and Health Sciences

Ethics Reference Number: BM20/4/20

Project Title: Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.

Approval Period: 08 June 2020 – 08 June 2023

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report annually by 30 November for the duration of the project.

Permission to conduct the study must be submitted to BMREC for record-keeping.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

Director: Research Development
University of the Western Cape
Private Bag X 17
Bellville 7535
Republic of South Africa
Tel: +27 21 959 4111
Email: research-ethics@uwc.ac.za

NHREC Registration Number: BMREC-130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

APPENDIX B: WCED APPROVAL LETTER



Directorate: Research

Audrey.wyngaard@westerncape.gov.za
 tel: +27 021 467 9272
 Fax: 0865902282
 Private Bag x9114, Cape Town, 8000
 wced.wcape.gov.za

REFERENCE: 20190903-8765
ENQUIRIES: Dr A T Wyngaard

Prof Nceba Somhlaba
 Department of Psychology UWC
 Private Bag X17
 Bellville
 7535

Dear Prof Nceba Somhlaba

RESEARCH PROPOSAL: THE PSYCHOLOGICAL FUNCTIONING OF SCHOOL-GOING ADOLESCENTS FOLLOWING SIBLING LOSS: DATA FROM TWO PROVINCES OF SOUTH AFRICA

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **05 September 2019 till 23 September 2021**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:
 The Director: Research Services
 Western Cape Education Department
 Private Bag X9114
 CAPE TOWN
 8000

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard
 Directorate: Research
 DATE: 26 October 2020

Lower Parliament Street, Cape Town, 8001
 tel: +27 21 467 9272 fax: 0865902282
 Safe Schools: 0800 45 46 47

Private Bag X9114, Cape Town, 8000
 Employment and salary enquiries: 0861 92 33 22
www.westerncape.gov.za

APPENDIX C: CONSENT FORM**UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Project title: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to other participants. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that data collected will be made available to the public by means of thesis publication.

Participant's name.....

Participant's signature.....

Date.....

APPENDIX D: ASSENT FORM**UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Project title: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to other participants. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that data collected will be made available to the public by means of thesis publication.

Participant's name.....

Participant's signature.....

Date.....

APPENDIX E: CONSENT FORM (PARENT/ GUARDIAN)**UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Project title: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my child's participation will involve and I agree for him/ her to participate out of my own choice and free will. I understand that my child's identity will not be disclosed to other participants. I understand that she/he may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that data collected will be made available to the public by means of thesis publication.

UNIVERSITY of the
WESTERN CAPE

Parent of Guardian's name.....

Parent of Guardian's signature.....

Date.....

APPENDIX F: TOESTEMMINGS VORM**UNIVERSITEIT VAN DIE WES KAAP****Privaatsak X 17, Bellville 7535, South Africa****Tel: +27 21-959 3713, Faks: +27 21-959 3515**

Titel van die projek: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

Die studie is aan my beskryf in 'n taal wat ek verstaan. My vrae oor die studie is beantwoord. Ek verstaan wat my deelname sal behels en ek stem saam om deel te neem, uit my eie keuse en wil. Ek verstaan dat my identiteit nie aan ander bekend gemaak sal word nie. Ek verstaan dat ek op enige stadium uit die studie kan onttrek, sonder om 'n verduidelik te offer of redes daarvoor te gee. Daar sal geen negatiewe gevolge wees of verlies van voordele, indien ek besluit om my deelname te beëindig. Ek verstaan dat die data gebruik sal word om artikels te publiseer.

Naam van deelnemer.....

Handtekening van deelnemer.....

Datum.....



APPENDIX G: I-FOMU YESIVUMELWANO

IDYUNIVESITHI YASE NTSHONA KOLONI

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Isihloko Sophando: Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.

Esi sifundo sichaziwe kum ngolwimi endiluqondayo. Imibuzo yam ngaso esi sifundo iphendulwe.

Ndiyakuqonda okuqulathwe kukuthabatha inxaxheba kwam kwesi sifundo, yaye ndiyavuma ukuba ndithabathe inxaxheba ngokukhululekileyo, ndibe ndinganyanzeliswanga. Ndiyayiqoda into yokuba iinkcukacha ngegama nobume bam azizi kuvezwa nakuye ubani na. Ndiyayiqonda nento yokuba ndingarhoxa kwisifundo nangalo naliphi na ixesha, ngaphandle kokunika isizathu, nangaphandle kwezohlwayo okanye ukuphulukana neenzuzo (okanye amangeniso).

Ndiyaqonda ukuba idatha eqokelelweyo iya kwenziwa ifumaneke eluntwini ngoshicilelo lwe-thesis.

Igama elipheleleyo lomthabathi-nxaxheba:

Utyikityo ngesandla lomthabathi-nxaxheba:

Umhla:

APPENDIX H: INFORMATION SHEET (PARENT/GUARDIAN)



IDYUNIVESITHI YASE NTSHONA KOLONI

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Project Title: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

What is this study about?

This is a research project being conducted by Noxolo Dumani and Prof. Nceba Somhlaba at the University of the Western Cape. We are inviting your child to participate in this research project because he/she is a student aged between 13 to 19-year-old and in grade 8 to 11 in the Western Cape and meets the criteria for the study. The purpose of this study is to validate different stress related measuring scales in the South African context. Furthermore, to investigate the between relation stress, coping strengths and psychological well-being using different measuring scales amongst high school students in grade 8-11, aged between 13-19 years old.

What will I be asked to do if I agree to participate?

Your child will be asked to fill in self-reporting questions in a form of survey that that will take about an hour with breaks- in between. The surveys will be administered and completed during a time that is most convenient for you, and will be administered and completed during school hours on school grounds. The questionnaire will ask questions regarding stress, coping, psychological strengths and psychological well-being.

Would my participation in this study be kept confidential?

The researchers undertake to protect your child's identity and the nature of their contribution. To ensure your child's anonymity, your child's name will be replaced with a pseudonym and code on the collected data, through the use of this pseudonym or code the researcher will be able to link your interview to your identity, and only the researcher will have access to the identification key. To ensure your confidentiality, the document files will be stored in a secure space where only the researcher and supervisor will have access. In addition, transcribed transcripts will be secured by password-protected computer files. If we write a report or article about this research project, your identity will be protected.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities' information that comes to our attention concerning child abuse or neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

There may be some risks from participating in this research study. All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you or your child personally, but the results may help the investigator learn more about stress amongst the student and adolescent community. We hope that, in the future, other people might benefit from this study through improved understanding of the relation between stress, coping strategies and psychological well-being amongst high

students. Moreover, the findings will provide greater insight into how they cope with everyday stress and strive for psychological well-being.

Does my child have to be in this research and may he/she stop participating at any time?

Your child's participation in this research is completely voluntary. You may choose for him/her not to take part at all. If you decide for him/her to participate in this research, he/she may stop participating at any time. If you decide for him/her not to participate in this study or if he/she stops participating at any time, he/she will not be penalized or lose any benefits to which he/she otherwise qualify. Participation in the research is not an academic requirement.

What if I have questions?

This research is being conducted by Noxolo Dumani and Prof Nceba Somhlaba at the University of the Western Cape. If you have any questions about the research study itself, please contact Noxolo Dumani at: 071 426 9209 or 3358178@myuwc.ac.za and Prof Nceba Somhlaba at: 021 959 3713 or nsomhlaba@uwc.ac.za.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Dr. Maria Florence
Head of Department: Psychology
University of the Western Cape
Private Bag X17
Bellville 7535
mflorence@uwc.ac.za

Prof Anthea Rhoda
Dean of the Faculty of Community and
Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

This research has been approved by the University of the Western Cape's BIOMEDICAL RESEARCH ETHICS COMMITTEE (REFERENCE NUMBER: _____).

Appendix I: INFORMATION SHEET (LEARNER/PARTICIPANT)



IDYUNIVESITHI YASE NTSHONA KOLONI

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 3713, Fax: +27 21-959 3515

Project Title: *Validation of instruments investigating the relationship between stress, psychological strengths, coping and overall psychological well-being among school-going adolescents in the Cape Metropole.*

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Your child will be asked to fill in self-reporting questions in a form of survey that that will take an hour with breaks in-between as required. The surveys will be administered and completed during a time that is most convenient for you, and will be administered and completed during school hours on school grounds. The questionnaire will ask questions regarding stress, coping, psychological strengths and psychological well-being.

Would my participation in this study be kept confidential?

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In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities' information that comes to our attention concerning child abuse or neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

There may be some risks from participating in this research study. All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

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What if I have questions?

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This research has been approved by the University of the Western Cape's BIOMEDICAL RESEARCH ETHICS COMMITTEE (REFERENCE NUMBER: _____).

Date: _____

APPENDIX J: SURVEY QUESTIONNAIRE

Instructions: Indicate by ticking the responses that are applicable to you (or by filling in the information required of you).

1. **Age:** _____

2. **Sex:** male female

3. **Population group:** African Coloured Indian White Other_____

4. **School grade:** Grade 8 Grade 9 Grade 10 Grade 11

5. **Home language:** English Afrikaans isiXhosa Sesotho
 Other (specify)_____

6. How would you describe your (and your family's) religious affiliation?

Christianity Islam African ancestry Jewish Hindu
 Other (specify)_____

7. Who do you live with at home?

Only with mother Only with father With both parents only
 With mother/father and siblings Only with siblings Only with relatives

8. How do you feel about your family's financial circumstances?

We never struggle to pay the bills	
We sometimes struggle to pay the bills	
We always struggle to pay the bills	

9. Have you ever had to skip a meal or not (because of insufficient food) in the past month?

I have never had to skip a meal	
I have had to skip a meal before	

10. When it comes to my mental-health and overall well-being, I would say that:

I am psychologically healthy, I feel mentally stable and well.	
I feel a little psychologically healthy, a little mentally stable and well.	
I am not psychologically healthy, mentally stable or well.	
I feel a little psychologically ill, mentally unstable and unwell.	

11. When it comes to my ability to deal with stress, I would say that:

I am always able to cope well when I need to	
I sometimes am able to cope well when I need to	
I am never able to cope well when I need to	
I am sometimes unable to cope well when I need to	



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BECK DEPRESSION INVENTORY - SECOND EDITION (BDI-II)

This questionnaire consists of 21 group of statements. Please read each group of statements carefully, and then pick out the **one statement** that best describes how you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number in that group, including Item 16 (Changes in Sleep Patterns) or Item 18 (Changes in Appetite).

1. SADNESS

0	I do not feel sad.	<input type="text"/>
1	I feel sad much of the time.	
2	I am sad all the time.	
3	I am so sad or unhappy that I can't stand it.	

2. GUILTY FEELINGS

0	I don't feel particularly guilty.	<input type="text"/>
1	I feel guilty over many things I have done or should have done.	
2	I feel quite guilty most of the time.	
3	I feel guilty all of the time.	

3. CONCENTRATION DIFFICULTY

0	I can concentrate as well as ever.	<input type="text"/>
1	I can't concentrate as well as usual.	
2	It's hard to keep my mind on anything for very long.	
3	I find I can't concentrate on anything.	

BECK ANXIETY INVENTORY (BAI)

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	NOT AT ALL	MILDLY - BUT IT DIDN'T BOTHER ME MUCH	MODERATELY - IT WASN'T PLEASANT AT TIMES	SEVERLY - IT BOTHERED ME A LOT
1. NUMBNESS OR TINGLING	0	1	2	3
2. TERRIFIED OR AFRAID	0	1	2	3
3. DIFFICULTY IN BREATHING	0	1	2	3



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BECK HOPELESSNESS SCALE (BHS)

Please indicate if any of the following statements are true or false for you.

1	I look forward to the future with hope and enthusiasm	TRUE	FALSE
2	I don't expect to get what I really want	TRUE	FALSE
3	The future seems vague and uncertain to me.	TRUE	FALSE



COPING STRATEGY INDICATOR (CSI)

We are interested in how people cope with the problems and troubles in their lives. Listed below are several possible ways of coping. We would like you to indicate to what extent you, yourself, used each of these coping methods. All of your responses will remain anonymous. Try to think of one problem you have encountered in the last six months or so. This should be a problem that was important to you, and that caused you to worry (anything from the loss of a loved one to a traffic citation, but one that was important to you. please describe this problem in a few words (remember, your answer will be kept anonymous): _____

With this problem in mind, indicate how you cope by checking the appropriate box for each coping behaviour listed on the following pages. Answer each and every question even though some may sound similar. Did you remember to write down your problem? If not, please do so before going on.

	A lot	A little	Not at all
1. Let your feelings out to friend?	3	2	1
2. Told people about the situation because just talking about it helped you to come up with solutions?	3	2	1
3. Fantasized about how things could have been different?	3	2	1

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Multidimensional Scale of Perceived Social Support

Instructions

Please read each statement and **circle** a number 1, 2, 3, 4, 5, 6 or 7 which indicates how much the statement applies to you (regarding your important relationships).

	Very strongly disagree	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree	Very strongly Agree
1. There is a special person who is around when I am in need	1	2	3	4	5	6	7
2. I get the emotional help and support I need from my family	1	2	3	4	5	6	7
3. My family is willing to help me make decisions	1	2	3	4	5	6	7

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Child and Adolescents Resilience Measure

Instructions

Please read each statement and **circle** a number 1, 2, 3, 4, or 5, which indicates how much the statement applies to you.

	1 Not at all	2 A little	3 Somewhat	4 Quite a bit	5 A lot
1. I have people to look up to	1	2	3	4	5
2. I am able to solve problems without harming myself or others (for example, by using drugs and/or being violent).	1	2	3	4	5
3. I am treated fairly in my community.	1	2	3	4	5

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Rosenberg Self-Esteem Scale

Instructions

Please read each statement and **circle** a number 1, 2, 3, or 4, which indicates how much the statement applies to you.

	1 Strongly agree	2 Agree	3 Disagree	4 Strongly disagree
1. I feel that I am a person of worth, at least on an equal basis with others.	1	2	3	4
2. I am able to do things as well as most other people.	1	2	3	4
3. At times I think I am no good at all.	1	2	3	4

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Psychological Well-Being Scale (PWB)*

Below are 8 statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by indicating that response for each statement.

	1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Mixed (Neither agree nor disagree)	5 Slightly agree	6 Agree	7 Strongly agree
1. My life is full of purpose and meaning.	1	2	3	4	5	6	7
2. I actively bring happiness and well-being to others.	1	2	3	4	5	6	7
3. Friends and people in general respect me.	1	2	3	4	5	6	7

**With permission from the author (Prof Ed Diener), some items have been slightly adapted for, and 'toned down' to, the adolescents' understanding.*

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