

**A SOCIAL-ECOLOGICAL INVESTIGATION OF AFRICAN YOUTHS'
RESILIENCE PROCESSES**

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PREFACE AND DECLARATION

The article format was chosen for the current study. The researcher, Angelique van Rensburg, conducted the research and wrote the manuscripts. Prof. Linda Theron and Prof. Ian Rothmann acted as promoter and co-promoter, respectively. Three manuscripts were written and will be/were submitted for publication in the following journals:

Manuscript 1: *South African Journal of Science*

Manuscript 2: *Journal of Adolescent Health*

Manuscript 3: *Journal of Research on Adolescence*

I declare that “A Social-Ecological Investigation of African Youths' Resilience Processes” is my own work and that all the sources that I have used or quoted are indicated and acknowledged by means of complete references.

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To whom it may concern

I hereby declare that I edited the PhD thesis entitled "A social-ecological investigation of African youths' resilience processes" written by Angelique van Rensburg. I am an accredited editor with the South African Translators' Institute (SATI Member No.: 1000193).

Yours sincerely

Hendia Baker

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SUMMARY

Title: A Social-Ecological Investigation of African Youths' Resilience Processes

Keywords: resilience, social-ecological, South Africa, youth, measurement invariance, latent variable modelling, systematic review, Pathways to Resilience Youth Measure, caregiving, meaning, school, engagement, youth perceptions

Resilience is defined as doing well despite significant hardships. Based on four principles informing a social-ecological definition of resilience (that is, decentrality, complexity, atypicality, and cultural relativity), Ungar (2011, 2012) hypothesised an explanation of social-ecological resilience. Seen from this perspective, resilience involves active youth ↔ social-ecological transactions towards meaningful, resilience-promoting supports. Youths' usage of these supports might differ due to, among others, specific lived experiences, contextual influences, and youths' subjective perceptions. While Ungar's explanation is both popular and plausible, it has not been quantitatively tested, also not in South Africa. Moreover, there is little quantitatively informed evidence about youths' differential resource-use, particularly when youth share a context and culture, and how such knowledge might support social ecologies to facilitate resilience processes.

The overall purpose of this study was, therefore, to investigate black South African youths' resilience processes from a social-ecological perspective, using a sample of black South African youth. This purpose was operationalised as sub-aims (explained below) that addressed the aforementioned gaps in theory. Data to support this study were accessed via the Pathways to Resilience Research Project (see www.resilienceresearch.org), of which this study is part. The Pathways to Resilience Research Project investigates the social-ecological contributions to youths' resilience across cultures.

This study consists of three manuscripts. Using a systematic literature review, Manuscript 1 evaluated how well quantitative studies of South African youth resilience avoided the pitfalls made public in the international critiques of resilience studies. For the most part, quantitative studies of South African youth resilience did not mirror international developments of understanding resilience as a complex socio-ecologically facilitated process. The results identified aspects of quantitative studies of South African youth resilience that necessitated attention. In addition, the manuscript called for quantitative studies that would statistically

explain the complex dynamic resilience-supporting transactions between South African youths and their contexts.

Manuscript 2 answered the aforementioned call by grounding its research design in a theoretical framework that respected the sociocultural life-worlds of South African youth (that is, Ungar's Social-Ecological Explanation of Resilience). Ungar's Social-Ecological Explanation of Resilience was modelled using latent variable modelling in Mplus 7.2, with data gathered with the Pathways to Resilience Youth Measure by 730 black South African school-going youth. The results established that South African youths adjusted well to challenges associated with poverty and violence because of resilience processes that were co-facilitated by social ecologies. It was, furthermore, concluded that school engagement was a functional outcome of the resilience processes among black South African youth. Manuscript 2 also provided evidence that an apposite, necessary, and respectful education contributed towards schooling as a meaningful resource.

Manuscript 3 provided deeper insight into aspects of black South African youths' resilience processes. Manuscript 3 investigated youths' self-reported perceptions of resilience-promoting resources by means of data gathered by the Pathways to Resilience Youth Measure. Consequently, two distinct groups of youth from the same social ecology made vulnerable by poverty were compared (that is, functionally resilient youth, $n = 221$; and formal service-using youth, $n = 186$). Measurement invariance, latent mean differences in Mplus 7.2, and analyses of variance in SPSS 22.0 were employed. What emerged was that positive perceptions of caregiving (that is, physical and psychological) were crucial to youths' use of formal resilience-promoting resources and subsequent functional outcomes. The conclusions resulted in implications for both caregivers and practitioners.

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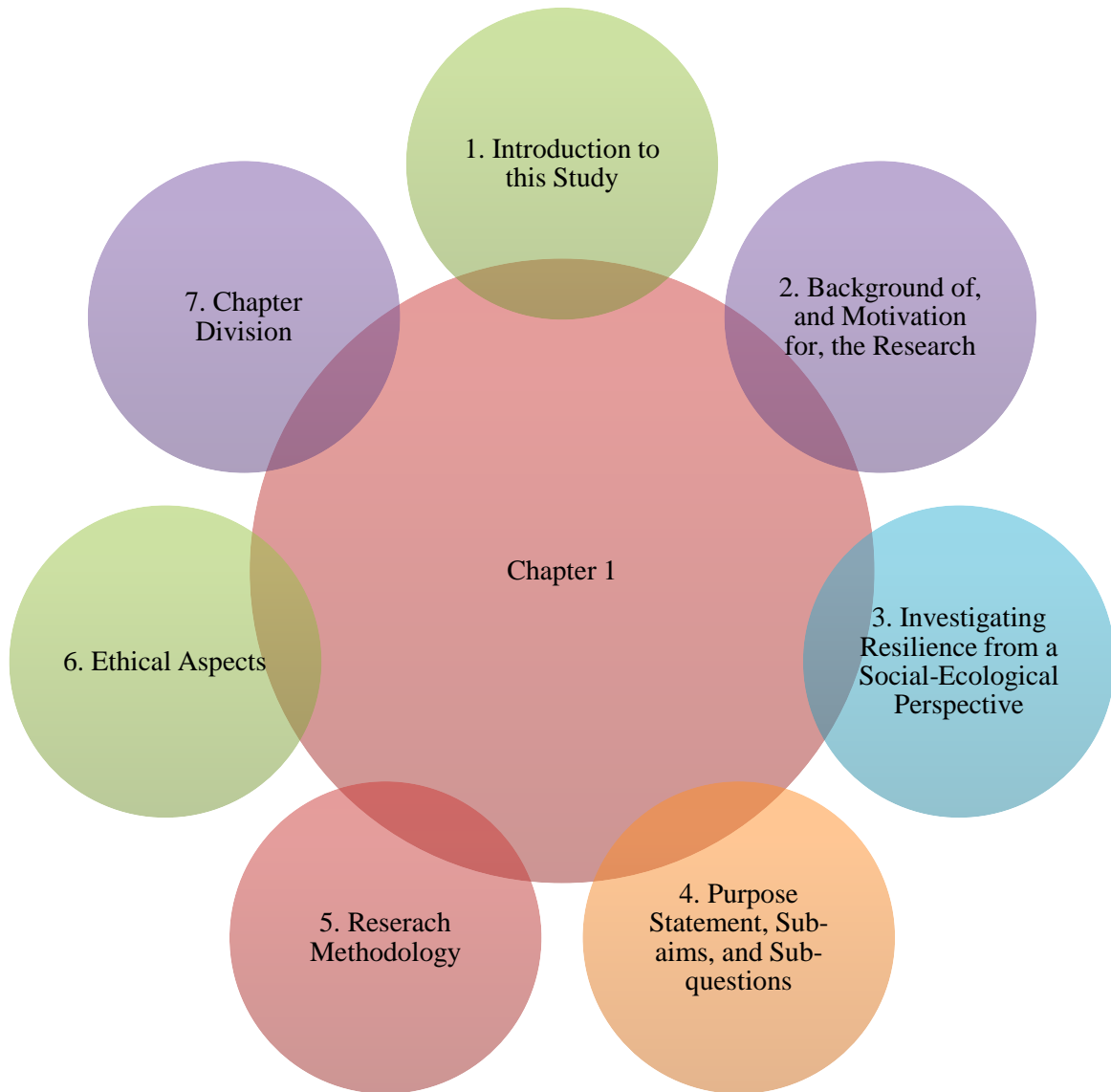
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CHAPTER 1



1. INTRODUCTION TO THE STUDY

This study forms part of the Pathways to Resilience Research Project (see www.resilienceresearch.org), a five-country (Canada, China, Colombia, New Zealand, and South Africa) collaborative project of which the North-West University is part. The Pathways to Resilience Research Project investigates the social-ecological contributions to youths' resilience across cultures. The researcher¹ has been part of the above-mentioned project since inception (2009), has attended all advisory panel meetings, and has been responsible for the capturing of the quantitative data as well as preliminary statistical analysis. This study contributes to the larger project and is concerned with investigating African youths' resilience processes from a social-ecological perspective. Chapter 1 includes the background of, and motivation for, the research, problem statement, research aims and questions, research method (per manuscript²), ethics, and chapter division.

2. BACKGROUND AND MOTIVATION FOR THE RESEARCH

In the section below, resilience will be defined, followed by the rationale for studying resilience from a social-ecological perspective. Thereafter, the four principles guiding a social-ecological understanding of resilience will be described.

2.1 Defining Resilience

Resilience is defined as doing well despite significant hardships (Masten, 2014a). Doing well, also known as demonstrating functional outcomes, implies that individuals unexpectedly illustrate positive development. Their positive development is unexpected, given that chronic and/or severe hardships predict negative outcomes (Ungar, 2013). Hardships are described as lived experiences of risks that will likely increase negative outcomes. Hardships typically refer to traumatic life events (for example, war, natural disasters, trauma), social issues (for example, poverty, unemployment, substance abuse), or biological risks (for example, physical disability, premature birth, illness) (Wright, Masten, & Narayan, 2013).

¹ The researcher refers to the PhD candidate.

² The manuscripts refer to "the authors" or "we". It is the North-West University's practice that PhD candidates craft the manuscripts under the mentorship of their promoters. The promoters are included as co-authors in recognition of this mentorship.

2.2 A Social-Ecological Perspective of Resilience

The rationale for discussing resilience from a social-ecological perspective is twofold. Firstly, the social-ecological perspective of resilience forms part of the Pathways to Resilience Research Project, of which this study is part (Resilience Research Centre, 2010). As a result, this study follows the same theoretical framework. Secondly, a social-ecological definition of resilience is increasingly being recognised as credible by international, well-cited resilience researchers (Betancourt, Meyers-Ohki, Charrow, & Hansen, 2013; Cicchetti, 2013; Goldstein & Brooks, 2013; Masten, 2012, 2014a, 2014b; Panter-Brick, 2015; Panter-Brick & Eggerman, 2012; Rutter, 2012).

2.2.1 A Social-Ecological Definition of Resilience

A social-ecological definition of resilience highlights the importance of dynamic partnerships between individuals and their social ecologies to positive adjustment in the face of hardship. As part of this partnership, youth actively seek out, and make use of health-promoting resources that are available in their social ecology. Youths also ask for supports that are not available. In return, it is the responsibility of the social ecologies (for example, families, communities, service providers, and schools) to provide resources in a culturally and contextually meaningful way and/or to help youths advocate for necessary resources. The youths rely on the ability of the social ecology to provide the aforementioned resources; thus, the social ecology could be seen as the more significant partner (Ungar, 2008, 2011, 2012, 2014).

2.2.2 Four Principles Informing a Social-Ecological Definition of Resilience

In order to guide a person \leftrightarrow social-ecological³ understanding of resilience, Ungar (2011) explains the social-ecological definition of resilience in terms of four principles, namely, decentrality, complexity, atypicality, and cultural relativity.

2.2.2.1 Decentrality

Decentrality, first and foremost, emphasises the importance of the individual's social ecology and stresses that the individual needs to be decentred or de-emphasised in explanations of

³ A transaction is symbolised by \leftrightarrow .

resilience processes. Until recently, researchers focused on an individual-centred view of resilience – that resilience could be explained as the result of an individual trait or personality characteristic (Luthar, Cicchetti, & Becker, 2000; Wright et al., 2013). Ungar (2011), however, theorises that resilience is a partnered process in which a social ecology supplies/advocates for resources needed by the individual facing adversity. The individual interacts with, and/or makes use of, these resources to attain functional outcomes (Luthar, 2006; Masten, 2014a; Ungar, 2011). Lerner (2006) explains that the 4-H Study of Positive Youth Development provides evidence that resilience is a process of person↔context interactions. Findings suggest that the youths in this study possessed the needed internal resources, but also required external resources to facilitate resilience. The latter were accessed during interactions with their contexts/social ecologies (Lerner et al., 2005). Youths in this study who interacted constructively with their contexts indicated lower levels of risk behaviours (for example, substance abuse) and negative outcomes (for example, depression). The findings of the 4-H Study illustrate that the individual should rather be seen as a participant in the resilience process and not its centre. Thus, the focus on resilience promotion from a social-ecological understanding discards the belief that only the individual's skills or traits need altering and/or bolstering and, instead, concentrates on enabling a social ecology to provide resources that will support individuals experiencing hardships to do well in life, regardless of the challenges they face (Ungar, 2011).

2.2.2.2 Complexity

The second principle highlights that resilience is not a simplistic process. Instead, it entails dynamic and complex partnerships between an individual and his/her social ecology. Several studies emphasise the complexity/dynamism of resilience, namely, that resilience processes vary over time, context, and groups and even among individuals of the same context (Masten, 2014a, 2014b; Phelps et al., 2007; Schoon, 2006; Ungar, 2011, 2013; Werner & Smith, 2001).

Some longitudinal studies (Phelps et al., 2007; Werner & Smith, 2001) have shown that even when an individual is presently resilient, it does not guarantee lifelong resilience. For instance, resilience-promoting resources within a particular social ecology or community might be available to at-risk individuals on one specific occasion. However, at another point in time or in another context, this might not be the case. For example, when a “resilient” youth relocates to another school or even when he/she is promoted to the next grade, the resources available to

him/her in one school (for example, a supportive teacher or guidance counsellor) or grade (for example, supportive peers) might not be available in the next (Masten, 2014a; Ungar, 2011), possibly leaving him/her without the resources needed to support his/her resilience.

In addition to the varying availability of resources, resilience/non-resilience depends on whether the resource utilised is deemed meaningful (or not) (Ungar, 2011, 2012). The meaning youths attach to a resource is influenced by contexts, cultural influences, individual/group-specific experiences of risks, and the chronicity of risk experienced. For example, international studies of resilience report that Western youths who are at-risk draw on their internal locus of control towards their resilience (Masten, Cutuli, Herbers, & Reed, 2009; Werner & Smith, 2001). Internal locus of control, also known as self-reliance, is valued by an individualistic society (Werner, 2006). South African studies (Pienaar, Beukes, & Esterhuyse, 2006; Theron & Dunn, 2010; Theron & Theron, 2010), however, indicate that some black South African youths⁴ (“black South African youths” will be used interchangeably in this study with “African youths”) steer towards traditional African practices (for example, ancestral worship) when at-risk (Matsaneng, 2010; Nsamenang & Tchombe, 2011). Youths in these contexts were brought up to respect traditional African world views promoting ancestral resources as meaningful. The aforementioned illustrates how the navigation towards resources differs between contexts and cultures, depending on what would be meaningful in those contexts/cultures (Ungar, 2012).

Moreover, in addition to the cultural and contextual differences (differences among groups) of resilience processes, Masten (2014a) and Ungar (2013) emphasise differences among individuals of the same context and culture with regard to the resilience process. From this perspective, resource-use might differ from individual to individual, despite their sharing a context/culture,

⁴ South Africa has a history of being acutely race conscious (Modiri, 2012). This has led to people being identified as white, black, coloured, and Indian or Asian. Since 1994, when South Africa became a democracy, the South African literature has continued to identify youth participants according to race (Durrheim, Tredoux, Foster, & Dixon, 2011). This is partly because culture is associated with race (Dupree, Spencer, & Spencer, 2015; Theron & Liebenberg, 2015). Resilience studies that have included black participants have either used the terms “black South African youth” (see, for example, Dass-Brailsford, 2005; Mampane, 2012; Wild, Flisher, and Robertson, 2011) or “African youth” (see, for example, Gathogo, 2008; Phasha, 2010; Theron & Theron, 2013, Theron, Theron & Malindi, 2013). There are similar tendencies in other race-conscious societies such as the United States of America (USA). Dupree et al. (2015), for example, refer interchangeably to African American youth and black American youth. Thus, for the purposes of this study, African youth and black South African youth will both be used.

among others, due to personally lived experiences (for example, traumatic life events, past experiences) (Masten, 2014a; Wright et al., 2013). For instance, youth living in a shelter might navigate to different resources. One youth might ask for assistance from a shelter social worker when facing hardships because this youth might have had past positive experiences with social workers and, therefore, might prefer navigation towards a social worker. Another might navigate towards a pastor because he/she was brought up in a religious home.

Keeping the above in mind, explaining resilience in terms of simple and/or static relationships/phenomena undermines a meaningful understanding of the pathways individuals take, in collaboration with their social ecologies, towards functional outcomes (Masten, 2014a; Ungar, 2013; Wright et al., 2013).

2.2.2.3 Atypicality

The third principle illustrates the non-typical pathways individuals take towards resilience. Ungar (2011) suggests that many different experiences, resources, or opportunities might lead to positive outcomes, even though they do not mirror socially acceptable pathways of resilience. For example, two South African studies have reported that engaging in violent activities and acts of vandalism supported some street youths towards positive adjustment (Malindi, 2014; Malindi & Theron, 2010). Some youths in these studies violently defended themselves when being threatened, and others damaged payphones in order to buy food. Even though these actions are not typically reported as resilience-supporting, or as socially acceptable, in the specific context of the above-mentioned studies, these actions supported youths to adjust well to street-life challenges such as physical danger and hunger. Although atypicality is not always about antisocial acts, the street-youth example highlights that the functionality of youths' behaviours should be examined in context and not in terms of its "appropriateness" as defined/prescribed by hegemonic groups/societies (Bottrell, 2009).

2.2.2.4 Cultural Relativity

The fourth and final principle suggests that resilience processes should be perceived through a culturally appropriate lens; thus, explanations of youth resilience and how resilience processes are manifested should be aligned with the particular culture and context in which the youth are embedded. Donald, Lazarus, and Lolwana (2010) describe context and culture as the everyday practices in which people are involved, for example, an individual's values, belief system,

language, customs, and life-world. As discussed earlier (see paragraph 2.2.2.2), the meaning individuals attach to a resource, opportunity, or experience is sensitive to cultural influences (Panter-Brick, 2015). Thus, understanding cultural influences on resilience processes (and how they change over a period of time) may enable researchers to comprehend resilience processes accurately (Jones, Hopson, & Gomes, 2012; Ungar, 2011). Thus, to understand resilience as a complex construct with various pathways, an individual's culture needs to be accounted for. For example, white Afrikaans-speaking youths found psychological services helpful when experiencing the hardships of their parents' divorce. Within the culture of their individualistic communities, one-on-one psychological services offered a form of culturally relevant support (Theron & Dunn, 2010). However, black South African youths who were challenged by sexual violence and risks associated with poverty typically did not have access to psychological services. Instead, they found support in traditional African practices, such as kinship systems. Their neighbours and extended family members comforted these youths and helped them to make meaning of being raped and/or marginalised (Theron & Phasha, 2015).

3. INVESTIGATING RESILIENCE FROM A SOCIAL-ECOLOGICAL PERSPECTIVE

Ungar's (2008, 2011, 2012, 2014) social-ecological definition of resilience emphasises the complex relationships involved in the resilience process (see paragraph 2.2.2.2); therefore, this study needed a complex methodology to investigate resilience from a social-ecological perspective. In addition, Masten (2011, 2012, 2014b), Naglieri, LeBuffe, and Ross (2013), and Panter-Brick (2015) call for more sophisticated methodologies when studying resilience processes. In addition, Herrenkohl (2013, p. 192) is concerned that resilience studies, to date, have lacked "analytic precision". In the light of the above-mentioned, a model was required to investigate the complex person ↔ ecological transactions quantitatively. In the next section, methodologies and models used to study resilience and a Social-Ecological Explanation of Resilience will be discussed in order to provide background for this study's methodological choices.

3.1 The Evolution of Methodologies Used to Investigate Resilience

The construct resilience, as it is presently known, has developed over four decades. Masten (2011) and Wright et al. (2013) describe the development as waves of resilience research. Each wave developed as the need for a deeper understanding, more sophisticated methodologies, and comprehensive theoretical frameworks regarding resilience emerged.

3.1.1 First Wave: Individual Centred Investigations of Resilience

The first wave was categorised by researchers focusing on the elementary principles of resilience (for example, risk, adversity, and protective factors), with an emphasis on protective processes embedded within the individual, such as traits or characteristics (for example, problem-solving skills, positive self-perception, internal locus of control) (Masten, 2011). What emerged, therefore, was a list of protective factors associated with resilience (Masten et al., 2009; Masten & Reed, 2005; Wright et al., 2013). To do this, the first wave of resilience research used mainly two approaches: person-focused and variable-focused models.

On the one hand, *person-focused models* study resilient individuals. To construct person-focused models, researchers identify resilient individuals or groups and measure them against non-resilient individuals or groups over the course of their lives to investigate traits or characteristics that promote their functioning well despite adversity. For example, a person-focused model of resilience informed the Kauai Longitudinal Study (Werner & Smith, 1982, 1992). A large population of individuals ($N = 698$) from Hawaii was followed from birth. A sub-sample ($n = 505$) of infants was selected at two years of age due to the multiple risks they faced at the time. Individuals were then again assessed for developmental outcomes at the age of 10 and 18 years, respectively. Subsequently, a sub-sample of resilient youths was identified and compared to their peers who did not perform well under risky circumstances.

Such person-focused models are well suited to the search for intrapersonal factors that influence resilience and are commonly used in single case studies that indicate important turning points in an individual's development (Masten et al., 2009). Person-focused studies are quite limited, however (Luthar et al., 2000). Limitations include that findings cannot be generalised from single case studies to larger cohorts of youth and only consist of descriptive data (Masten, 2011; Masten & Obradović, 2006). Furthermore, person-focused approaches direct too little attention at relationships and other social-ecological processes involved in the resilience process, thus limiting comprehensive explanations of resilience (Wright et al., 2013).

On the other hand, *variable-focused models* study the associations between individual characteristics (for example, cognitive abilities, good peer relationships, internal locus of control) and social-ecological aspects (for example, safe communities, effective schools, supportive families) influencing positive outcomes when facing adversities. Most variable-focused studies make use of correlations, regression analysis, and structural equation modelling

(Wright et al., 2013). These models were historically also used to study the variation between the interactions of the protective factors embedded within the individual and the social-ecological supports related to resilience (Luthar, 2006; Luthar et al., 2000; Masten, 2011). One example of such a study is that of Project Competence (Garmezy, Masten, & Tellegen, 1984). The aim of this longitudinal study was to investigate the interactions among variables associated with resilience (for example, risks, protective factors, functional outcomes) in children who were thought of as at-risk due to maternal psychopathology (that is, schizophrenia, personality disorders). Garmezy et al. (1984) employed a hierarchical regression analysis approach and found that three models explained the resilience of their participants: compensatory, challenge, and immunity versus vulnerability models.

- **Compensatory:** this model suggested that protective factors (for example, supportive siblings, recreational centres, religion, cultural activities) assisted an individual to compensate for high levels of risk (for example, death of a parent, divorce, rape).
- **Challenge:** this model proposed that exposure to moderate stress (for example, failing one grade, frequent relocation during childhood, loss of a pet) strengthened the individual; therefore, the ability to cope with risk factors later in life was encouraged.
- **Immunity versus vulnerability (protective factor model):** this model speculated that a relationship existed between risks and protective factors. In other words, protective factors fostered an environment where at-risk youths were buffered against the effects of risk (that is, possible negative outcomes).

However, Masten and Reed (2005) explain that the variable-focused approach might oversimplify the prediction of resilience and does not fully describe how resilience unfolds throughout individuals' lives. Based on the literature, resilience processes cannot be approached as if to solve a simple equation such as $Y = X + Z$, where Y = resilience, X = a protective factor, and Z = a risk factor (Luthar et al., 2000; Ungar, 2013; Wright et al., 2013). Firstly, one cannot merely substitute the variables in order to solve Y . Resilience is so complex that such a simple equation might label resilience as static, where the variables (X , Z), in reality, ought to be seen as interacting with each other on a continuous basis. Secondly, assigning variables might lead to the focus falling only on the single variables hypothesised to be part of the process. Thus, variable-focused approaches are limited because the likelihood of good adaptation being explained in terms of multiple risks and multiple protective factors, as well as the interaction of these factors together with mediating and moderating factors, is small.

Findings from the first wave made it evident that resilience was manifested within a process. The need arose for a more in depth understanding of which individual and social-ecological factors interacted and buffered the lived experiences of hardship. In addition, more advanced models and methodologies were needed to understand the complex processes involved in resilience. This led to the second wave.

3.1.2 Second Wave: Resilience as a Process Embedded in Systems

The second wave adopted an “ecological, transactional systems approach” (Wright et al., 2013, p. 23); in other words, the research shifted from investigating resilience as an individual trait or characteristic to investigations of resilience as an interactive process between the individual and the environment (Masten & Obradović, 2006; Wright et al., 2013). The study of resilience as a transactional process included the influence of broader ecological systems such as context, time, and cultural aspects and how they influenced varying resilience processes (see paragraph 2.2.2). In addition to *variable-focused models* (see paragraph 3.1.1) – concentrating on the relationships involved in resilience processes – another methodology was used to study resilience in the second wave, namely, pathway models.

Essentially, resilience research within *pathway models* focuses on the longitudinal adaptive and maladaptive pathways individuals follow in contexts of risks. Pathway models are essential for understanding resilience as a process; however, these models are very difficult to operationalise due to their longitudinal nature (Masten, 2011; Masten & Reed, 2005). Researchers visually illustrate the adaptive/maladaptive pathways individuals take towards resilience over a period of time in the form of a diagram/graph. Adaptive and maladaptive behaviour is plotted before, during, and after periods of adversity, allowing researchers to investigate the manifestation and patterns of resilience processes over time (Masten, 2013; Masten & Obradović, 2006; Masten & Reed, 2005; Masten & Wright, 2010). One example of a pathway model study is that of the English and Romanian Adoptee Study (ERA) (Rutter et al., 1998). This longitudinal study followed developmentally impaired children who had been adopted from Romanian orphanages by English families. The ERA found that individuals who had been adopted before the age of six months developed well and presented adaptive behavioural patterns at four years of age. Rutter et al. (1998) refer to their adaptive behaviour as their “developmental catch-up” (p. 470). In this study, the Romanian orphans (under six months) at first illustrated maladaptive behavioural patterns, but after they had been adopted by English families, their trajectory changed to adaptive pathways, demonstrating the change in patterns of behaviour over a period

of time. Children who had been older than six months when adopted also showed signs of adaptive behaviour; however, these were not as significant as the aforementioned.

3.1.3 Third Wave: Generating Resilience

The third wave materialised through researchers transforming evidence of resilience processes (found in the first and second waves) into intervention programmes – thus focusing on how to generate resilience where it was not naturally expected (Wright et al., 2013). The Seattle Social Development Project (Hawkins et al., 2007) is an example of resilience theory being transformed into a preventive intervention programme in order to improve the likelihood of positive outcomes in youths who face hardships. In this project, a longitudinal design with 808 Grade 5 children formed part of an experimental intervention study that translated the understanding that supportive parents facilitated resilience into parent-child programmes. Youths who were at-risk for negative outcomes, and their parents, were included in this intervention and the effects on their adjustment measured.

Consequently, the third wave encouraged researchers to facilitate resilience through hypothesised processes and models of resilience, which also brought more insight into how protective mechanisms buffered risks. This insight came from resilience theory being tested through intervention programmes. For example, resilience studies have reported that protective factors such as a positive mother ↔ child relationship might result in positive outcomes. The New Beginnings Programme designed a preventive programme where mothers were encouraged to engage in positive relationships and effective discipline with their children. The results indicated that such an intervention programme encouraged functional outcomes. The findings also revealed the positive impact of parental functioning (that is, resilient parents) on children in adverse contexts (McClain et al., 2010). As a result, resilience theory was verified or adapted as new and/or refined knowledge regarding resilience processes emerged through intervention programmes. There is sustained encouragement for researchers to continue to investigate the complex multifaceted processes informing resilience intervention programmes for youth who continue to be at-risk (Masten, 2011, 2014a; Ungar, Brown, Liebenberg, Cheung, & Levine, 2008).

3.1.4 Fourth Wave: Research Across Multiple Domains

The current focus (fourth wave) of research is categorised by investigating epigenetic and neurological processes involved in resilience. More so, this wave focuses on how genetic and biological processes can create conditions or situations of risk and growth. The fourth wave surfaced due to advances in science and research methodologies that made it possible to study resilience from more than the traditional and mono-level psychosocial perspective (Cicchetti, 2013). The advances included methods to assess, among others, genes, brain structure, how the aforementioned interacted with the environment, as well as sophisticated data analysis methodologies such as latent variable growth modelling (Masten et al., 2009; Ungar, 2012; Wright et al., 2013). To date, one approach has informed the study of resilience from a genetic and neurobiological perspective, namely, transactional models.

The *transactional model* theorises that risks, protective factors, and assets interact across various levels (for example, genetic, neurological, physiological, psychological, familial, community, cultural, etc.) towards resilience (Cicchetti, 2013; Cicchetti et al., 2014; Cicchetti & Rogosch, 2012; Cicchetti & Roth, 2013; Davies & Cicchetti, 2014). This allows researchers to model an all-inclusive explanation of resilience, including the multiple domains that influence the resilience process. Cicchetti et al. (2014), Rutter (2014), and Jaffee, Price, and Reyes (2013) are known for their work on the mediating effect of the environment on resilience processes (that is, Gene×Environment interaction). The aim of transactional models is to investigate factors across various levels and how the factors mediate and/or moderate the resilience processes. Thus, as a result, transactional models advocate that resilience should be studied across disciplines (for example, neuroscience, education, health, and economics) (Masten, 2014a; Masten et al., 2009).

3.2 An Ecological Explanation of Resilience

As mentioned above, the Pathways to Resilience Research Project and, subsequently, this study conceptualise resilience from a social-ecological framework. Ungar (2011, 2012) defines resilience as complex person↔ecological transactions (see 2.2.1). Ungar, furthermore, referred to this ecological definition of resilience as an “*Explanatory Model of Ecological Resilience*” (p. 11) in 2011 and as an “*Ecological Expression of Resilience*” (p. 19) in 2012. For the purpose of this study, the term “Social-Ecological Explanation of Resilience” will be used.

Ungar (2011, 2012) developed the Social-Ecological Explanation of Resilience with Lewin's (1951) explanation of behaviour as a starting point. Lewin suggested that an individual (P) and his or her environment (E) were in constant interaction with each other; this would then predict behaviour (B).

$$B = f(P, E)$$

Keeping the four principles informing a social-ecological definition of resilience in mind (decentrality, complexity, atypicality, and cultural relativity), Ungar modified Lewin's expression to give a thorough ecological understanding of resilience in the context of risk, as seen below (Ungar, 2011, 2012).

$$R_B = \frac{f(P_{SC}, E)}{(O_{AV}, O_{AC})(M)}$$

R_B signifies the functional behaviours (for example, pro-social behaviour, internal locus of control, being engaged at school) individuals demonstrate when doing well, even though facing extreme hardships. Functional behaviours are described as observable outcomes of the resilience process. The Social-Ecological Explanation of Resilience explains resilience as a transactional process (f) where individuals (P) at-risk ask for, or steer towards, an opportunity (O) in the form of resources (that is, formal and/or informal) available (O_{AV}) and accessible (O_{AC}) to them. The ecology (E) reciprocates and provides the individual with the necessary resources towards positive adaptation. The meaning (M) – the significance of the resource – individuals attach to the opportunity depends on its cultural and contextual appropriateness. To summarise, Ungar hypothesised that the individuals interacted with the strengths, challenges, and meaningful resources within their ecologies. The aforementioned interactions resulted in individuals asking for, or steering towards, useful resources and the social ecology reciprocating and offering meaningful resources. However, his explanation of a Social-Ecological Understanding of Resilience is still unverified statistically.

3.2.1 Informal and Formal Resources Towards Resilience

Ungar's Social-Ecological Explanation of Resilience refers to the individual steering or asking for resources towards support in times of adversity. Social ecologies encourage an individual's resilience by providing either informal or formal resources. *Informal resources*, for the most part, are supportive relationships (that is, with self, family, community, and culture) that occur naturally within the individual's social ecology (Theron & Theron, 2010). *Formal resources* are services and supports provided by schools, mental health services, social welfare departments, and other health-promoting services (Johnson & Lazarus, 2008; Theron & Dunn, 2010; Theron & Malindi, 2010; Ungar, 2005). Formal resources can be subcategorised into voluntary and mandatory resources. "Voluntary" refers to formal resources youths steer towards, or ask for, when they experience hardships. In other words, this use is of their own volition. The literature often refers to voluntary formal services as resilience-promoting (for example, nurses, doctors, support groups, support educators, counsellors, pastors, and traditional healers) (Dass-Brailsford, 2005; Phasha, 2010; Theron & Dunn, 2010; Theron & Theron, 2010; Theron & Theron, 2014a). "Mandatory" refers to formal resources youths did not actively select, but were required, by representatives of the social ecology (for example, school principals, social workers), to make use of (for example, social work services, foster homes, substance abuse programmes). The literature confirms that mandatory services support resilience when youths' experience these services as satisfying, of quality, or when multiple services are coordinated and consistently offered (Sanders & Munford, 2014; Sanders, Munford, Liebenberg, & Ungar, 2014; Ungar, Liebenberg, Dudding, Armstrong, & Van de Vijver, 2013). Tables 1 and 2 are a summary of informal and formal resources, respectively, reported in South African youth resilience literature.

Table 1

Examples of Informal Resources Reported in South African Resilience Literature: 2001 to 2014

Resources with Self

Acceptance of situation; assertiveness; worthiness; dreamer; empathetic; enthusiastic; internal locus of control; problem-solving skills; pro-social behaviour; optimistic; resilient personality; self-regulation; value-driven (Dass-Brailsford, 2005; De Villiers & Van den Berg, 2012; Ebersöhn, 2007, 2008; Govender & Killian, 2001; Johnson & Lazarus, 2008; Kritzas & Grobler, 2005; Malindi, 2014; Mampane & Bouwer, 2006; Pienaar, Swanepoel, van Rensburg, & Heunis, 2011; Pienaar et al., 2006; Theron, Theron, & Malindi, 2013; Wild, Flisher, & Robertson, 2011)

Resources with Family

Authoritative and good parenting practices; good family functioning; parental support towards a better education; supportive mother, grandmother, and other extended family members; supportive siblings; value-driven family (Choe, Zimmerman, & Devnarain, 2012; Dass-Brailsford, 2005; De Villiers & Van den Berg, 2012; Ebersöhn, 2007; Kritzas & Grobler, 2005; Malindi, 2014; Theron, 2007; Theron et al., 2013; Van Rensburg & Barnard, 2005)

Resources with Community

Peers providing a sense of belonging; peers helping and listening during difficult times; acceptance and support of peers; positive peer influences; supportive neighbours and community members; advice from pastor (Choe et al., 2012; Dass-Brailsford, 2005; Ebersöhn, 2008; Govender & Killian, 2001; Johnson & Lazarus, 2008; Kruger & Prinsloo, 2008; Malindi, 2014; Malindi & Machenjedge, 2012; Pienaar et al., 2011; Pienaar et al., 2006; Theron, 2007; Van Rensburg & Barnard, 2005; Ward, Martin, & Theron, 2007)

Resources with Culture

Kinship support; religion as a support; traditional and cultural values; traditional African practices (Dass-Brailsford, 2005; Ebersöhn, 2007; Kruger & Prinsloo, 2008; Malindi, 2014; Pienaar et al., 2006; Theron, 2007; Theron & Dunn, 2010; Theron & Phasha, 2015; Theron & Theron, 2013; Theron et al., 2013)

Table 2

Examples of Formal Resources Reported in South African Resilience Literature: 2001 to 2014

Schools

Good extramural activities; health-promoting schools (for example, healthy relationship between learners and teachers, healthy learners); life skills education; safe space for learners; schools that promote academic excellence; well-resourced schools (for example, playgrounds, libraries) (Barbarin, Richter, & de Wet, 2001; De Villiers & Van den Berg, 2012; Ebersöhn, 2007, 2008; Govender & Killian, 2001; Johnson & Lazarus, 2008; Kruger & Prinsloo, 2008; Malindi, 2014; Malindi & Machenjedze, 2012; Malindi & Theron, 2010; Mampane & Bouwer, 2011; Theron & Dunn, 2010; Theron, Liebenberg, & Malindi, 2014; Theron & Theron, 2014a; Ward et al., 2007)

Social and Mental Health Services

Social workers; shelters; psychological services; HIV/Aids care facilities; non-governmental organisations (NGOs); religious organisations (for example, church); supportive teachers (Malindi, 2014; Malindi & Theron, 2010; Pillay, 2012; Theron & Dunn, 2010; Theron & Malindi, 2010; Theron et al., 2013)

3.2.2 Meaningfulness of Resources

Resource-use alone is not a clear-cut pathway to resilience (Sanders et al., 2014; Ungar et al., 2013; Van Rensburg, Theron, Rothmann, & Kitching, 2013). The resources (both informal and formal) individuals ask for, or steer towards, when at-risk are dependent on their meaningfulness and tie in with the four principles that inform a social-ecological understanding of resilience. Due to the complex partnerships, cultural and contextual impact, as well as non-typical pathways individuals take towards resilience (see paragraph 2.2.2), it is plausible that the meaning individuals attach to a resource might vary. Thus, the meaningfulness of a resource is dependent on lived experiences, chronicity of risks, and cultural and contextual influences, although little quantitative evidence exists of how resource-use might vary within a context (Masten, 2014a; Ungar, 2013; Wright et al., 2013).

In addition, Wright et al. (2013) suggest that the meaning an individual attaches to a resource might change over time. For example, when experiencing a traumatic event at an early age (for example, rape or the death of a parent), at that moment, the child might not understand the full impact of what has happened. However, as he/she grows older and the traumatic event is put into perspective and fully understood, the individual might react differently and attach altered meaning to it. Panter-Brick (2015) and Theron and Theron (2014b) explain that the meaning individuals attach to an experience might also differ due to their cultural way of living. For example, Theron et al. (2013), as well as others (Dass-Brailsford, 2005; Phasha, 2010; Theron,

2007), report that educational advancement supports black South African youths' resilience. Black South African youth seek educational improvement towards a better future for themselves, their families, and communities in the light of the past racial isolation in South Africa. Theron and Phasha (2015) theorise that black South African youth attach meaning to education and prioritise educational advancement because their parents, communities, and elders emphasise that educational achievements are valued by black South Africans and will bring honour to black South Africans as a whole. Thus, black South African youth attach positive meaning to education because it has cultural salience (Panter-Brick, 2015). However, Western youth report that educational achievement supports them to do well under adverse circumstances (Kumpfer, 1999; Masten, Best, & Garnezy, 1990; Werner, 2006). The youth in these studies aim to achieve additional skills sets. Thus, both the black South African and Western youth make use of the same resource (that is, education); however, the meaning they attach to the resource varies due to lived experiences and cultural influences (for example, racial isolation versus skills set achievement).

3.2.3 Problems Related to Investigating a Social-Ecological Explanation of Resilience

In summary, Ungar's Social-Ecological Explanation of Resilience highlights the need to fully understand resilience as a social-ecological process, with emphasis on understanding that meaningful resources (as opposed to resources in general) facilitate positive development in the face of high levels of risk. However, as mentioned above (paragraphs 2.2.2 and 3.2.2), Ungar's complex explanation still needs to be tested empirically, and moreover, little is quantitatively known about differential resource-use among individuals sharing a context and culture (Ungar, 2013; Wright et al., 2013). To investigate the relationships involved in resilience processes, a sophisticated methodology (that is, latent variable modelling⁵) is needed that can model and measure the relationships among the various aspects of resilience (for example, risks, functional outcomes, and resources). Furthermore, studying these relationships calls for more sophisticated and culturally appropriate methodologies to research resilience (Masten, 2014a; Panter-Brick, 2015; Ungar, 2013). Thus, this study aims to answer the aforementioned call and investigate a sample black South African youths' social-ecological resilience processes quantitatively. Flowing from the aforementioned problem statement, the purpose, sub-aims, and sub-questions guiding this study are set out in paragraph 4.

⁵ Structural equation modelling and latent variable modelling will be used interchangeably in this study (Muthén & Muthén, 1998-2012).

4. PURPOSE STATEMENT, SUB-AIMS, AND SUB-QUESTIONS

The purpose of this sophisticated cross-sectional study is to investigate black South African youth resilience processes from a social-ecological perspective, using a sample of black South African youth. The purpose of this study is served by the following sub-aims:

- Evaluate how well quantitative studies of South African youth resilience (1996 to 2012) have explained resilience processes in South African youth.
- Model Ungar's Social-Ecological Explanation of Resilience in a sample of black South African school-going youth, and investigate how resource (that is, schooling) meaningfulness contributes to resilience processes.
- Investigate youths' perceptions of resilience-promoting resources.

The above-mentioned sub-aims lead to the following sub-questions:

- How well does existing quantitative research on South African youths' resilience explain the resilience processes of South African youth?
- How does a model based on Ungar's Social-Ecological Explanation of Resilience compare to alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures?
- Is school engagement a culturally appropriate functional outcome of black South African youths'⁶ resilience?
- What contributes to schooling as a meaningful resource?
- Do youths' self-reported perceptions of resilience-promoting resources differ significantly across two distinct groups (that is, groups identified as functionally resilient and formal service using) from the same social ecology?
- How do such significantly varied perceptions of resilience-promoting resources (if any) relate to youths' reported use of formal supports?

⁶ The terms 'youth' and 'adolescent' were used interchangeably in this study, depending on journal specific terminology.

5. RESEARCH METHODOLOGY

The sections below provide a summary of the research designs used to answer the questions directing each manuscript. When the answers to each of the manuscripts are viewed as a whole, the main research question of this study will be answered.

5.1 Manuscript 1

5.1.1 Research Question

The first manuscript aimed to answer the following question:

How well does existing quantitative research on South African youths' resilience explain the resilience processes of South African youth?

The rationale for this question related to the need to ascertain whether existing quantitative studies of South African youths' resilience processes perhaps already offered methodologically rigorous and theoretically robust explanations of black South African youths' resilience processes from a social-ecological perspective. In that case, the current study would have been redundant.

5.1.2 Design

For the purpose of this manuscript (see Chapter 2) a systematic review of relevant youth resilience studies was conducted. A systematic review is defined as a methodology that investigates current literature in order to evaluate what is and what is not known about the topic being evaluated – in this instance, South African youth resilience – and to synthesise this to offer a richer perspective on the topic (Denyer & Tranfield, 2011). Two systematic reviews were conducted: one of critiques regarding quantitative studies of youth resilience (see 5.1.3.1 below) and one of quantitative studies of South African youths' resilience (see 5.1.3.2 below). For both reviews, relevant studies that were included in internationally indexed and scholarly peer-reviewed journals and chapters indexed on EBSCOhost, JSTOR, and ScienceDirect were sourced. The criteria to determine relevance for each review are detailed in 5.1.3.1 and 5.1.3.2 below, as are the procedures followed. In addition to a database search, use was made of reference lists from published resilience studies and in-press literature made available by the

promoter's resilience networks. Some advantages are associated with a systematic review. Systematic reviews allow researchers and/or practitioners to become informed of the newest and most reliable developments in their field (that is, in this instance, youth resilience studies). Furthermore, this design allows researchers and/or practitioners to unearth the possible caveats and best practices regarding their field of study (Hemmingway, 2009). However, some disadvantages also exist; for instance, with the use of selection criteria, a possibility exists of selection bias. In addition, it is possible that, from the time of data analysis until publication of the review, findings might become outdated. Thus, to avoid the aforementioned, researchers should update their results continuously (Shuttleworth, 2014).

5.1.3 Procedure

5.1.3.1 First Review: International Critiques Regarding Youth Resilience Studies

At first, literature critiquing youth resilience studies was selected. Studies published in English and containing terms such as “review”, “issues”, “critique”, “commentary”, “evaluation”, “frameworks”, “future directions”, “research development”, and “youth resilience” were included. Studies that focused on adult/geriatric resilience and on coping (different from resilience – see Ungar, 2013) or that assessed intervention programmes were excluded. A total of 26 international journal articles and chapters were selected (see Table 3) (Ahern, Kiehl, Lou Sole, & Byers, 2006; Barber, 2013; Betancourt et al., 2013; Bottrell, 2009; Cicchetti, 2013; Gartland, Bond, Olsson, Buzwell, & Sawyer, 2011; He & Van de Vijver, 2015; Klika & Herrenkohl, 2013; Lerner, 2006; Luthar et al., 2000; Luthar & Cushing, 1999; Masten, 2001, 2011, 2012; Panter-Brick & Leckman, 2013; Rutter, 1987; Tol, Song, & Jordans, 2013; Ungar, 2013; Vanderbilt-Adriance & Shaw, 2008; Walsh, Dawson, & Mattingly, 2010; Werner, 1987; Werner & Smith, 1982; Windle, 2011; Windle, Bennett, & Noyes, 2011; Wright et al., 2013; Zolkoski & Bullock, 2012).

Table 3

Summary of International Critique of Quantitative Resilience Research

<u>Authors</u>	<u>Identify research problem</u>	<u>Collect data</u>	<u>Analyse and interpret data</u>
1. Ahern, Kiehl, Sole, and Byers, 2006		√	
2. Barber, 2013		√	
3. Betancourt, Meyers-Ohki, Charrow, and Hansen, 2013		√	
4. Bottrell, 2009	√		
5. Cicchetti, 2013		√	
6. Gartland, Bond, Olsson, Buzwell, and Sawyer, 2011		√	
7. He and Van de Vijver, 2015		√	√
8. Klika and Herrenkohl, 2013		√	
9. Lerner, 2006	√		
10. Luthar and Cushing, 1999	√		
11. Luthar, Cicchetti, and Becker, 2000	√	√	√
12. Masten, 2001	√		
13. Masten, 2011	√		√
14. Masten, 2012			√
15. Panter-Brick and Leckman, 2013	√	√	
16. Rutter, 1987	√		
17. Tol, Song, and Jordans, 2013		√	
18. Ungar, 2013	√	√	√
19. Vanderbilt-Adriance and Shaw, 2008		√	
20. Walsh, Dawson, and Mattingly, 2010		√	
21. Werner, 1987	√		
22. Werner and Smith, 1982	√		
23. Windle, 2011	√		
24. Windle, Bennett, and Noyes, 2011		√	
25. Wright, Masten, and Narayan, 2013	√		√
26. Zolkoski and Bullock, 2012		√	

These articles were read and reread to identify instances of critiques that had been made of resilience studies and the research processes informing these studies. Each instance was coded (that is, a label summarising the gist of the critique was assigned to that part of the article). Next, all similar codes were grouped and given a label (for example, unsophisticated statistical analysis, arbitrary decisions influencing analysis and interpretations, problematic measurement of resilience) that summarised their commonality (Saldaña, 2009). Creswell's (2012) six-step research process (that is, identifying a research problem, reviewing the literature, specifying a purpose for the research, collecting data, analysing and interpreting the data, and reporting and evaluating the research – see Figure 1) was used as a framework to structure the critiques levelled at studies of youth resilience. In other words, the findings resulting from the systematic

review of critiques levelled at studies of youth resilience were grouped and reported according to the part of the research process with which these critiques aligned.

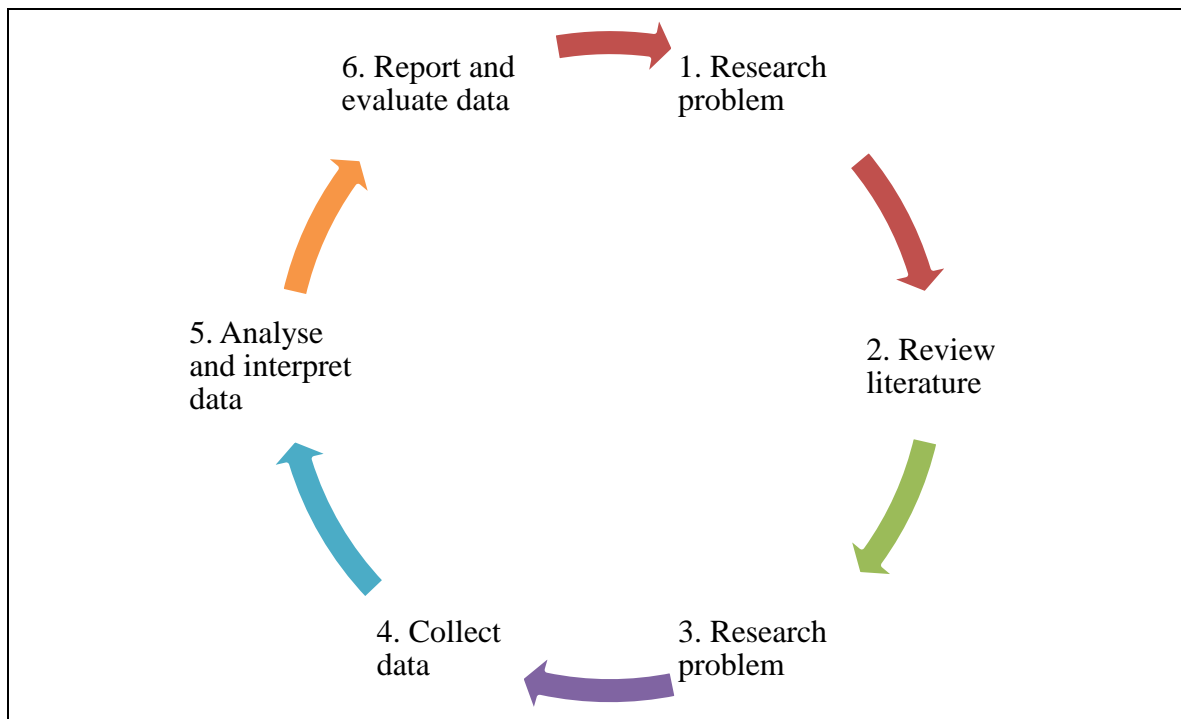


Figure 1. Research cycle as explained by Creswell (2012)

5.1.3.2 Second Review: Critical Review of Quantitative Studies of South African Youth Resilience

Databases mentioned in 5.1.2 were accessed to select quantitative studies of South African youth resilience. Only quantitative studies that included South African children (zero to 18 years) and youth (15 to 24 years) as described by UNESCO (UNESCO, 2014) and the UN (United Nations Human Rights, 1989) and with the words “resilience/resiliency/resilient” in their titles and keywords were selected. Quantitative sections of mixed-method studies were excluded because the aim of Manuscript 1 was to review quantitative (and not mixed) studies of South African youth resilience. In addition, only youth (as opposed to adult/geriatric) resilience studies were included. The aforementioned criteria resulted in 13 journal articles being selected (Bloemhoff, 2006a; 2006b; 2012; Choe et al., 2012; De Villiers & Van den Berg, 2012; Ebersöhn, 2008; Fincham, Altes, Stein, & Seedat, 2009; Jorgenson & Seedat, 2008; Kritzas & Grobler, 2005; MacDonald, Gillmer, & Collings, 1996; Mampane, 2012; Ward et al., 2007; Wild et al., 2011).

A set of *a priori* codes (Nieuwenhuis, 2012), namely, a list of limitations associated with prior studies of youth resilience, emerged from the first systematic review. These terms informed the *a priori* codes that were used to analyse the 13 journal articles included in this second review. What is meant by *a priori* codes is that the data (that is, 13 journal articles) was analysed using a set of predetermined codes (as identified in the first review; see paragraph 5.1.3.1), rather than codes arising inductively from the data being analysed (Creswell, 2012). The *a priori* codes were as follows: conflicting conceptualisation of resilience (for example, person-focused, process-oriented, a person-ecological transaction); varying/absent conceptualisations of key terms (for example, different definitions of protective factors); overreliance on cross-sectional research designs; undeclared or outdated theoretical frameworks; problematic measurement of resilience; inadequate information about psychometric properties of resilience scales; unsophisticated statistical analysis; and arbitrary decisions influencing analysis and interpretations (Nieuwenhuis, 2012). See Figure 2 for an example of *a priori* coding of conflicting conceptualisations of resilience.

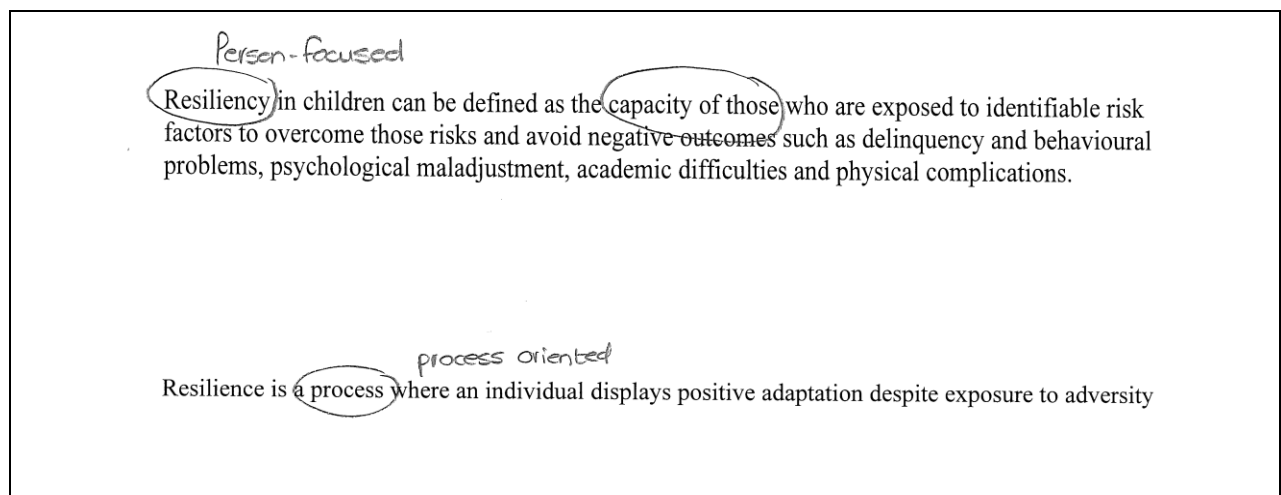


Figure 2. Example of a priori coding indicating conflicting conceptualisations of resilience

5.2 Manuscript 2

Manuscript 1 provided evidence that previous studies of resilience in black South African youth were limited by multiple methodological and theoretical concerns and that a social-ecological approach to resilience had been largely neglected. This paved the way for Manuscript 2.

5.2.1 Research Questions

The second manuscript aimed to answer the following questions:

- How does a model based on Ungar's Social-Ecological Explanation of Resilience compare to alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures?
- Is school engagement a culturally appropriate functional outcome of black South African youths' resilience?
- What contributes to schooling as a meaningful resource?

5.2.2 Literature Study Informing Manuscript 2

For the purpose of this manuscript, multiple peer-reviewed international and national journals, books, and chapters regarding a social-ecological understanding of resilience, the principles that inform such an understanding, and how the meaning youth attach to formal and informal resources adds to the supportiveness of the resource were consulted. Furthermore, this enabled the researcher to have current literature accessible to interpret the findings and when discussing the results of Manuscript 2 (Creswell, 2009). The following databases were used to access relevant literature: EBSCOhost (Academic Search Complete, Eric, MEDLINE, and PsycINFO), JSTOR, SA ePublications, the PsySSA website, and the HRSA website.

5.2.3 Design Informing Manuscript 2

As mentioned previously, this study forms part of the Pathways to Resilience Research Project. For the purposes of Manuscript 2, the researcher was provided with access to the South African data set by the principal South African investigator and, consequently, made use of secondary data analysis (that is, analysis of data collected by others) (Remler & Van Ryzin, 2011).

To answer the research question directing this manuscript, a cross-sectional survey design, the design of the Pathways to Resilience Research Project, was used. This research design sampled and compared groups by category, namely, school-going youth, functionally resilient youth, and formal service-using youth. School-going youth meant that the individuals who made up this sample were recruited by the Pathways to Resilience Research Project from local schools in the Thabo Mofutsanyana District, Free State province, South Africa (see 5.2.4). The functionally resilient youths were individuals who were identified according to a culturally appropriate criterion (that is, school engagement), and the formal service-using youth were made up of individuals who were identified by local service providers (that is, shelters, children's homes, non-governmental organisations) (see 5.3.4). The aim of this study was to learn about a large population by surveying a sample of the population (Creswell, 2009; Gravetter & Forzano, 2011; Remler & Van Ryzin, 2011; Shaughnessy, Zechmeister, & Zechmeister, 2009). However, there were limitations to this cross-sectional survey design: only one measurement took place (that is, 2010), and change was not observed over time; a once-off measure would not account for resilience processes over time (Monette, Sullivan, & DeJong, 2011).

This study made use of Mplus version 7.2. Mplus has many advantages, and it has a broad range of variable modelling estimators (for example, maximum likelihood, maximum likelihood with adjusted means, robust maximum likelihood, and weighted least square estimators)⁷. In addition, Mplus has the ability to deal with missing data and can accommodate categorical variables. However, some disadvantages do also exist, as Mplus requires some knowledge of syntax programming as well as an understanding of the analysis that is involved in latent variable modelling (Muthén & Muthén, 1998-2012).

In addition, this study followed a frequentist approach to latent variable modelling. A frequentist approach might be seen as a limitation by methodologists who prefer Bayesian methodologies. The frequentist approach to hypothesis testing requires the evaluation of the p-value, as opposed to a subjective interpretation of the data, where the researcher learns from the data and does not evaluate the data. However this study made use of 90% confidence intervals (CI) of the root mean square error of approximation (RMSEA), as well as used literature, to inform the development of a structural model (Kline, 2011; Moreno & Girón, 2006; Van de Schoot et al., 2014).

⁷ See Muthén and Muthén (1998-2012, p. 603) for further descriptions of estimators available in Mplus.

5.2.4 Population and Sample

As mentioned, during the course of the Pathways to Resilience Research Project, South African participants were recruited from the Thabo Mofutsanyana District, Free State province, South Africa. A total of 1 209 South African participants were recruited to participate in the Pathways to Resilience Research Project. All 1 209 completed the study's measure (see Addenda A and B), of which 1 137 measures were useable because they were more complete than the remainder. For the purpose of Manuscript 2, data generated by 730 school-going youths, as recruited by the Pathways to Resilience Research Project, was used. Table 4 summarises the demographic details of these youths.

Table 4

Demographics of the School-going Sample and Total Population of Participants Recruited by the Pathways to Resilience Research Project⁸

		<u>School-going</u>		<u>Total⁹</u>		
		<u>sample</u>				
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	
Gender	Girls	388	53.15	599	52.68	
	Boys	341	46.71	536	47.14	
	<i>Missing</i>	1	0.14	2	0.18	
Racial group	Black	715	97.95	1110	97.63	
	White	4	0.55	10	0.88	
	Coloured	10	1.37	14	1.23	
	Indian	0	0	1	0.09	
	<i>Missing</i>	1	0.14	2	0.18	
	Age	12	7	0.96	7	0.62
	13	34	4.66	92	8.09	
	14	32	4.38	95	8.36	
	15	100	13.70	170	14.95	
	16	230	31.51	319	28.06	
	17	175	23.97	238	20.93	
	18	85	11.64	122	10.73	
	19	67	9.18	93	8.18	
	<i>Missing</i>	0	0	1	0.09	
	<i>M</i>	16.35		16.09		
	<i>SD</i>	1.52		1.64		
Attending school	Yes	728	99.73	1129	99.30	
	No	0	0	5	0.44	
	<i>Missing</i>	2	0.27	3	0.26	
Grade passed	3	0	0	2	0.18	
	4	0	0	13	1.14	
	5	0	0	34	2.99	
	6	44	6.03	109	9.59	
	7	43	5.89	115	10.11	
	8	146	20.00	229	20.14	
	9	452	61.92	525	46.17	
	10	7	0.96	61	5.36	
	11	30	4.11	35	3.08	
	12	3	0.41	5	0.44	
	<i>Missing</i>	5	0.68	9	0.79	
		<i>M</i>	8.60		8.24	
		<i>SD</i>	1.02		1.40	
Total		730		1137		

⁸ Chapter 1 and 5 applied the APA Style (6th edition) for the South African context.

⁹ Total population of the South African Pathways to Resilience Research Project.

5.2.5 Measuring Instrument

The Pathways to Resilience Youth Measure (PRYM; see Addenda A and B) was used for data collection (Resilience Research Centre, 2010). The questionnaire consists of 11 scales (or parts of these scales) to measure youths' risks, resources, strengths, difficulties, social determinants of health, school experiences, and resilience processes (see Addendum C for a description of these). For the purposes of Manuscript 2, 16 subscales and clusters (making up the 11 scales) were used (see Addendum C for the details).

5.2.6 Data Collection

Quantitative data were collected between February and October of 2010 by means of the PRYM. Data were only collected once ethical clearance had been given by the institutional (that is, North-West University) Ethics Committee (see Addendum D), the Department of Basic Education in the Free State province, South Africa (see Addendum E), participating youth (see Addendum F), and their caregivers (see Addendum F). The Pathways to Resilience Research Project was guided by an advisory panel (AP) (that is, community leaders and other community members who were knowledgeable about local youth and youth resilience; for details, see Elias and Theron, 2012 and Theron et al., 2013). With the guidance of the AP, the PRYM was modified for use in the South African context (Advisory Panel, 2010a). For example, more difficult English words were simplified (for example, the term "resilience" was referred to as "doing well in life") and culturally inappropriate items modified (for example, "had sexual intercourse" was replaced with "had willing sexual intercourse" (Elias & Theron, 2012; Advisory Panel, 2010a).

Three Sesotho-speaking fieldworkers assisted in the data collection. Data were collected outside of official teaching time (researchers met with youths on school premises). The PRYM was administered in groups of 30 to 45 youth per session and completed by the youth themselves. On the AP's advice, the PRYM was presented to youths in English (that is, each youth had his/her own copy, and fieldworkers then read each item aloud to the youth; once the youth had completed that item, the fieldworker then moved on to the subsequent item, and so on). Youths were free to ask/indicate if they did not understand the English used. In such instances, the fieldworkers made use of pre-agreed-on code switches (that is, Sesotho synonyms for English-specific words or phrases in the questionnaire that might be difficult for youth to comprehend)

and so supported youth understanding. The AP facilitated the choice of code switches (Advisory Panel, 2010b).

5.2.7 Data Analysis

Mplus version 7.2 (Muthén & Muthén, 1998-2012) and SPSS 22.0 (IBM Corp, Released 2013) software packages were used in this manuscript. Mplus was used to conduct confirmatory factor analyses, to compute composite reliabilities, and to test measurement invariance. SPSS was used to compute descriptive statistics. A categorical estimator was used, specifically the weighted least square estimator (WLSMV) (Muthén & Muthén, 1998-2012). The WLSMV estimator employs an amended χ^2 statistic. This estimator was favoured due to its ability to deal with multiple categories, Likert scales (for example, three- to six-point Likert scales), or ratings, as well as smaller to moderate sample sizes ($n = 100$ to 1000) (Byrne, 2012). In addition, alternative models were compared with the use of the maximum likelihood estimator with robust standard errors (MLR) (Byrne, 2012).

Latent variable modelling, also known as structural equation modelling (SEM), was implemented to test structural models. A measurement model based on Ungar's hypothesis was used to test which measurement model, developed on the basis of Ungar's theoretical hypothesis, fitted the empirical data well. In addition, latent variable modelling was used to explain relationships within the measurement model, which consisted of multiple variables, and to examine the structure of the interrelationships among latent variables in the model (Byrne, 2012; Hair, Black, Babin, & Andersen, 2010; Wang & Wang, 2012).

Data analysis of Manuscript 2 consisted of five steps (Hair et al., 2010):

1. Defining the individual constructs (that is, risks¹⁰, resources within the social ecology), using Ungar's (2011, 2012) Social-Ecological Explanation of Resilience (see paragraph 5.2.5).
2. Developing and specifying the measurement models based on the constructs identified in Step 1.

¹⁰ These were based on extant South African resilience literature (e.g. Fincham et al., 2009; Theron et al., 2013; Theron et al., 2014 and Ward et al., 2007)

3. Assessing the measurement models for validity (see paragraph 5.2.8) and identifying the best-fitting measurement model.
4. Specifying the structural validity of the model with the use of the best-fitting measurement model identified in Step 4.
5. Assessing the structural model for validity (see paragraph 5.2.8).

5.2.8 Validity

The measurement models and structural model were tested in various steps, as described in paragraph 5.2.7. Fit indices are used to establish how well the observed data fit a model and, as a result, evaluate whether a model is acceptable. During Step 3, the following fit indices were used to assess the validity of the measurement models, with the use of the MLR estimator (Byrne, 2012; Hair et al., 2010; Kline, 2010; Schreiber, Stage, King, Nora, & Barlow, 2006; Wang & Wang, 2012):

- Chi-square (χ^2) assessed the statistical significance of the measurement models. A p-value (p) smaller than 0.05 indicated that the model fitted.
- Degrees of freedom (df) informed the researcher of the number of corrections in the input of variables minus the number of estimated coefficients.
- The Akaike information criterion (AIC) gave information on the quality of the model. AIC maintained a balance between goodness of fit and model complexity. The model with the lowest AIC value indicated the best-fitting model.
- The Bayes information criterion (BIC) was employed to evaluate parsimony of the model, for the chi-square only indicated the fit. The model with the lowest BIC value indicated the best-fitting model.

The above-mentioned analysis gave the researcher more information on the validity of the measurement models. The next step was to establish an acceptable fit using various indices; this was achieved with the use of the WLSMV estimator (Byrne, 2012; Hair et al., 2010; Kline, 2010; Schreiber et al., 2006; Wang & Wang, 2012):

- Root mean square error of approximation (RMSEA) indicated how well the model fitted the population being represented in the data. Values less than 0.08 were recommended as a cut-off score.

- RMSEA 90% confidence interval values less than, or equal to, 0.08 and a significance (p) \geq 0.05 indicated that the RMSEA score was 90% confident for the population being studied – indicating a close-fit model.
- The Tucker-Lewis index (TLI) evaluated the comparison of the normed chi-square values for the models and took (to some degree) into account model complexity. A value \geq 0.90 indicated a good fit.
- The comparative fit index (CFI) is an incremental fit index that is more insensitive to model complexity. Values above 0.90 indicated good fit.

Subsequently, the measurement model with the lowest AIC and BIC value and that indicated goodness-of-fit was used to specify the structural model in Step 4. The structural model was assessed by the same fit indices as specified above.

5.2.9 Reliability

Reliability of the constructs specified in the model was calculated with the use of composite reliability (ρ). The calculation of latent variable scores violated the assumption of tau equivalence (used to calculate alpha coefficients); therefore, the composite reliability was rather computed (Raykov, 2012). Composite reliability evaluated the consistency of the measures imbedded in the PRYM. A score of 0.70 indicated high levels of composite reliability¹¹.

5.3 Manuscript 3

Manuscript 2 provided evidence that a social-ecological understanding of resilience could explain resilience in black South African youth. A social-ecological understanding of resilience entails transactions between an individual and his/her social ecology. Individual-initiated transactions entail that, in times of severe hardships, individuals steer towards/ask for formal and/or informal resources. At the same time, the individuals' social ecology is co-responsible for youths doing well. The social ecology's responsibility includes initiating provision of culturally and contextually meaningful supports to at-risk individuals as well as reciprocating youths' negotiation for resources. Nevertheless, little is known regarding youths' perceptions of such resilience-promoting resources, whether/how these perceptions vary when youths share a

¹¹ For comparative purposes, composite and alpha coefficients were calculated – see Addendum G.

social ecology, and how significantly varied perceptions of resilience-promoting resources are associated with youths' usage of formal supports. The aforementioned paved the way for Manuscript 3.

5.3.1 Research Question

The third manuscript aimed to answer the following questions:

- Do youths' self-reported perceptions of resilience-promoting resources differ significantly across two distinct groups (that is, groups identified as functionally resilient and formal service using) from the same social ecology?
- How do such significantly varied perceptions of resilience-promoting resources (if any) relate to youths' reported use of formal supports?

5.3.2 Literature Study Informing Manuscript 3

For the purpose of Manuscript 3, numerous national and international journals, books, and chapters regarding a social-ecological definition of resilience, as well as resource-usage, were accessed to fully comprehend extant understandings of differential resource-use among youths within different and the same contexts. The same databases used in Manuscript 2 (see 5.2.2) were consulted to access relevant literature.

5.3.3 Design Informing Manuscript 3

A similar quantitative research design (cross-sectional survey), as described in Manuscript 2 (see 5.2.3), was followed.

5.3.4 Population and Sample

For the purpose of this manuscript, two samples (total $n = 407$) were compared with regard to resource-usage. These samples comprised the functionally resilient youths ($n = 221$) and youths mandated to use formal services ($n = 186$) that were nominated to the Pathways to Resilience Research Project. The formal service-using youth (SU sample) were recruited by the AP from shelters ($n = 14$), children's homes ($n = 28$), the Department of Social Development ($n = 23$), and a non-governmental organisation ($n = 118$) offering youth formal educational, health care,

welfare (for example, food and clothing), and human rights services. The functionally resilient (FR sample) youths were recruited by the Pathways to Resilience Research Project using culturally and contextually guided criteria, defined by the AP. The AP defined resilient youths in the Thabo Mofutsanyana District as having a resilient personality, being a dreamer, progressing academically, having the ability to accept their situation and carry on, being value driven, and having access to, and being supported by, active support systems (Theron et al., 2013). Using these criteria, researchers asked a range of community stakeholders (teachers, psychologists, social workers, community elders, and religious leaders) to recommend resilient youths to the project. As with the school-going youths referred to in Manuscript 2, all youths participated voluntarily, following their and their caregivers' informed consent. Table 5 summarises the demographic details of the functionally resilient and formal service-using samples.

Table 5

Demographics of the Functionally Resilient Sample, Formal Service-using Sample and Total Population of Participants Recruited by the Pathways to Resilience Research Project

		<u>FR sample</u>		<u>SU sample</u>		<u>Total¹²</u>		
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	
Gender	Girls	124	56.11	87	46.77	599	52.68	
	Boys	96	43.44	99	53.23	536	47.14	
	<i>Missing</i>	1	0.45	0	0	2	0.18	
Racial group	Black	216	97.74	179	96.24	1110	97.63	
	White	3	1.36	3	1.61	10	0.88	
	Coloured	1	0.45	3	1.61	14	1.23	
	Indian	0	0	1	0.54	1	0.09	
	<i>Missing</i>	1	0.45	0	0	2	0.18	
	Age	12	0	0	0	0	7	0.62
	13	38	17.19	20	10.75	92	8.09	
	14	28	12.67	35	18.82	95	8.36	
	15	30	13.57	40	21.51	170	14.95	
	16	51	23.08	38	20.43	319	28.06	
	17	33	14.93	30	16.13	238	20.93	
	18	24	10.86	13	6.99	122	10.73	
	19	16	7.24	10	5.38	93	8.19	
	<i>Missing</i>	1	0.45	0	0	1	0.09	
	<i>M</i>	15.68		15.55		16.09		
	<i>SD</i>	1.83		1.63		1.64		
Attending school	Yes	219	99.10	182	97.85	1129	99.30	
	No	2	0.90	3	1.61	5	0.44	
	<i>Missing</i>	0	0	1	0.54	3	0.26	
Grade passed	3	1	0.45	1	0.54	2	0.18	
	4	6	2.71	7	3.76	13	1.14	
	5	23	10.41	11	5.91	34	2.99	
	6	37	16.74	28	15.05	109	9.59	
	7	23	10.41	49	26.34	115	10.11	
	8	46	20.81	37	19.89	229	20.14	
	9	44	19.91	29	15.59	525	46.17	
	10	38	17.19	16	8.60	61	5.36	
	11	1	0.45	4	2.25	35	3.08	
	12	0	0	2	1.08	5	0.44	
	<i>Missing</i>	2	0.90	2	1.08	9	0.79	
		<i>M</i>	7.67		7.51		8.24	
		<i>SD</i>	1.77		1.68		1.40	
	Total		221		186		1137	

¹² Total population of the South African Pathways to Resilience Research Project.

5.3.5 Measuring Instrument

Of the 11 scales used in the PRYM (see Addenda A and B), Manuscript 3 made use of seven sub-scales comprising these scales (see Addendum C).

5.3.6 Data Collection

Data collection was executed in the same manner as described in Manuscript 2; see 5.2.6.

5.3.7 Data Analysis

Mplus version 7.2 (Muthén & Muthén, 1998-2012) and SPSS 22.0 (IBM Corp, Released 2013) were used for the latent variable modelling (in a multigroup format) and demographic calculations that informed Manuscript 3. This manuscript was concerned with whether items and constructs represented in the measurement model were invariant (with regard to factor loadings and thresholds), also known as equivalent, across two samples (that is, the SU and FR samples). In the context of this manuscript, this meant that measurement invariance investigated whether the items of the 10 latent variables used operated equivalently across both the SU and FR samples. In the light of the research question, it was essential to establish measurement invariance before factor mean scores could be compared. During invariance testing, the researcher could eliminate the possibility of item and construct biases (Chen, 2008; He & Van de Vijver, 2015). As a result of the goal of this manuscript (that is, establishing measurement invariance), alternative measurement models were not tested. The WLSMV estimator was used, as described in Manuscript 2 (see 5.2.7). Due to the modified χ^2 statistic used in the WLSMV estimator, only the change of chi-square ($\Delta\chi^2$), change in degrees of freedom (Δdf), and its significance (p) were interpreted.

Data analysis used for the purposes of answering the research question directing Manuscript 3 consisted of 10 steps (Byrne, 2012; Hair et al., 2010; Kline, 2010; Schreiber et al., 2006; Van de Schoot, Lugtig, & Hox, 2012; Wang & Wang, 2012):

1. Testing demographical differences (for example, age and grade completed) between SU and FR samples, with the use of independent sample T-tests in SPSS 22.0 (IBM Corp, Released 2013).

2. Defining the individual constructs (for example, resources and lived risks youths experienced); see paragraph 5.2.5.
3. Developing and specifying the measurement model based on the constructs identified in Step 2.
4. Assessing the measurement model for acceptable fit (see paragraph 5.2.8).
5. Testing the baseline model (measurement model) for acceptable fit in both the SU and FR samples (see paragraph 5.2.8).
6. Testing the configural model (baseline model in multigroup format) for acceptable fit. Parameters were allowed (factor loadings and thresholds) to vary freely (see paragraph 5.2.8). In addition, configural invariance is essential in invariance testing; if acceptable fit was achieved, it indicated that the items were measured the same way between groups.
7. Testing for weak (metric) measurement invariance: a model (weak/metric invariance) where both samples' factor loadings were constrained as equal were compared to the configural model (Step 6). Chi-square difference testing ($\Delta\chi^2$) was used to investigate whether the models (configural versus weak/metric) differed from each other. A p-value greater than 0.05 indicated an insignificant $\Delta\chi^2$; thus, samples were invariant with regard to factor loadings. In the case where the p-value was less than 0.05, modification indices (MI) were consulted to identify possible problematic items. The highest MI (pointing out the problematic item) was freed, and this modified model was compared to the configural model. The process was followed until partial invariance had been established. Thus, metric invariance proposes that the items are measured in both groups on the same scale, and when achieved, further testing can be done.
8. Testing for strong (scalar) measurement invariance. A model (strong/scalar invariance) was specified where the factor loadings, as well as thresholds, were constrained to be equal across samples and compared to the final metric invariance model (Step 7). This allowed the researcher to evaluate whether models differed from each other (metric versus strong/scalar). The same process was followed in order to determine whether samples differed with regard to thresholds with the use of chi-square difference testing as explained in Step 7. Therefore, when strong measurement invariance was achieved, groups shared the measurement metric and the equal scalar; thus, the means of the latent variable could be compared.
9. Comparing latent variable means. When at least partial weak (metric) and partial strong (scalar) invariance had been achieved, factor mean invariance could be calculated. Problematic items as identified in Steps 7 and 8 were removed from both the SU and FR

samples. In a multigroup format, the factor loadings, as well as thresholds, were specified as invariant (equal) across the SU and FR samples, with the use of parameterisation type 1, as explained by Little, Siegers, and Card (2006). The difference in factor means scores was calculated and specified. For a specific latent variable, a p-value less than 0.05 indicated a significant difference between samples.

10. The differences identified (if any) in step 10 were further analysed with the use of analyses of variance (that is, ANOVA) in order to identify how (and whether) varied perceptions regarding available resilience-promoting resources were associated with formal resource-usage.

5.3.8 Validity

The same measures were used to establish goodness-of-fit (RMSEA, RMSEA 90% confidence interval, TLI, and CFI), as described in Manuscript 2; see paragraph 5.2.8.

5.3.9 Reliability

Composite reliability (ρ), as described by Raykov (2012), was employed, as described in Manuscript 2; see paragraph 5.2.9¹³.

5.4 Conclusion to Methodology Section

In the section above, the methodology of each manuscript was discussed. This included the literature study, design, research question, population and sample, measurement instruments used, how the data were collected, how the data were analysed, and the validity and reliability of latent variables. Figure 2 summarises the three manuscripts that make up this study. In the methodology section, there was only passing mention of ethical procedures. The secondary analysis was conducted in an ethical manner and will be discussed in paragraph 6.

¹³ For comparative purposes, composite and alpha coefficients were calculated – see Addendum H.

Pathways to Resilience Research Project

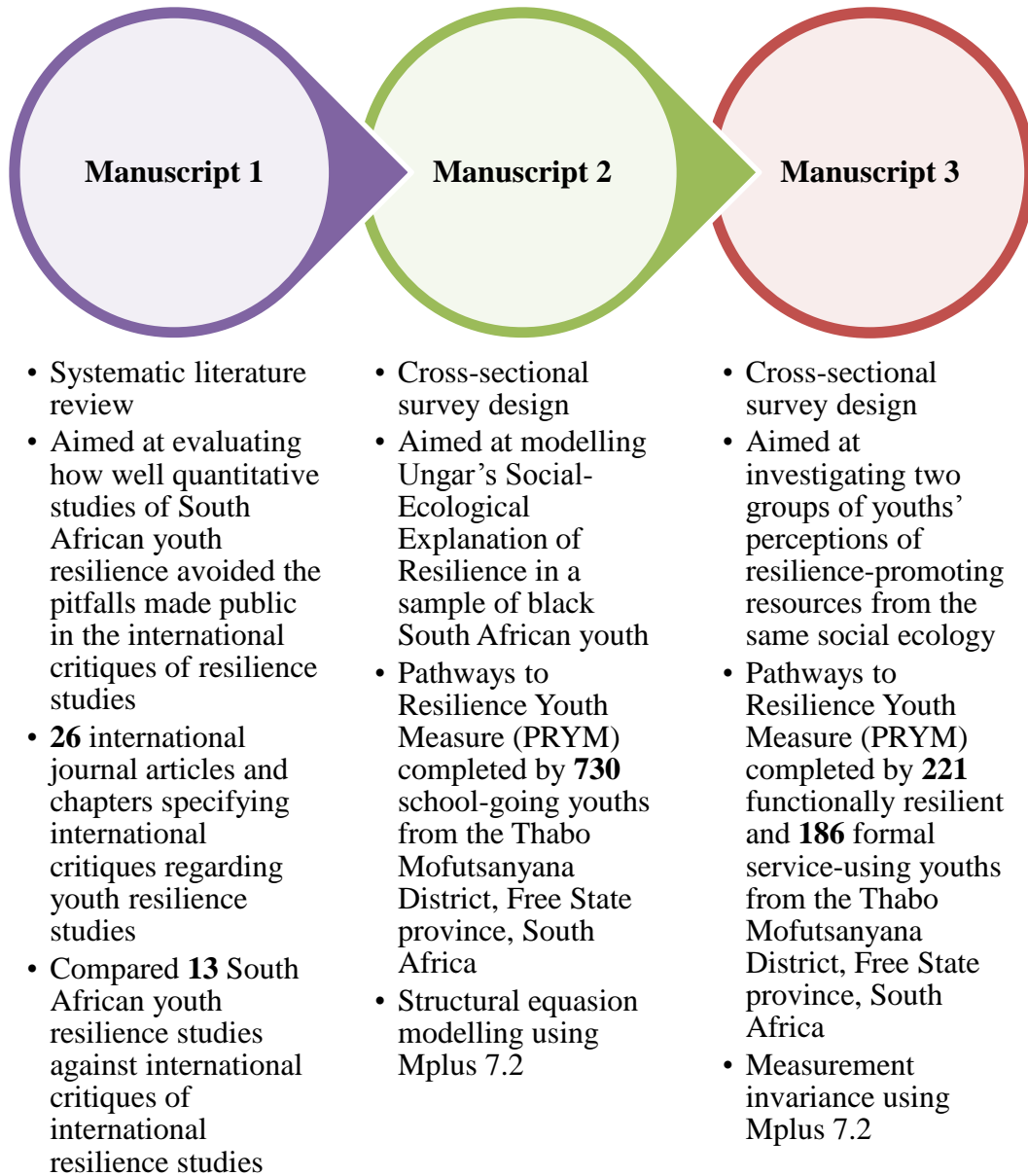


Figure 3. Brief summary of methodology informing this study

6. ETHICAL ASPECTS

The Pathways to Resilience Research Project researchers respected standard ethical procedures during the generation of the data that were reused in this study. Ethical clearance (NWU-00066-09-A2) was obtained from the North-West University (see Addendum D), as well as the Department of Basic Education in the Free State province, South Africa (see Addendum E), as well as from the AP. Signed consent forms were obtained from youths who participated in the Pathways to Resilience Research Project and from their caregivers, and the scope of the research project was explained to all participants (see Addendum F). It was clearly stated that no participant would be forced to complete the questionnaire against his or her own will, and no names were indicated on the PRYM to ensure anonymity.

Due to the fact that secondary data analysis was done, many of the standard ethical aspects were not primary to this study (for example, harm to participants, lack of informed consent, invasion of privacy, and deception) (Bryman, 2012). Nevertheless, the researcher was aware that ethical research practice was needed in secondary data analysis as well. This included ethically reporting on the data. Thus, the way in which the participants were portrayed was ethical (that is, participants were not stereotyped or marginalised), and the confidentiality and anonymity of the participants were respected (that is, the names of participants, schools, or service providers were not mentioned). Furthermore, permission was obtained from the principal investigator of the South African Pathways to Resilience Research Project to use the data. Finally, the data were used in an appropriate way (as intended by the principal investigator, to research the contribution of the social ecologies to youths' resilience processes) and with appropriate data analysis tools (Mertens & Ginsberg, 2009). The preliminary findings were presented to the study's AP as well as to seasoned resilience researchers and community partners at conferences and symposia. In this way, the researcher aimed to satisfy the ethical requirement of communicating the practical value of research findings to the communities that participated in the generation of the data (Creswell, 2012).

7. CHAPTER DIVISION

The following section provides a brief overview of the remaining structure of this document.

Chapter 2

Manuscript 1: A review of quantitative studies in South African youth resilience: Some gaps

Prepared for: *South African Journal of Science* (see Addendum I for journal scope and guidelines to authors)

Accepted with minor changes on 1 October 2014; changes currently being reviewed by editor.

Referencing style: Vancouver

Word limit: 6 000 (excluding summary and reference list)

References: limited to 60

Chapter 3

Manuscript 2: A Social-Ecological Model of Resilience within a Sample of Black South African Adolescents

Prepared for: *Journal of Adolescent Health* (see Addendum J for journal scope and guidelines to authors)

Referencing style: International Committee of Medical Journal Editors (ICMJE)/ AMA Manual of Style, 10th edition

Word limit: 3 500 (excluding abstract, tables, figures, and reference list)

References: limited to 40

Chapter 4

Manuscript 3: Adolescent Perceptions of Resilience-promoting Resources: The South African Pathways to Resilience Research Project

Prepared for: *Journal of Research on Adolescence* (see Addendum K for journal scope and guidelines to authors)

Referencing style: APA

Page limit: 40 (including abstract, tables, figures, and reference list)

Chapter 5

Conclusions, Limitations, and Recommendations for Future Studies

CHAPTER 2

Manuscript 1, entitled “*A review of quantitative studies in South African youth resilience: Some gaps*”, will answer the following secondary research question: “*How well does existing quantitative research on South African youths’ resilience explain the resilience processes of South African youth?*”

Prepared for submission to the *South African Journal of Science*

Summary

Resilience (positive adjustment to hardship) relies on a socio-ecologically facilitated process in which individuals navigate towards, and negotiate for, health-promoting resources, and their social ecology, in return, provides support in culturally aligned ways.¹ In the light of international critiques of the conceptualisation and measurement of resilience, the aim of this study was to systematically review quantitative studies of South African youth resilience in order to consider to what extent such studies failed to address documented critique.² This study argues that, for the most part, quantitative studies of South African youth resilience did not mirror international developments of understanding resilience as a complex socio-ecologically facilitated process. Furthermore, the majority of reviewed studies lacked a culturally or contextually sound measurement and contained conflicting operationalisations of resilience-related constructs. Essentially, the results of this study call for quantitative studies that will statistically explain the complex dynamic resilience-supporting transactions between South African youth and their contexts and guide mental health practitioners and service providers towards more precise explanations and promotion of resilience in South African youth.

Keywords

quantitative studies; resilience; systematic review; social ecology; South Africa; youth

A review of quantitative studies of South African youth resilience: Some gaps

Introduction

Resilience, or positive adjustment to hardship, relies on a complex transactional process between an individual and his/her social ecology in which the individual navigates towards, and negotiates for, health-promoting resources, and the social ecology reciprocates by providing support in culturally aligned ways.¹ It is important to note that a precondition of resilience is a lived experience of risk – in other words, an experience of adversity as personally threatening. Risks typically heighten the chances of negative developmental outcomes.³ Risks include challenging social ecologies (e.g., a violent community or ineffective school), specific negative life events (e.g., the death of a parent), compound socio-demographic risks (e.g., growing up in a single-parent, impoverished family in a violent community), as well as the impact of biological vulnerabilities (e.g., genetic predispositions or premature births).^{1,4}

As explained by Masten and colleagues, the interpretation of resilience as a complex process evolved over decades.^{3,5-9} In the early 1970's, researchers focused on the elementary principles involved in resilience: a considerable amount of research emphasised the definition and measurement of resilience. What emerged was a list of protective factors (i.e., attributes of an individual that could result in better outcomes under high levels of adversity) supporting resilience.³ It was thought that these protective resources were embedded within the individual as personality traits, skills, and genetic predispositions.^{5,6} As a result, *person-focused models* of resilience emerged, in which the emphasis was on differences between resilient and non-resilient individuals researched in the form of single case studies. However, this model did not allow researchers to identify the processes that underpinned resilience.⁹ This led to a shift in researchers exploring the mechanisms of resilience and conceptualising how these might inform processes of positive adjustment to hardship. This 1980's shift manifested as *variable-focused models* that relied on analysis of the relationship between resilience and a person's characteristics and aspects relating to his/her ecologies (e.g., violence, divorce, supportive families, religion).^{5,7} Researchers subsequently focused on testing and promoting these models of resilience processes through prevention, interventions, and policy making.^{6, 8} This then prompted questions about how adaptive and maladaptive

pathways differed in individuals who experienced adversity and generated *pathway models* (from 1990's and onwards). However, not enough was known about how resilience processes differed across contexts and cultures.^{3,7} Studies of contextual and cultural influences on resilience led researchers to acknowledging the complexity and cultural relativity involved in processes of positive adaptation. Consequently, resilience is now seen as a *culturally aligned transaction* that is facilitated by actions that social ecologies and young people reciprocally take.^{1,5}

As detailed below, how resilience (particularly quantitative studies of resilience) was studied in the course of this evolution received much criticism. Studies of South African (SA) youth resilience followed a similar evolution.¹⁰ The purpose of this article was to conduct a systematic review of quantitative studies of SA youth resilience in order to evaluate how well they avoided the pitfalls made public in the international critiques of resilience studies. In 2010, Theron and Theron¹⁰ published a review of published studies of SA youth resilience. Although their review did raise some criticisms of prior studies, it did not evaluate the quantitative studies of SA youth resilience against internationally voiced concerns. The current review was guided by the following questions: how does quantitative SA youth resilience research measure up to international critiques, and which subsequent gaps necessitate future investigation?

International critiques of quantitative resilience research

In order to weigh quantitative SA youth resilience research against international commentaries, a systematic review of critical commentaries on international youth resilience studies was conducted. The inclusion criteria were (a) internationally-indexed, scholarly, peer-reviewed articles and/or book chapters, (b) with titles, keywords, or abstracts that included the following terms: 'review', 'issues', 'critique', 'commentary', 'evaluation', 'frameworks', 'future directions', 'research development', and 'resilience'. Relevant commentaries were sourced through a database search (EBSCOhost, JSTOR, ScienceDirect), perusal of published reference lists, and/or recommend by authors' resilience-focused networks. Only one¹¹ commentary (included in a resilience-focused volume) did not define resilience explicitly. In this instance, the commentary aligned with how resilience was defined in the volume it was included in. We excluded commentaries not reported in English, and/or those that were not resilience-specific (e.g. coping-focused), or not youth-specific (e.g.

adult/geriatric resilience). We further excluded commentaries on resilience-supporting interventions. Applying these criteria resulted in the inclusion of 26 documents.^{1-5,9,11-30}

When conducting research, scholars make use of scientific approaches of investigation, to which Creswell³¹ refers as a ‘process of research’ (p. 7). The process consists of six steps: identifying a research problem, reviewing the literature, specifying a purpose for research, collecting data, analysing and interpreting the data, and reporting and evaluating research. Because the reviewed documents typically addressed problems with the researching of resilience, these steps were used to structure the synthesis of international critiques on resilience research. No critiques were levelled at three of Creswell’s³¹ steps (i.e., reviewing the literature, specifying a purpose for research, as well as reporting and evaluating research).

Identifying a research problem

Part of identifying a research problem is conceptualising the focus of the research.³¹ A number of criticisms were aimed at how researchers conceptualised resilience and related constructs such as risk and protective factors.^{2,27}

Conflicting conceptualisation of resilience

Masten⁹ and Werner,²⁵ among others, affirm that a disagreement exists among researchers with regard to how to conceptualise resilience and that such disagreement confounds the study of resilience. Resilience was originally thought of as a person-centred construct (see the work of Anthony and Cohler³²). Person-centred conceptualisations of resilience meant that what was needed to be resilient lay within the individual.⁵ However, Lerner¹⁹ and Luthar, Cicchetti, and Becker², among others,^{21,26} became critical of a person-focused conceptualisation of resilience and encouraged understandings of resilience as a person ↔ context transactions¹⁹ (i.e., a dynamic transaction between the environment and the individual that supports access to, and use of, resilience-promoting resources). A danger in person-focused definitions is how it accentuates youths’ responsibility to be resilient.¹ In spite of this, some recent studies of resilience continued to interpret resilience as an individual-centred concept.^{1,15} For example, researchers use terms such as ‘psychological resilience’ and ‘resiliency’.³³ These terms imply personality characteristics or individual skills in explanations of resilience and downplay the importance of pro-active, supportive

socio-ecological contributions to resilience.³⁴ Thus, when some researchers define resilience as person-focused and others as a construct supported by transactions between youths and their context, resilience is inconsistently conceptualised and the importance of socio-ecological contributions to resilience marginalised.¹⁹

Moreover, in their understanding of resilience, there is some disagreement among researchers about the exclusivity of positive adjustment. For example, Rutter³⁵ stated that one ought not to assume that everyone could be/become resilient. Masten⁹ however, referred to resilience-promoting resources as ‘common phenomena’ and to resilience as ‘ordinary magic’ (p. 227). Likewise, Windle²⁷ stated that the capacity for resilience is widespread and possible for anyone.

Additionally, some scholars discouraged the conceptualisation of vulnerability as the opposite of resilience – vulnerability refers to susceptibility to adverse outcomes.^{2,3} Early studies described resilient individuals as being invulnerable,^{2,3} implying that resilience is the opposite of being vulnerable.^{36,37} This is problematic because vulnerability and resilience co-exist, and resilience does not imply an absence of vulnerability.²

Varying/absent conceptualisations of key terms

Critiques of prior resilience studies reported that key terms used to describe resilience-related phenomena were used conflictingly. For example, Luthar, Cicchetti and Becker² reported that researchers used resilience-related terms such as *protective factors* and *risk factors* inconsistently. *Protective factors* (e.g., good parenting, personal agency, supportive teachers, or effective schools) are factors that heighten the chances of constructive developmental outcomes.³ However, different connotations for the term *protective factors* are seen in resilience literature. For example, protective factors were used to explain ‘main effects models – referring to protective factors having a single or direct effect on positive adaptation (e.g., good parenting might result in good coping skills).^{2,38} In contrast, other studies conceptualised protective factors as interactive² or bidirectional.¹⁹ From this perspective, multiple protective factors work in tandem to support functional outcomes, often as part of a give-and-take process (e.g., a learner’s personal agency in securing support from her teacher when experiencing difficulties and her teacher’s supportive response). Furthermore, what one community/context might consider as a protective factor/process might not be relevant to another.^{1,15} For example, in Africentric contexts, youths are taught to value ancestral bonds as

protective,³⁹ whereas youths in Eurocentric contexts value different relational bonds.⁴⁰ Culturally-sensitive conceptualisations of protective factors potentially protect highly mobile youth who must negotiate non-familiar contexts.

In the absence of risk, researchers would be observing coping rather than resilience.¹ For this reason, researchers are compelled to explain how study participants are at-risk and to define such risks.¹ The heterogeneity of the source of risks (i.e., negative influences, experiences, specific life events, etc.) calls for researchers to clarify the types of risk that make youth participants vulnerable due to the varying processes involved in each source of risk.²³ Similarly, a distinction should be made between single occurrences of risk and compound/chronic risks, given that compound/chronic risks are known to heighten vulnerability.^{7,23} Moreover, the impact of any given risk is not homogeneous across individuals and sociocultural contexts: even though individuals, families, and communities share similar adverse experiences, one cannot assume that all individuals interpret these experiences as equally threatening.^{1,3}

Collecting data

How data are collected is influenced by theoretical frameworks, research designs, and instruments used.³¹ Commentaries on the study of resilience included concerns about all these.

Undeclared or outdated theoretical frameworks

Theoretical frameworks shape how resilience and related constructs (e.g., risks and protective factors) are defined, operationalised, and subsequently measured.² Theoretical frameworks must be made explicit.⁵ If the theoretical framework is not declared, it makes little sense why resilience will be measured in terms of individual, socio-ecological processes or otherwise. Additionally, if earlier theoretical frameworks (e.g., person-focused or variable-focused theories) are used, the data being collected will contribute minimally to the evolved discourse of resilience.²

Overreliance on cross-sectional research designs

A number of research reviews noted a preference for cross-sectional designs in resilience studies and emphasised that cross-sectional designs limited understandings of long-term pathways individuals took towards resilience.^{13,14,16,20,22} The repeated choice of cross-

sectional designs is problematic because they do not identify cause-and-effect relationships associated with resilience.⁴¹ They also cannot establish the direction or magnitude of resilience processes, which is required to determine lifespan pathways individuals take towards resilience.^{14,16} As a result, there have been calls for longitudinal research designs to be used in the studies of youth resilience. Provided the theoretical framework is socio-ecological, and measures are chosen accordingly, long-term designs will allow researchers to observe individual and socio-ecological change. Long-term designs are integral to examining, explaining, and predicting the causality, direction, or magnitude of factors involved in resilience processes.^{14,41}

Problematic measurement of resilience

Several resilience scales have been developed over the decades; however, there has been little consistency in how these instruments have been constructed and/or the cultural and contextual equivalence of these scales, resulting in possible construct, item, and sampling biases.^{1,11,28} Also, different conceptualisations of resilience have informed these multiple scales. Subsequent measurement of key concepts (e.g., resilience, risk, and protective factors) is variable, potentially rendering data biased.¹¹ Moreover, despite current consensus that resilience is a transaction between an individual and his/her social ecology, most resilience measures do not mirror this.^{18,24,28} Gartland, Bond, Olsson, Buzwell, and Sawyer¹⁷ and Tol, Song, and Jordans²² note that many resilience measures have a limited focus and scope because they address individual characteristics and not the dynamic socio-ecological transaction.

The proliferation of resilience scales might relate to resilience and risk being culturally and contextually specific constructs, which are not similarly defined universally. Ungar¹ is critical of notions of a universal measuring instrument. Measurements of resilience are flawed if the measure used is not contextually and culturally appropriate to the population to which it will be administered.²⁸ Analysis of biased data could cause inaccurate assumptions about cultural or other differences in resilience, resulting in faulty theories.¹¹

The measurement of resilience is also problematic when measurements are conducted on non-representative samples.¹ Of concern is that resilience theories currently reflect measurements that were predominantly taken from white, Western participants.^{1,2} Essentially, this translates into sampling bias.¹¹ Subsequent theories of resilience will be limited by the

narrow sampling that informed them. For example, when researchers work with one narrowly defined group, such as substance-abusing youth attending private schools, they exclude substance-abusing youth who are not at school or who are in government schools. Another example pertains to youths who are routinely excluded from resilience studies: youth with disabilities, life-limiting conditions, and/or terminal illnesses are under-represented in resilience studies, resulting in poor understandings of their specific resilience processes.⁴²

Then, discrepancies exist in how constructs related to resilience are measured. For example, Luthar, Cicchetti and Becker² stated that risk measurement was not uniform across resilience studies. Individuals experience various levels of adversity (e.g., some individuals experience shorter, longer, single, or multiple risks).²⁹ Nevertheless, the chronicity and/or multiplicity of risk is/are not always assessed. Moreover, being exposed to contexts characterised by adversity does not prove that risk was experienced. For example, some people might live in a risk-laden context, but might not experience risk as personally threatening. Vanderbilt-Adriance and Shaw²³ indicated that researchers seldom measure personal experiences of risks specifically. They relied on available national and regional statistics (i.e., socio-demographic statistics) to prove adversity. Including individuals who do not experience risks as personally threatening in studies of resilience because of their membership in risk-saturated life worlds makes the measurement of their ‘resilience’ questionable.^{2,4}

Inadequate information about psychometric properties of resilience scales

There appears to be inadequate publication of the psychometric development and evaluation (e.g., validation of instruments) of resilience scales.^{12,28} In the absence of such public knowledge, resilience researchers’ use of existing scales (also across sociocultural contexts) is restricted.

Analysing and interpreting data

Accurate analyses and interpretations of data collected are vital.³¹ The reviewed literature included several critiques concerning statistical analysis, the accuracy of analyses/interpretations, and possible biases.

Unsophisticated statistical analysis

Masten^{5,30} was unambiguous about the lack of sophisticated statistical methods across resilience studies. Her critique probably relates to the univariate (i.e., frequency analyses or comparisons of means) and bivariate (i.e., correlations, simple regression analyses, or discriminant analyses) analyses most typically used in resilience studies.⁴³ The statistical innovations of recent years have made more sophisticated, multivariate analyses (i.e., structural equation modelling and multilevel analyses) possible. Without these, the influence of context on the youths' resilience cannot be determined, and the study of resilience will be impeded.³ Sophisticated statistical analyses are, however, limited by small samples (< 200).³¹ It is, therefore, possible that criticism of unsophisticated techniques relates to design and/or sampling issues.²⁸

Arbitrary decisions influence analysis and interpretations

Resilience assumes experiences of severe hardship and functional outcomes. Therefore, to be deemed resilient, individuals need to fulfil both criteria (i.e., evidence of hardship and functional outcomes). Both hardship and functional outcomes can be continuous (e.g., parental conflict can range from mild to severe) or dichotomous (e.g., either having a single parent or not). With regard to continuous data, Luthar, Cicchetti and Becker² suggested that resilience deals with 'two tails of continua' (p. 551) (i.e., severe and mild conflict). In the analyses of data, this means that researchers need to make decisions on cut-off scores that prove hardship and positive adaptation. Depending on their decisions, researchers could end up with smaller or larger numbers of 'resilient' individuals (if resilient at all), which would, in turn, influence their interpretations of data collected. Hence, when researchers analyse continuous data, their choice (i.e., either severe or mild conflict) could be arbitrary, and this arbitrariness could influence their analysis and interpretation.

Conclusion to international critiques

In summary, from the critiques synthesised above, it is possible to conclude that studies of resilience can be limited, among others, by design faults. These include conflicting conceptualisations of resilience, undeclared or outdated theoretical frameworks, problematic measurement of resilience, and unsophisticated statistical analysis. Studies to which these

critiques apply offer questionable conclusions about how some youths adjust well to significant adversities.

A critical review of South African quantitative studies of youth resilience

This phase of the review used the critiques listed above to comment critically on quantitative resilience studies of SA youth. To select relevant studies, we included only peer-reviewed, SA quantitative studies with ‘resilience/resiliency/resilient’ (as opposed to coping) in their titles, abstracts and keywords. We excluded quantitative sections of mixed-method studies, as our focus fell strictly on quantitative studies. In addition, we only included studies of children (0-18 years) and youth (15-24 years), as defined by UNESCO⁴⁴ and the UN.⁴⁵ We acknowledge the possibility of sampling bias resulting from our use of the above-mentioned inclusion criteria. Nevertheless, using these criteria, we included 13 studies.⁴⁶⁻⁵⁸ The first study appeared in 1996 and the last in 2012. We evaluated these studies against the concerns that flowed from our synthesis of international critiques (as documented in the preceding section). The findings are summarised in Table 1 and are detailed below.

Table 1: Summary of SA quantitative resilience studies

	Conceptualisation of resilience	Conceptualisation of risk	Conceptualisation of protective factors	Operationalisation of resilience	Measurement scale and sample size	Potential data collection problems	Measurement of key components associated with resilience	Statistical analysis	Theoretical or conceptual framework used to interpret data
Bloemhoff⁴⁶	Person-focused construct	Negative environments and/or lack of skills	Assets that buffer the impact of environmental / biological stressors	Product of various protective factors	Shortened Protective Factors Scale (Will, Baker, and Scott, 1996) N = 46	<i>Potential construct/item bias</i> Cultural appropriateness of scale not mentioned <i>Validation of scale not reported</i>	PF	T-test ANCOVA	Jessor (1993; 1995) theorised five interrelated conceptual domains of risk and related protective factors
Bloemhoff⁴⁷	Person-focused construct	Environmental stressors	Factors that buffer the impact of environmental / biological stressors	Product of various protective factors	Shortened Protective Factors Scale (Will, Baker, and Scott, 1996) N = 47	Potential construct/item bias <i>Cultural appropriateness of scale not mentioned</i> Validation of scale not reported	PF	T-test ANCOVA	Jessor (1993; 1995) theorised five interrelated conceptual domains of risk and related protective factors
Bloemhoff⁴⁸	Person-focused construct	Environmental stressors/lack of skills	Factors that buffer the impact of environmental / biological stressors	Product of various protective factors	Shortened Protective Factors Scale (Will, Baker, and Scott, 1996) Measure translated/back-translated N = 29	<i>Potential construct/item/administration bias</i> <i>Cultural appropriateness of scale not mentioned</i> Validation of scale not reported	PF	T-test ANCOVA	Jessor (1993; 1995) theorised five interrelated conceptual domains of risk and related protective factors

Choe, Zimmerman, and Devnarian ⁴⁹	Process-oriented	Factors that increase the odds of negative outcomes (i.e., violence)	Factors associated with positive outcomes	Interaction between multiple risk and protective factors	Cumulative Measure for Adult Involvement (Ostaszewski and Zimmerman, 2006) N = 424	<i>Potential construct/item/sampling/administration bias</i> Cultural appropriateness of scale not mentioned <i>Validation of scale not reported</i>	R PF	SEM	Cumulative measures of risk and protective factors (Ostaszewski and Zimmerman, 2006)
De Villiers and Van den Berg ⁵²	Process-oriented	Threats to well-being (i.e., violence or poverty)	Serve a protective role	Product of various protective factors	Behavioural and Emotional Rating Scale (Epstein and Sharma, 1998), Resiliency Scale (Prince and Embury, 2006), Fortitude Questionnaire (Pretorius, 1998) N = 161	<i>Potential construct/item bias</i> Cultural appropriateness of scales not mentioned <i>Validation of scales not reported</i>	PF	ANOVA	X
Ebersöhn ⁵³	Process-oriented	Threats to youth (i.e., crime)	Protective factors are seen as assets	Interaction between multiple risk and protective factors	Self-developed Questionnaire (five closed-ended questions, asking whether youth felt safe at home, etc.) Measure translated N = 2391	Potential sampling bias <i>Cultural appropriateness of scale not mentioned</i> Validation of scale not reported	R PF	Frequency analysis	Asset-focused resilience
Jorgesøn and Seedat ⁵⁰ (publication of psychometric results)	Person-focused construct	Threats to homeostasis	X	Set of individual characteristics	Connor-Davidson Resilience Scale (Connor and Davidson, 2003) N = 701	<i>Potential sampling bias</i> Cultural appropriateness of scale not mentioned	R	CFA EFA	X
Kritzas and Grobler ⁵⁴	Process-oriented	X	X	Individuals' capacity to cope	Orientation to Life Questionnaire (Antonovsky, 1987), COPE Scale (Carver, Scheier, and Weintraub, 1989), Parental Authority Questionnaire (Buri, 1991) N = 360	<i>Potential construct/item/sampling bias</i> <i>Cultural appropriateness of</i>	X	Hierarchical regression analysis	X

						<i>scales not mentioned</i>			
						Validation of scales not reported			
MacDonald, Gillmer, and Collings⁵¹	Person-focused construct	X	X	Individuals' capacity to cope	Adolescent Coping Orientation for Problem Experiences (Patterson and McCubbin, 1987), High School Personality Questionnaire (South African Institute for Psychological and Psychometric Research, 1981) N = 42	<i>Potential construct/item/sampling bias</i> <i>Cultural appropriateness of scales not mentioned</i> Validation of scales not reported <i>Reported use of cut-off scores</i>	X	Correlations	X
Mampane⁵⁶ (publication of psychometric results)	Person-ecological transaction	Negative environments	Protective factors are seen as strengths	Socio-ecological transaction	Resilience Questionnaire for Middle-adolescents in Township Schools (Mampane, 2012) N = 231	X	R PF	EFA	X
Ward, Martin, Theron, and Distiller⁵⁷	Process-oriented	Negative life events	Protect against negative outcomes	Multidimensional construct	Social and Health Assessment (Ruchkin, Schwab-Stone, and Vermeiren, 2004), Substance Abuse Report Scale developed with use by the South African Community Epidemiology Network on Drug Use (Flisher, Parry, Evans, and Lombard, 2003), Survey of Exposure to Community Violence (Richters and Martinez, 1993), Anxiety and Depression Subscales of the Behavioural Assessment System for Children (Reynolds and Kamphaus, 1992), Peer Risk Behaviours (self-developed), Perceived Competence Scale for Children (Harter, 1982) N = 377	<i>Potential construct/item/sampling bias</i> <i>Cultural appropriateness of scales not mentioned</i> Validation of scales not reported	R PF	SEM	X
Wild, Flisher, and Robertson⁵⁵	Process-oriented	Death of a parent	Assets or resources are uni-directional	Interaction between multiple risk and	Life Events Questionnaire for Adolescents (Masten, Neemann, and Andenas, 1994), 10-item Acceptance Subscale from the Revised Child Report of Parent Behaviour Inventory	<i>Potential construct/item/sampling/administration bias</i>	R PF	Hierarchical regression analysis	Variable-based model of resilience (Barber,

				protective factors	(Barber, Stolz, and Olsen, 2005; Schaefer, 1965), Five-item Monitoring Scale (Barber, Stolz, and Olsen, 2005), Eight-item Psychological Control Scale – Youth Self-report (Barber, Stolz, and Olsen, 2005), One-item Peer Connection (self-developed), Barber and Olsen’s (1997) adaptation of the 11-item Measure of Peer Delinquency (Elliot, Huizinga, and Ageton), One-item Respect for Individuality in the Adolescent’s Peer Relationships (self-developed), Four-item Scale of How Often the Adolescent had Spent Time During the Last Six Months with Neighbours, Parents of Friends, Community Leaders, and Church Leaders (Barber and Olsen, 1997), Five-item Scale Measuring the Presence of Social Disorganisation (Barber and Olsen, 1997), Children’s Depression Inventory (Kovacs, 1992), Children’s Manifest Anxiety Scale – Revised (Reynolds and Richmond, 1978), seven items from the Global Self-worth Subscale of the Self-esteem Questionnaire (DuBois, Felner, Brand, Phillips, and Lease, 1996) Measure translated/back-translated N = 159	<i>Cultural appropriateness of scales not mentioned</i> Validation of scales not reported		Correlations ANOVA	Stolz, and Olsen, 2005)
Fincham, Altes, Stein and Seedat ⁵⁸	Process-oriented	Exposure to community violence, trauma, stress, and childhood abuse/neglect	A protective factors that buffer the effects of risks.	Product of various protective factors	Child PTSD Checklist (Amaya-Jackson, McCarthy, Newman and Chemey, 1995), Child Exposure to Community Violence (Amaya-Jackson, 1998), Childhood Trauma Questionnaire (Bernstein & Fink, 1998), Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983), Connor-Davidson Resilience Scale (Connor & Davidson, 2003) N = 787	<i>Potential construct/item bias</i> <i>Cultural appropriateness of scales not mentioned</i> Validation of scales not reported	R PF	Correlations Hierarchical multiple regression analysis	X

PF – protective factors; R – risk; X – absent

Identifying a research problem

Conflicting conceptualisations of resilience

SA quantitative studies of resilience did not conceptualise resilience uniformly. In five of the 13 included studies, resilience was perceived as a person-focused construct and mostly explained as a personality trait.^{46-48,50,51} Furthermore, the person-focused nature of resilience was conceptualised variably as an individual's capacity to overcome or escape from risk and/or avoid negative outcomes.^{46-48, 51} or the individual's ability to bounce back after experiencing hardship.⁵⁰ In contrast, seven studies explained resilience as a process in which protective factors alleviate, buffer, or compensate for the effects of risks or negative outcomes.^{49,52-55,57,58} One study⁵⁶ conceptualised resilience as a person ↔ ecology transaction that is sensitive to contextual factors (i.e., 'Resilience demonstrated by youths and children is not purely the result of their intrinsic characteristics; it can partly be attributed to supportive contextual and normative factors' (p. 405). None of the 13 studies defined resilience as either exclusive or ordinary, as debated by Rutter,³⁵ Masten⁹ and Windle.²⁷ More recent studies did not reflect the evolution of resilience conceptualisations, as described by Masten⁵.

Varying/absent conceptualisations of key terms

Only 11^{46-50,52,53,55-58} studies specifically defined risk. In nine of these, risks were defined as witnessing conflict or violence, growing up in negative environments (e.g., poor parental supervision, parental alcoholism), or knowing environmental stressors (e.g., unemployment or poverty).^{46-49,52,53,56-58} In the tenth⁵⁵ risks were defined as the death of a parent, which pointed to specific life events that led to negative outcomes. The eleventh⁵⁰ described risks as threats to an individual's intrinsic stability. The remaining two studies^{51,54} did not clarify what risks threatened study participants. Moreover, only six studies^{46,49,55-58} considered the compound nature of risks (i.e., the presence of multiple or chronic rather than single risks that left youths vulnerable).

Ten studies^{46-49,52,53,55-58} explicitly defined protective factors. Of these, eight^{46-49,52,53,56,58} described protective factors as interactive assets that worked together to support youths in adjusting well. The ninth⁵⁵ described protective factors as unidirectional assets aligned with a main-effects model. One study⁵⁷ implicitly conceptualised protective factors by suggesting

that an internal locus of control might be protective against negative outcomes. Three studies^{50,51,54} did not define protective factors at all.

Collecting data

Overreliance on cross-sectional research designs

All 13 studies (see Table 1) followed a cross-sectional research design.

Undeclared or outdated theoretical frameworks

Only six studies^{46-49,53,55} specified the theoretical framework on which they were based, and none of these frameworks reoccurred across these studies. Moreover, all six reported variable-focused theoretical frameworks that align with Wave 2 of resilience development.^{5,7} This suggested the use of outdated frameworks, given that these studies were conducted from 2006 to 2012. During this period, international resilience research had already shifted on to Wave 3 or a pathway model approach.^{5,7}

Problematic measurement of resilience

There was inconsistent measurement of resilience. To assess resilience, eight studies^{46-49,52,53,55,57} measured the interaction of resources within the individual, peers, family, school, and community risks. All of these studies were during 2006 to 2012. Four studies^{50,51,54,58} measured indicators associated with individual characteristics of resilience. For example, measurements were taken of individual coping ability,^{51,54} and individual traits (i.e., personal competence and spirituality).^{50,58} A single study⁵⁶ measured resilience as a person ↔ ecology transaction.

Seven^{49,50,53,55-58} studies clarified which risks were measured (i.e., individual and environmental risks, negative life events, exposure to violence, and violent attitudes and behaviours). Only three^{50,55,58} of these seven reported that the risks measured were personally experienced by study participants. In the remaining six, risk appeared to be assumed from participants' demographics (e.g., living in a socio-economically impoverished community). No justification of risk was provided in the six remaining studies.^{46-48,51,52,54} For example, one⁵⁴ study gathered data from Grade 12s in English-medium schools that were racially integrated. It was not apparent how attending a middle-class school or a racially integrated

school placed learners at-risk. It would seem, therefore, that sampling bias¹¹ was present in the majority of studies reviewed because they appeared to include youths who were not truly at-risk (as per the international definition of risk).^{1,3} None included youth with disabilities or life-threatening illnesses. However, one study⁵⁵ investigated youth living in an AIDS affected community. In addition, six^{46-48,51,52,55} of the thirteen studies had sample sizes smaller than 200.

Of the 13 studies, 10^{46-49,51,52,54,55,57,58} used Western scales to measure SA youth resilience without considering the cultural and contextual equivalence (or inequivalence) of the scales and their related constructs and/or items/questions to the populations of the studies; therefore, scales were invalidated. Invalidated scales used to measure resilience might potentiate construct or item biases.¹¹ One study⁵⁴ reported that the scale used (i.e., the COPE scale) was designed to be ‘culture-free’ (p. 4). A single study⁵⁶ was sensitive to how culture and context shaped resilience and factored this into the measurement of participants’ resilience by developing and validating a scale that measured risks and protective factors relevant to SA township contexts.

Inadequate information about psychometric properties of resilience scales

Two studies^{50,56} reported on the development and ongoing validation of the scales used. The first⁵⁶ referred to the R-MATS (Resilience Questionnaire for Middle-adolescents in Township Schools), a multidimensional scale containing four factors: confidence and internal locus of control, social support, toughness and commitment, and achievement orientation. The R-MATS was described as a valid resilience measure in low-income, township school contexts in Mamelodi, SA. However, readers of the study were cautioned that the R-MATS needed to be administered to a nationally representative sample and related psychometric property needed to be determined before it could be deemed valid for use in other SA populations. The second⁵⁰ detailed the five-factor structure that made up the Connor-Davidson Resilience Scale (CD-RISC), but cautioned that the CD-RISC had not been sufficiently validated for cultural groups in SA and that the factor structure needed to be re-examined. The remaining 11 studies^{46-49,51-55,57,58} did not report any validation of their chosen resilience scales or how appropriate they were for use with SA youths.

Analysing and interpreting data

Unsophisticated statistical analysis

Quantitative studies of SA youth resilience used a variety of methods to analyse data – some more complex than others. From 1996 to 2012, six studies relied on univariate⁵³ and bivariate analysis^{46-48,51,52} (e.g., frequency analysis, correlations, ANOVA, ANCOVA). From 2007 to 2012, seven studies^{49, 50,54-58} employed more advanced statistical analysis (i.e., structural equation modelling (SEM), multiple regression analysis, exploratory (EFA) and confirmatory factor analysis (CFA). Most of these seven studies^{49,50,54-58} reported variable-focused methodologies (Wave 2). The abundance of multivariate, variable-focused studies highlights our limited knowledge of pathways youths take towards resilience.

Arbitrary decisions influence analysis and interpretations

Only one⁵¹ study reported cut-off scores for risks and/or functional outcomes when analysing youth resilience. However the study did not explain the rationale for these cut-off scores. Another study⁵⁵ specifically reported that due to the lack of standardisation of the scale (Depression Inventory; Children’s Manifest Anxiety Scale – Revised), no cut-off scores were available, and therefore, none was made use of. The remaining eleven^{46-50,52-54,56-58} studies did not report the cut-off scores used to analyse risk and resilience. The lack of indicators (i.e., cut-off scores) used to identify resilience point out arbitrary decisions, and so resilience might have been overestimated and could have led to an overestimated number of youths labelled ‘resilient’.

Discussion

We undertook a review of quantitative studies of SA youth resilience to comment on whether and how local studies are compromised in light of the public critiques of international studies of resilience. Among others, our review showed that the majority of current published studies contributed marginally to our knowledge regarding person↔ecological transactions of SA youth resilience because of the reasons discussed below. In spite of this, there are some steps in the right direction. The recent work of one study⁵⁶ demonstrates the importance of individual, contextual, and cultural influence for the transactional processes of resilience in SA youth. Nonetheless, because most quantitative studies defined resilience as either a simple process or a person-focused construct (see Table 1), these positive steps are nascent and

require follow-up studies that would scrutinise the transactional nature of resilience processes of at-risk SA youth.

The problems inherent in the reviewed quantitative studies of SA youth resilience are mostly related to the use of outdated and/or undeclared theoretical frameworks informing the conceptualisation and operationalisation, an abundance of cross-sectional studies, as well as overreliance on univariate and bivariate analyses. In so doing, the majority of SA youth resilience studies explained resilience as too simple a process and failed to report the complexity and/or culturally aligned transactional nature that characterises resilience processes.¹ The lack of longitudinal studies also restricts our understanding of the long-term pathways towards resilience SA youths take. Moreover, some methodological flaws limited how resilience was measured. International critiques revealed that individual, contextual, and cultural influences shape resilience; therefore, one universal resilience measure was unlikely.¹ Our findings, however, indicated that the majority of reviewed studies made use of invalidated Western scales, suggesting possible biased findings, which potentially invalidate results.¹¹ The lack of published psychometric results limits decisions about the validity of scales available for use with SA youth and, in so doing, restricts researchers' repertoire of culturally appropriate instruments to measure resilience. Another limitation was the lack of direct measures of risks. Resilience implies functional outcomes despite adversity, and functional outcomes outside the contexts of adversity are conceptualised as coping, not resilience.¹ Therefore, it is possible that the studies that excluded/did not specify measurement of risks^{46-48,51,52,54} produced findings relating to coping rather than resilience.¹ Likewise, the absence of cut-off scores (i.e., scores used to denote risks and functional outcomes) and presence of sampling biases might have resulted in a greater number of youths being deemed resilient, without scientific proof of this. Implicit in the failure to pinpoint and measure risks and protective factors is uncertainty about what is informing young people's resilience processes.² In particular, the exclusion of youth with disabilities/life-threatening illnesses translates into inadequate understanding of their resilience.

Reviewed SA youth resilience studies did not replicate international progress in the conceptualisation and measurement of resilience as a complex transactional process. Person-focused, variable-focused, and pathway-model-focused studies were sporadically published from 1996 to 2012, whereas complex pathway model designs were less frequently

researched. As a result, little is still known about how SA youths transact with their ecologies towards resilience.

The above-listed caveats have implications for future quantitative youth resilience studies. To contribute meaningfully to prevailing person \leftrightarrow ecological conceptualisations of resilience³⁰ and to offer complex theories of youth \leftrightarrow context resilience processes among SA youths, researchers need to ground their quantitative research designs in up-to-date theoretical frameworks in ways that respect the sociocultural life worlds of SA youths.^{2,5} In doing so, this would encourage conceptualisations and operationalisations of resilience as well as the choice of resilience scales that fit with theoretical and methodological progress made in resilience studies elsewhere¹ and that offer more socioculturally sensitive explanations of SA youths' resilience. Concomitant with this is that researchers take advantage of the statistical strengths of multivariate analysis. Univariate and bivariate analysis will not allow researchers to make complex, culturally congruent inferences regarding the transactional, contextually relative dynamics of resilience processes.^{30,43}

The lack of validated tools and/or evidence regarding validated tools does not imply that no resilience studies should be done. Rather, resilience researchers are encouraged to conduct studies using available scales, while employing various methods of multivariate analysis to establish contextual and cultural equivalence (i.e., testing for construct, metric, and scalar equivalence) and avoid potentially biased findings (i.e., exploratory and confirmatory factor analysis, target rotations, and differential item functioning).¹¹ In addition, researchers need to prioritise the development and validation of contextually and culturally suitable instruments. Researchers are, therefore, encouraged to publish the psychometric results of scales to further stimulate the development, validation, and use of contextually and culturally appropriate resilience scales with SA youth. Likewise, careful consideration should be given to how experiences of risk (lived versus exposed) and functional outcomes are chosen, measured, and reported. The use of validated risk and protective factor measures, as well as culturally and contextually appropriate cut-off scores, could ensure that actual at-risk, resilient youths are being investigated, potentially evading sampling biases.¹¹ Finally, longitudinal studies of SA youth resilience are overdue. A continued absence of longitudinal studies will impede understanding of the long-term wellness of SA youths who are at-risk.

Conclusion

This review considered concerns relating to reviewed quantitative studies of SA youth resilience. The concerns are numerous and dictate sophisticated, multivariate-driven future investigations. What emerged urges future studies of SA youth resilience that are grounded in complex, person↔ecological conceptualisations of resilience and that employ culturally relevant measures and sophisticated statistical analyses to generate theories that illuminate the complex, culturally relative transactions that inform the resilience processes of SA youth. Because many SA youths remain at-risk, it is imperative for researchers to offer compelling evidence of how and why youths cope well with these risks.⁵⁹ Until tangible evidence is offered, mental health practitioners, service providers, educators, and policy makers will not be able to intervene with confidence that their resilience-related interventions are based on sound and culturally specific scientific evidence.

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CHAPTER 3

Manuscript 2, entitled “A *social-ecological model of resilience within a sample of black South African adolescents*”, will answer the following secondary research questions: “*How does a model based on Ungar’s Social-Ecological Explanation of Resilience compare to alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures?*”; “*Is school engagement a culturally appropriate functional outcome of black South African youths’ resilience?*”; and “*What contributes to schooling as a meaningful resource?*”

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ABSTRACT

Purpose: the study aimed to model and test Ungar's Social-Ecological Explanation of Resilience in school-going black South African adolescents and investigate school engagement as a culturally appropriate, functional outcome of resilience. Since meaningful resources promote resilience in at-risk adolescents, the authors also examined what contributed to meaning in schooling as resilience-promoting resource.

Methods: the Pathways to Resilience Research Project gathered data through the Pathways to Resilience Youth Measure (PRYM). Seven hundred and thirty school-going adolescents (ages 12 to 19, 388 female, 341 male) from Thabo Mofutsanyana District, in South Africa's Free State province participated in this cross-sectional study. Latent variable modelling modelled adolescents' self-reported perceptions of social-ecological contributions (resources and challenges) to their resilience. Ungar's Social-Ecological Explanation of Resilience was modelled as a three-factor model and compared against alternative varied factor structure models. Multiple regression analyses examined what contributed to schooling as meaningful resource.

Results: a three-factor model based on a Social-Ecological Explanation of Resilience (AIC = 161807.22, BIC = 163194.32, CFI = .92, TLI = .91, RMSEA = .03, 90% CI [.02, .03], $p > .05$) fitted best. Multiple regression analyses indicated that this model predicted 32% of the variance in school engagement. Apposite, necessary, and respectful schooling contributed strongly to the meaningfulness of schooling.

Conclusions: the three-factor model based on Ungar's Social-Ecological Understanding of Resilience explained resilience in black South African adolescents as a person ↔ context relational process. The model confirmed school engagement as a culturally appropriate functional outcome, highlighting the importance of youth perceiving education as apposite,

necessary, and respectful in order for schooling to be a meaningful resilience-promoting resource.

Implications and contributions: Ungar's conceptual explanation explained resilience in black South African adolescents, who reported education as resilience-promoting; however, the onus lies with the social ecology to provide meaningful education. Principals, parents, teachers, adolescents, governmental departments, and tertiary institutions training teachers must encourage apposite, necessary, respectful education to promote at-risk adolescents' resilience.

Keywords: Pathways to Resilience Youth Measure, resilience, school engagement, South Africa, latent variable modelling, adolescents.

A Social-Ecological Model of Resilience within a Sample of Black South African Adolescents

Resilience, or positive adjustment to extreme adversities, was first defined as a person-focused construct (i.e. individual traits and personality characteristics informed resilience) [1]. Researchers then questioned this initial overreliance on individual-centred conceptualisations of resilience that underestimated the influence of social ecologies on resilience processes [1-3]. To fully comprehend the complexities of the resilience processes, resilience had to rather be conceptualised as a relational/transactional construct between an individual and his/her environment [1, 3, 4]. Such an understanding was supported by front-runners in the field of resilience research, such as Masten [1], Luthar, Cicchetti, and Becker [3], Panter-Brick [5], and Rutter [6]. As a result, Ungar [7] then proposed that to fully understand the processes associated with resilience, researchers needed to refocus their attention on social-ecological supports and the quality of supports that social ecologies offered adolescents at-risk. Understanding resilience as a process in which social ecologies and at-risk adolescents collaborated to achieve functional outcomes (e.g. school engagement) became known as the Social-Ecological Explanation of Resilience [7-10].

In this article, a Social-Ecological Explanation of Resilience underpins how resilience is conceptualised [2, 7]. Seen from this perspective, resilience demands constructive transactions between young people and their life-worlds. Adolescent-driven transactions entail adolescents steering towards, or asking/bargaining for, support required to cope well with adversities. Concurrently, social ecologies are co-responsible for adolescents' positive adjustment. To this end, their contributions include assisting adolescents to access culturally and contextually meaningful opportunities and resources that buffer risk and/or reciprocate adolescents' negotiations for support [6].

To explain this evolved conceptualisation of resilience (i.e. resilience as a collaborative adolescent-environment process), Ungar [7] specified four principles that informed social-ecological understandings of resilience. Firstly, Ungar [7] referred to how social ecologies were the more significant partner in resilience processes. Accordingly, explanations of resilience should not foreground young people's capacities or agencies. Rather than expecting adolescents to be responsible for their positive adaptation to threatening life-worlds and centring explanations of resilience on adolescents' capacities, social ecologies need to initiate/reciprocate and/or advocate for support for adolescents at-risk. In this way, even though their contributions count, adolescents are not central to resilience processes. Secondly, many different pathways might lead to resilience, and adolescents might differ in their perceptions of how meaningful a pathway might be. One adolescent could follow expected pathways (e.g. an adolescent failing Mathematics navigates towards his/her teacher for support), and another might navigate pathways that differ from what mainstream society or culture would anticipate/sanction (e.g. an adolescent joins a gang in order to fulfil his/her basic needs of food, clothing, and shelter). Ungar [7] referred to such diverse pathways of resilience as "atypicality" (p. 7). Therefore, a "one size fits all" pathway to positive adjustment is highly unlikely. Researchers should focus on the functionality of the behaviour adolescents exhibit when experiencing risks rather than predetermining and/or prescribing what paths lead to resilience. Third, resilience is dynamic. Resilience processes may vary over time and/or across contexts, individuals, and groups; therefore, resilience is changeable in nature. Multiple factors, such as more/less meaningful resources, exposure to new/different contexts, or the experience of new/other relationships could impact resilience processes. For example, a new sibling, interaction with different peers, transition from primary to secondary schooling, or relocation to a new town/country could alter how individuals transact with their social ecologies, and vice versa. Consequently, researchers

should refrain from predicting resilience in terms of simple and/or static relationships. Fourth, culture (i.e. beliefs, values, customs, and language) informs resilience processes and shapes adolescents' understanding of the meaningfulness of resources [5]. The underlying processes of resilience facilitate positive developmental outcomes that might differ from one culture to another (e.g. Western adolescents find a supportive adult or nuclear family protective, whereas black South African adolescents experience supportive communities and family systems as protective) [9]. Resilience mechanisms are, therefore, relative to the culture in which adolescents are embedded. Consequently, Ungar's four principles nullified a simple, linear understanding of resilience as individually focused and culturally neutral and illustrated the culturally relative, complex, and sometimes unexpected nature of resilience-supporting person ↔ context transactions [4].

Flowing from the above, Ungar hypothesised a Social-Ecological Explanation of Resilience [2, 7]. Ungar's hypothesis borrowed Kurt Lewin's [11] expression of human behaviour. Lewin explained behaviour as a result of the interaction between an individual and his/her environment. Ungar modified this expression in order to explain the complex person ↔ social-ecological transactions that underpinned resilience processes. In his explanation, resilient behaviour is seen as dependent on opportunities (or resources) within the adolescent's social ecology, which are available and accessible, and the meaning the individual attaches to the opportunities/resources. The opportunities and their personal meaning interact with adolescents' individual strengths and challenges experienced within their social ecologies. Accordingly, Ungar proposed a multifaceted explanation of resilience.

Ungar's reference to the meaningfulness of resources informing resilience processes is supported by a limited number of studies [1, 5]. Resilience studies show that the meaning individuals attach to resilience-supporting resources/supports (e.g. knowing your own strength, feeling safe with caregivers, being treated fairly in the community) differs from

individual to individual [1, 2]. These differences can be attributed to past experiences that influence perceptions of the usefulness of a resource [12, 13] or to the cultural salience of a resource (i.e., how much a cultural group values and/or promotes use of a specific resource) [5].

In addition to the meaningfulness of resources, satisfaction with a resource affects perceptions of resource usefulness. For example, a study by Daining and DePanfilis [14] emphasised that, in the context of foster care, adolescents' perceptions of the effectiveness of support from friends and family correlated with adolescents' satisfaction with these supports. Furthermore, Lee, Cheung [15] indicated that adolescents' willingness to make use of an Internet-based learning program was dependent on adolescents' perception of the program's usefulness as well adolescents' perception of satisfaction with the program. However, despite the evidence included above, there is scant statistical evidence of resilience processes being interrelated with *meaningful* resource opportunities – operationalised in this study as adolescents' satisfaction with available resources [16].

While Ungar's Social-Ecological Explanation of Resilience is theoretically plausible, it is, to date, empirically untested, also in South Africa. Similarly, no published quantitative evidence exists regarding school engagement as a functional outcome of black South African adolescents, even though this has been qualitatively established [9]. Therefore, the first aim of this article is to model Ungar's Social-Ecological Explanation of Resilience using a sample of black South African school-going adolescents and to compare such a model against alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures. The second aim is to quantitatively investigate school engagement as a culturally appropriate functional outcome of black South African adolescents' resilience. Thirdly, since meaningful resources (i.e. schooling) encourage resilience, this article aims to investigate what contributes to schooling as a meaningful

resource. This aim also addresses the dearth of research concerning the meaningfulness of resources.

Methods

Study context

This study forms part of the five-country Pathways to Resilience Research Project (see www.resilienceproject.org). This project investigates the physical and social ecologies (i.e. family, community, school, cultural, political and economic) that enhance adolescents' positive adjustment in the face of severe adversities, such as chronic poverty [17]. In the South African study, useable data were generated by 1 137 adolescents from the Thabo Mofutsanyana District, Free State province, South Africa. For the purposes of modelling Ungar's Social-Ecological Explanation of Resilience, a subset of the data was used ($n = 730$), as detailed below. The Thabo Mofutsanyana District is troubled by multiple socio-ecological risks (i.e. poverty, unemployment, high levels of crime, and HIV/Aids-related issues) [18]. These challenges put adolescents at-risk of negative outcomes; however, some adolescents do well despite these risks [19]. Furthermore, an advisory panel (AP) (i.e. teachers, social workers, and other officials from the Department of Basic Education, Free State province, who were knowledgeable about local adolescents and local culture) steered the South African study. The AP assessed and approved the project's aims and methodologies (e.g. survey-based data collection) and ensured that the project was conducted in ways that were ethical and aligned with African world views. For example, the AP advised that school engagement/progress, as opposed to passive school attendance/non-attendance, constituted a culturally congruent functional outcome associated with resilient adolescents in their context [9].

Participants

For the purposes of this article, data generated by school-going adolescents are included. A total of 730 (388 female, 341 male and 1 undisclosed) adolescents were recruited from schools in the Thabo Mofutsanyana District. This population was made up of 97.95% black adolescents, aged from 12 to 19 years ($M = 16.35$, $SD = 1.52$). Participants were in, or had completed, Grades 6 to 12 ($M = 8.6$, $SD = 1.02$).

Measures

The Pathways to Resilience Youth Measure (PRYM) was used for data collection [17]. The following measures and subscales embedded in the PRYM were used in this study: Boston Neighbourhood Survey (BNS) [17], National Longitudinal Study of Children and Youth Brief Questionnaire (NLSCY) [17], 4-H Study of Positive Youth Development (4HSQ) [20], Strength and Difficulties Questionnaire (SDQ) [21], Child Youth Resilience Measure (CYRM) [22], and Youth Services Survey (YSS) [17]. Scales and reliabilities are summarised in Table 1.

Procedures

The PRYM was administered in English to groups of 30 to 45 adolescents (see [19]). The administration of the PRYM was assisted by three trained, Sesotho-speaking fieldworkers. The AP advised the project researchers on code switches (i.e. mother tongue synonyms), administered by the fieldworkers, for more difficult English terminology if adolescents did not fully understand questions in the PRYM. The PRYM is a self-report questionnaire, and completion took up to 90 minutes. Informed and written consent was obtained (from participants and their caregivers) before the administration of the PRYM. The Department of Education, Free State province, South Africa, and the authors' institutions

gave ethical clearance for this study [19]. Each adolescent participant received a hamburger meal as a token of appreciation.

Statistical analysis

Latent variable modelling analyses were done with Mplus version 7.2 [23] and descriptive statistics (e.g. demographics) using SPSS 22.0 [24]. Due to the categorical nature of the data gathered by the PRYM and the sample size, the weighted least square (WLSMV) estimator, which makes use of a weight matrix with an amended χ^2 statistic, was employed [23]. Measurement models were tested using the maximum likelihood estimator with robust standard errors (MLR) [23]. The Akaike information criterion (AIC) and the Bayes information criterion (BIC) were used to compare measurement models. AIC and BIC values take into account model complexity and model fit [25]. In addition, goodness-of-fit was determined using the following: a) chi-square (χ^2) degrees of freedom (df); b) the Tucker-Lewis index (TLI); c) the comparative fit index (CFI); d) root mean square error of approximation (RMSEA); and e) the 90% confidence interval (CI) of RMSEA and its significance (p) [25]. Cut-off scores for acceptable fit were scores $\geq .90$ for TLI/CFI, values $\leq .08$ for RMSEA, and RMSEA 90% confidence interval; a p greater than .05 indicated close fit of the model [25, 26]. R-square (R^2) values were used to assess the practical significance of results; scores greater than .25 indicated a large effect [27]. Composite reliability (ρ) was computed as described by Raykov [28], given that alpha coefficients could either underestimate or overestimate reliability [28].

Table 1

Latent variables and subscales

Latent variable	Instrument	Construct	Item example	Response options
Challenges within individual and social ecology (RISK)	Six items from the Boston Neighbourhood Survey (BNS) [17]	Lack of community safety (RISK1)	“People in my community can be trusted” “If a child or young person was being abused by his or her family, how likely is it that your neighbours would report it?”	“Not at all” to “Very unlikely” on four- and three-point scale
	Four items from the National Longitudinal Study of Children and Youth Brief Questionnaire (NLSCY) [17]	Negative peer impact (RISK2)	“Smoked cigarettes” “Drank alcohol”	“None” to “All” on four-point scale
	Four items from the NLSCY [17]	Poor relationship with mother and father figures (RISK3)	“Thinking of the mother/father you identified above, how much affection do you receive from him/her?” “Overall, how would you describe your relationship with the mother/father?”	“A great deal” to “Not at all” on four-point scale “Very close” to “Not very close” on four-point scale
Behavioural risks (RISKB):				
Resources within individual and social ecology (STR)	Five items from the 4-H Study of Positive Youth Development (4HSQ) (Delinquency Scale) ‡ ($\alpha = .73$) [20]	Antisocial behaviour (RISK4)	“Stolen something from a shop” “Hit or beat up someone”	“Never” to “Five or more times” on five-point scale
	Seven items from the 4HSQ (Risk Scale) ‡ ($\alpha = .86$) [20]	Health risk behaviour (RISK5)	“Smoked cigarettes” “Used dagga”	“Never” to “Regularly” on four-point scale
	Five items from the Strengths and Difficulties Questionnaire (SDQ) ‡ ($\alpha = .80$) [21]	Disruptive behaviour (RISK6)	“I get very angry and often lose my temper” “I fight a lot”	“False”, “Sometimes”, “True” on three-point scale
	Five items from the Individual Personal Skills sub-cluster of the Child Youth Resilience Measure (CYRM) [22]	Personal skills (STR1)	“I try to finish what I start” “I know my own strengths”	“Does not describe me at all” to “Describes me a lot” on five-point scale
	Two items from the Individual Peer Support sub-cluster of the CYRM [22]	Peer support (STR2)	“My friends are on my side” “My friends stand by me during difficult times”	“Does not describe me at all” to “Describes me a lot” on five-point scale
	Four items from the Individual Social Skills sub-cluster of the CYRM [22]	Social skills (STR3)	“I know how to behave in different social situations” “I know where to go in my community to get help”	“Not at all” to “A lot” on five-point scale
Seven items from the relationship with caregivers subscale from the CYRM ‡ ($\alpha = .83$) [22]	Physical and psychological caregiving (CARE)	“My caregiver(s) watch(es) me closely” “My caregiver(s) know(s) a lot about me”	“Not at all” to “A lot” on five-point scale	
Five items from the Cultural Context sub-cluster of the CYRM [22]	Cultural context (CON1)	“I am proud of my cultural background” “I enjoy my community’s traditions”	“Not at all” to “A lot” on five-point scale	

	Three items from the Spiritual Context sub-cluster of the CYRM [22]	Spiritual context (CON2)	“Spiritual beliefs make me strong” “I think it is important to serve my community”	“Does not describe me at all” to “Describes me a lot” on five-point scale
	Two items from the Educational Context sub-cluster of the CYRM [22]	Educational context (CON3)	“Getting an education is important to me” “I feel I belong at my school”	“Not at all” to “A lot” on five-point scale
Satisfaction with resources (SAT)	14 items from the Youth Services Survey (YSS) measuring youths’ perception of their school. Two items measuring whether their educational needs were met [17]	Satisfaction with schooling (SAT1)	“My teachers and/or other school staff stand by me during difficult times” “I have a say in school activities and can ask for what I need”	“Strongly agree” to “Strongly disagree” on five-point scale
	14 items from the YSS measuring adolescents’ perception of quality of another service. Two items measuring whether the opportunity used was the opportunity needed by the adolescents [17]. For example, another resources/service included, a clinic, a doctor, the Department of Home Affairs, the local municipality, or a local adolescent club	Satisfaction with another resource/service (SAT2)	“I felt I had someone within the service to talk to when I was in trouble” “I received the service that was right for me”	“Strongly agree” to “Strongly disagree” on five-point scale
School engagement (ENG)	Four items from the NLSCY [17]	School engagement (ENG)	“During the last 12 months (or during the last full school year you attended), how many times did you skip a day of school without permission?” “During the last 12 months (or during the last full school year you attended), how many times did you get suspended?”	“Never” to “Every day”, “Never” to “Once a week”, and “Yes” and “No” on a two-, five-, and six-point scale

† Refers to available reliabilities from previous studies.

Results

Testing measurement models

Measurement models were tested using latent variable modelling (see Table 1) to determine the fit of a model for a Social-Ecological Explanation of Resilience (see Table 2). Five measurement models were tested. In Model 1, resilience was modelled as a three-factor model as described by Ungar's Social-Ecological Explanation of Resilience [2, 7]. Model 1 consisted of three second-order latent variables, namely:

- strengths within social ecology (measured by seven first-order latent variables: personal skills, peer support, social skills, relationship with caregiver, cultural contexts, spiritual context, and educational context);
- challenges within social ecology (measured by three first-order latent variables – lack of community safety, negative peer support, and poor relationship with mother and father figures – and one second-order latent variable, namely, behavioural risk, which consisted of three first-order latent variables, namely, antisocial behaviour, health risk behaviour, and disruptive behaviour); and
- satisfaction with resources (measured by two first-order latent variables: satisfaction with school and satisfaction with another resource).

All three second-order latent variables made up one third-order latent variable, namely, resilience. In addition, one first-order latent variable, namely, school engagement (measured by four observed variables), was correlated with resilience, as a culturally appropriate functional outcome [9]. Meaningfulness, availability, and accessibility were modelled as one factor in all five models.

Model 2 consisted of two first-order latent variables, namely, resilience (measured by 90 observed variables) and school engagement (measured by four observed variables).

Resilience and school engagement (as a culturally appropriate functional outcome) were allowed to correlate. The rationale behind Model 2 was to establish whether a one-factor model based on the interactions among observed variables measuring strengths and challenges, together with satisfaction with resources, could best explain resilience. As a result, Model 2 also tested for common method variance [29, 30].

Model 3 consisted of one second-order latent variable, namely, resilience, measured by 12 first-order latent variables (lack of community safety, negative peer support, poor relationship with mother and father figures, personal skills, peer support, social skills, relationship with caregiver, cultural contexts, spiritual context, and educational context satisfaction with school and satisfaction with other resources) and one second-order latent variable, namely, behavioural risks (antisocial behaviour, health risk behaviour, and disruptive behaviour). In addition, one first-order latent variable, namely, school engagement (measured by four observed variables) was specified and correlated with resilience as a functional outcome. Model 3 was adapted from a basic model (i.e. additive model) of resilience [31]. As a result, a 13-factor model consisting of all latent variables associated with strengths and challenges within the social ecology, satisfaction with resources, and school engagement was developed and evaluated to determine whether it could better explain resilience compared to the other models.

Model 4 consisted of one first-order latent variable, namely, school engagement (measured by four observed variables), and one second-order latent variable, namely, resilience (measured by three first-order latent variables: social ecology (66 observed variables), satisfaction with school (14 observed variables), and satisfaction with another resource (14 observed variables)). School engagement and resilience were allowed to correlate as a functional outcome. The rationale behind Model 4 was that a three-factor model consisting of social ecology, satisfaction with school, and satisfaction with another

resource could best explain resilience. In addition, Model 4 also evaluated for common method variance of the social ecology latent variable as well as a two-factor structure of satisfaction with resources [29, 30].

Model 5 comprised of one third-order latent variable, namely, resilience (measured by two second-order latent variables entitled social ecology (lack of community safety, negative peer support, poor relationship with mother and father figures, behavioural risks, personal skills, peer support, social skills, relationship with caregiver, cultural contexts, spiritual context, and educational context) and satisfaction with resources (satisfaction with another resource and satisfaction with resources). Resilience was allowed to correlate with one first-order latent variable, namely, school engagement (measured by four observed variables), as a functional outcome. Model 5 was developed to investigate whether a two-factor model consisting of social ecology and satisfaction with resources could best explain resilience.

Table 2
Fit statistics of measurement models

Model	χ^2	<i>df</i>	RMSEA	90% CI	<i>p</i>	CFI	TLI	AIC	BIC
Model 1	6271.50	4257	.03	[.02, .02]	1.00	.92	.91	161807.22	163194.32
Model 2	11139.95	4276	.05	[.05, .04]	1.00	.71	.71	167766.08	169065.91
Model 3	6564.22	4260	.03	[.03, .03]	1.00	.90	.90	161871.22	163244.54
Model 4	8508.71	4269	.04	[.04, .04]	1.00	.82	.82	164747.45	166079.44
Model 5	6373.20	4258	.03	[.03, .03]	1.00	.91	.91	161828.78	163211.28

χ^2 : chi-square; *df*: degree of freedom; RMSEA: root mean square error of approximation; 90% CI: RMSEA 90 % confidence interval, CFI: comparative fit index; TLI: Tucker-Lewis index; AIC: Akaike information criterion; BIC: Bayesian information criterion.

Table 2 indicates that Model 1 had the lowest AIC and BIC values – indicating a better-fitting model [25] compared to the other four models. Also, acceptable model fit was established (CFI = .92, TLI = .91, RMSEA = .03, 90% CI [.02, .03], *p* > .05). See Figure 1 for a visual representation of Model 1.

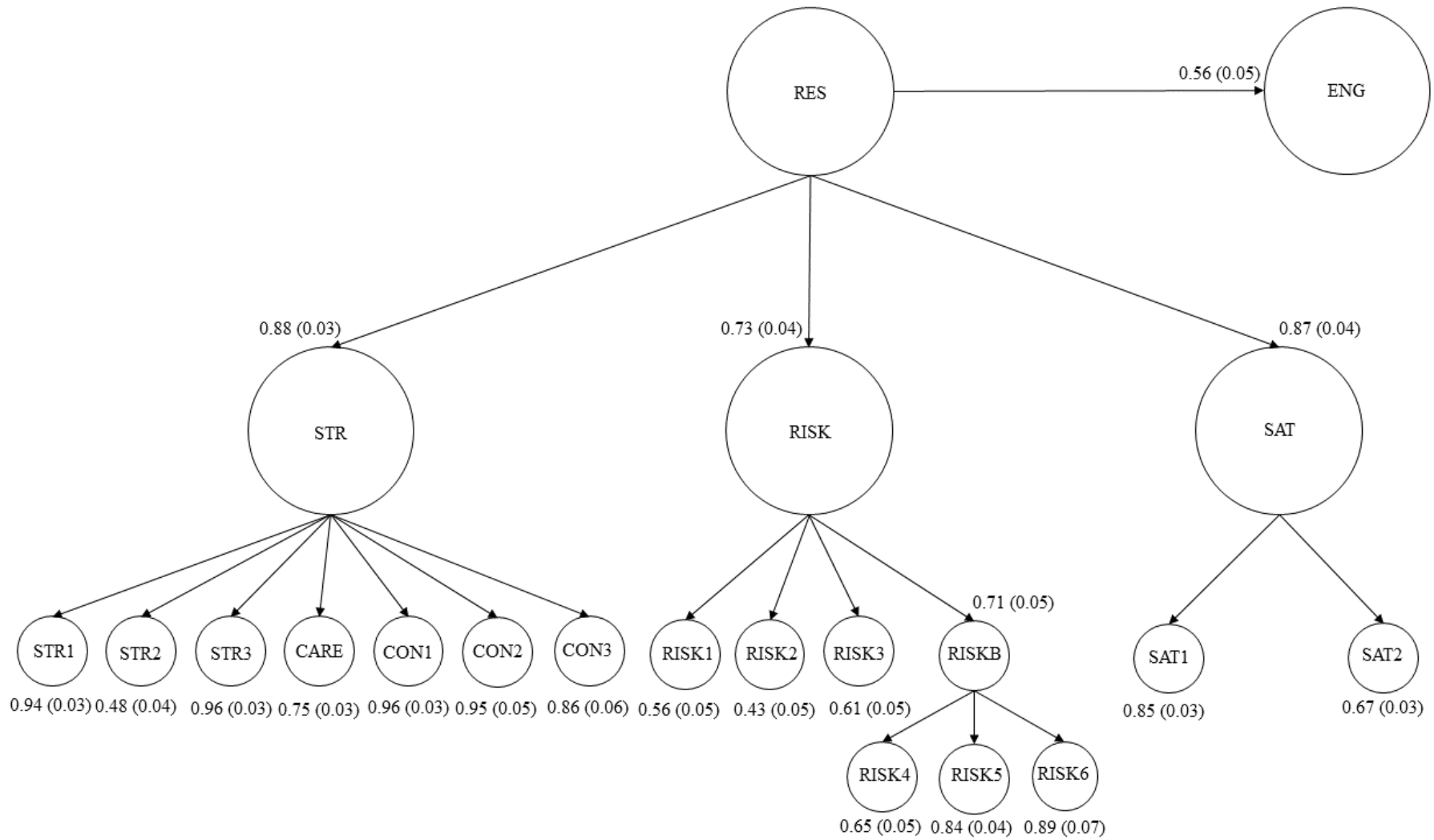


Figure 1: Structural model of Model 1

Table 3 illustrates the lower-order latent variable factor loadings, variance extracted, composite reliabilities, and correlations of the variables in Model 1. Eight latent variable factor loadings were high (behavioural risks, personal skills, social-skills, relationship with caregiver, cultural contexts, spiritual context, educational context, and satisfaction with school), with the remaining five being medium (lack of community safety, negative peer support, poor relationship with mother and father figures, peer support, and satisfaction with another resource). Variances extracted from the lower-order latent variables were all significant: social skills = 92%, cultural contexts = 91%, spiritual context = 91%, personal skills = 88%, educational context = 74%, satisfaction with school = 73%, relationship with caregiver = 56%, behavioural risks = 50%, satisfaction with another resource = 45%, poor relationship with mother and father figures = 37%, lack of community safety = 32%, peer support = 23%, and negative peer support = 19%.

Table 4 shows that the following items contributed strongly to the meaning adolescents attached to schooling: a) receiving an education that was right for the adolescent ($R^2 = .61$), b) receiving education that was needed ($R^2 = .52$), and c) teachers' and/or staff's respect for the adolescent's religious and spiritual beliefs ($R^2 = .50$).

Concerning the factor loadings of the higher-order latent variables, all three latent variables loading on resilience (resources within social ecology, challenges within social ecology, and satisfaction) had high factor loadings (see Table 3). Moreover, concerning the percentages of variance extracted, all three latent variables contributed significantly to the resilience latent variable: resources within social ecology = 77%, satisfaction = 75%, and challenges within social ecology = 54%. A significant correlation was found between resilience and school engagement ($r = .56$). In addition, all but two first-order latent variables showed acceptable composite reliabilities (ρ) (i.e. disruptive behaviour, $\rho = .53$ and spiritual context, $\rho = .49$).

Table 3

Correlation matrix: lower- and higher-order latent variables

Lower-order

	ρ	R^2	β	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. RISK1 (R)	.62	.32**	.56**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. RISK2	.88	.19**	.43**	.24**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. RISK3 (R)	.88	.37**	.61**	.34**	.26**	-	-	-	-	-	-	-	-	-	-	-	-	-
4. RISK4	.80	.42**	.65**	.26**	.20**	.28**	-	-	-	-	-	-	-	-	-	-	-	-
5. RISK5	.91	.71**	.84**	.33**	.26**	.36**	.55**	-	-	-	-	-	-	-	-	-	-	-
6. RISK6	.53	.79**	.89**	.35**	.27**	.38**	.58**	.75**	-	-	-	-	-	-	-	-	-	-
7. RISKB	-	.50**	.71**	.40**	.30**	.43**	.65**	.84**	.89**	-	-	-	-	-	-	-	-	-
8. STR1	.66	.88**	.94**	-.34**	-.26**	-.37**	-.28**	-.36**	-.38**	-.43**	-	-	-	-	-	-	-	-
9. STR2	.81	.23**	.48**	-.17**	-.13**	-.18**	-.14**	-.18**	-.19**	-.22**	.45**	-	-	-	-	-	-	-
10. STR3	.71	.92**	.96**	-.35**	-.27**	-.37**	-.28**	-.36**	-.39**	-.43**	.90**	.46**	-	-	-	-	-	-
11. CARE	.87	.56**	.75**	-.27**	-.21**	-.29**	-.22**	-.29**	-.30**	-.34**	.71**	.36**	.72**	-	-	-	-	-
12. CON1	.76	.91**	.96**	-.35**	-.26**	-.37**	-.28**	-.36**	-.39**	-.43**	.90**	.45**	.92**	.72**	-	-	-	-
13. CON2	.49	.91**	.95**	-.35**	-.26**	-.37**	-.28**	-.36**	-.38**	-.43**	.90**	.45**	.91**	.72**	.91**	-	-	-
14. CON3	.72	.74**	.86**	-.31**	-.24**	-.33**	-.25**	-.33**	-.35**	-.39**	.81**	.41**	.82**	.64**	.82**	.82**	-	-
15. SAT1	.91	.73**	.85**	-.31**	-.23**	-.33**	-.25**	-.32**	-.34**	-.38**	.61**	.31**	.62**	.49**	.62**	.62**	.56**	-
16. SAT2	.92	.45**	.67**	-.24**	-.18**	-.26**	-.20**	-.25**	-.27**	-.30**	.48**	.24**	.49**	.38**	.49**	.49**	.44**	.57**

Higher-order

	ρ	R^2	β	1	2	3	4
1. SAT		.75**	.87**	-	-	-	-
2. ENG (R)	.71	.32**		-.49**	-	-	-
3. STR		.77**	.88**	.76**	.49**	-	-
4. RISK		.54**	.73**	-.64**	-.41**	-.64**	-
5. RES		-	-	-	.56**	-	-

ρ – reliability; R^2 – r-square; β – factor loading; RISK1 – lack of community safety; RISK2 – negative peer support; RISK3 – poor relationship with mother and father figures; RISK4 – antisocial behaviour; RISK5 – health risk behaviour; RISK6 – disruptive behaviour; RISKB – behavioural risks; STR1 – personal skills; STR2 – peer support; STR3 – social skills; CARE – relationship with caregiver; CON1 – cultural contexts; CON2 – spiritual context; CON3 – educational context; SAT1 – satisfaction with school; SAT2 – satisfaction with another resource; SAT – satisfaction with resources; ENG – school engagement; STR – satisfaction; STR – resources within social ecology; RISK – challenges within social ecology; RES – resilience process; R – items interpreted in reverse.

** $p \leq .01$.

Table 4

Multiple regression analysis of satisfaction with school

Item	R^2
Overall, I am satisfied with my schooling	.45**
I feel like I have choices at school	.38**
My teachers and/or other school staff stand by me	.35**
At school, there is an adult I can talk to when I have a problem	.42**
I have a say in school activities and can ask for what I need	.38**
I receive an education that is right for me	.61**
It is easy for me to come to school	.48**
The location of my school is convenient	.44**
Teachers and/or staff respect my religious and spiritual beliefs	.50**
Teachers and/or staff speak in a way that I understand	.46**
Teachers and/or staff are sensitive to my cultural background	.45**
I am now better able to cope when things go wrong	.41**
This was the education I needed	.52**
I needed more help at school, but I could not get it	.04*

** $p \leq .01$.* $p \leq .05$.

Testing the structural model

The structural model was based on the measurement model (i.e. Model 1). One structural model was tested with a path from resilience to school engagement. The results indicated good fit (CFI = .92, TLI = .91, RMSEA = .03, 90% CI [.02, .03], $p > .05$) for the model. A total of 32% of the variance in school engagement, a functional outcome of the resilience process, was predicted by the model based on Ungar's Social-Ecological Explanation of Resilience (see Table 4).

Discussion

The first aim of the current study was to statistically model and compare Ungar's [2, 7] conceptual explanation of resilience against alternative models. All models were tested on school-going adolescents who participated in the South African Pathways to Resilience Research Project. A good fit was found for Model 1 based on a social-ecological understanding of resilience that predicted school engagement.

As expected, a measurement model based on Ungar's conceptual explanation (Model 1) explained a social-ecological understanding of resilience. Alternative models evaluated

different factor structures of a social-ecological understanding of resilience, which included testing for common method variance as well as a more simplistic understanding (i.e. additive models) of resilience. Ungar's conceptual explanation illustrated that, in the context of this study, resilience processes were contingent on black South African adolescents interacting with both challenges and resources as well as on the meaning adolescents attached to available and accessible social-ecological resources (i.e. schooling). Additionally, the measurement model offered statistical detail that validated prior hypotheses [2, 7] and narrative accounts [9, 32] of the relationship between an individual and his/her environment, where the individual asks for/steers towards support, and the social ecology offers culturally meaningful resources. Model 1 also added to nascent latent variable modelling explanations of resilience as a social-ecological construct [33] and answered Masten's [1, 34] and Panter-Brick's [5] call for studies of resilience that utilised sophisticated and culturally appropriate methodologies.

In order to attain the second aim, school engagement was operationalised as a culturally appropriate functional outcome of black South African adolescents' resilience. The AP identified that school engagement, as opposed to passive school attendance, was a culturally salient indicator of resilience in adolescents living in the Thabo Mofutsanyana District [9]. Model 1 supported the aforementioned and indicated a significant relationship between resilience and school engagement. This significant relationship, as well as fit statistics (see Table 3), supports the reliability of the model specified. Thirty-two per cent of the variance in school engagement was accounted for by resilience, indicating a practically significant relationship of large effect between resilience and school engagement. Results also aligned with local [9] and international [8, 10] literature that reported being engaged in school as resilience-promoting.

To achieve the third aim of understanding what contributed to schooling as a meaningful resource, the authors focused on the observed variables that contributed to the satisfaction with school latent variable. Three observed variables made a strong contribution: an apposite (i.e. “right”), necessary (i.e., “needed”), and respectful education. The contribution of a respectful education towards resilience processes confirmed known literature. One South African study had previously investigated respectful schooling [19]. Results showed that when adolescents experienced schooling as respectful of their rights, they were more likely to be resilient. Moreover, although it makes intuitive sense, to date, there has been no empirical statistical evidence that resilience processes are related to adolescents’ perceptions of how apposite and necessary resources are. Thus, understanding that education that is interpreted as apposite and necessary influences adolescents’ resilience processes extends resilience literature.

The empirical data did not explain why perceptions of the suitability and necessity of schooling influenced adolescents’ resilience processes. It is possible that, in the South African context, the historic legacies of colonialism, patriarchy, and apartheid might have heightened sensitivity to personal understandings of the necessity or suitability of resources [35-37]. It is equally possible that some black adolescents consider education to be necessary because education is culturally valued and urged by cultural leaders, parents, and elders [9, 38]. Since education potentiates a successful future, social ecologies need to provide meaningful and accessible schooling to adolescents towards promoting young people’s resilience and, subsequently, their school engagement [19]. However, to provide meaningful education, research is needed on what influences adolescents’ perception of the suitability and necessity of schooling. From a methodological standpoint, this will require longitudinal and qualitative studies of resilience [1, 3]. Such an understanding will enable various stakeholders (e.g. principals, parents, teachers, adolescents, governmental departments, and

tertiary institutions training teachers) to provide meaningful schooling to adolescents and, as a result, promote the resilience of those at-risk of negative outcomes.

Finally, the findings should be interpreted in the light of study limitations. The cross-sectional nature of the data only allowed the researchers to make inferences regarding the contribution of adolescents' social ecologies towards their resilience in one instance in time [39]. In addition, adolescents' self-completion of the PRYM might have resulted in the data being limited by young people's opinions, particularly as opinions are influenced by recent experiences [39]. Nevertheless, as in the present study, self-report measures do yield valuable insight into theoretical constructs, such as the process of resilience [40].

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CHAPTER 4

Manuscript 3, entitled “*Adolescent perceptions of resilience-promoting resources: The South African Pathways to Resilience Research Project*”, will answer the following secondary research questions: “*Do youths’ self-reported perceptions of resilience-promoting resources differ significantly across two distinct groups (that is, groups identified as functionally resilient and formal service using) from the same social ecology?*”; and “*How do such significantly varied perceptions of resilience-promoting resources (if any) relate to youths’ reported use of formal supports?*”

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Adolescent Perceptions of Resilience-promoting Resources: The South African Pathways to
Resilience Research Project

Abstract

Resilience, or doing well amid experiences of severe adversity, involves active adolescent ↔ social-ecological transactions towards meaningful, resilience-promoting resources. Adolescent use of resilience-promoting resources is influenced by lived experiences, contextual factors, and adolescents' subjective perceptions. However, little quantitative, generalisable evidence of adolescents' differential perceptions of resilience-promoting resources exists. This study investigated adolescents' self-reported perceptions of resilience-promoting resources and how these perceptions might/might not differ significantly across two distinct groups from the same social ecology and, also, how such significantly varied perceptions of resilience-promoting resources (if any) related to adolescents' reported use of formal supports. Participants ($N = 407$) from the Thabo Mofutsanyana District, Free State province, South Africa, were purposefully recruited. They comprised two samples of adolescents made vulnerable by poverty: functionally resilient ($n = 221$) and formal service-using adolescents ($n = 186$). Adolescents self-completed the Pathways to Resilience Youth Measure. Measurement invariance indicated that, with the exception of two items, samples could be compared. Functionally resilient adolescents reported significantly more physical and psychological caregiving. Moreover, analyses of variance showed that significantly higher perceptions of physical and psychological caregiving were associated with higher frequencies of voluntary service-usage and lower frequencies of mandatory service-usage. This implies that physical and psychological caregiving is important to subsequent resource-use. Accordingly, service providers need to prioritise caregiving in their interaction with adolescents as well as advocate for social ecologies that support caregivers to provide physical and psychological care.

Keywords: Pathways to Resilience Youth Measure, resilience, South Africa, measurement invariance, adolescent perceptions, caregiving

Introduction

Resilience, or doing better than expected despite challenging circumstances (e.g., poverty, premature birth, or abuse), is conceptualised from a social-ecological perspective as a process of complex and dynamic wellness-promoting interactions. Put differently, a social-ecological understanding of resilience implies that individuals and social ecologies interact in ways that promote functional outcomes in spite of challenging circumstances. Such interaction draws on the individual's capacity to ask for, and/or steer towards, resources and the capacity of the social ecology (i.e., the individual's family, peer group community, service network, and culture or belief systems) to make meaningful supports available (Ungar, 2008, 2011, 2012, 2014).

One way in which social ecologies provide meaningful support to at-risk adolescents is in the form of formal resources. Formal resources, such as schools and/or social and mental health supports, are ways in which a social ecology deliberately nurtures the well-being of its members (Ungar, 2005). The South African literature on adolescent resilience provides various examples of how educational, social work, and other professional services support adolescents' resilience processes (Malindi, 2014; Mampane & Bouwer, 2011; Pienaar, Swanepoel, van Rensburg, & Heunis, 2011; Theron & Malindi, 2010). For example, Mampane and Bouwer (2011) investigated the influence of two township schools in Mamelodi on South African adolescents' resilience. One township school supported adolescents' resilience processes through creating a stimulating learning environment and implementing rules and educational policies that made adolescents feel safe and cared for. As a result, adolescents felt that their needs were being addressed and, subsequently, made more use of resources offered by the school. The second school was described as not sufficiently supportive of adolescents at-risk due to a lack of school-based resources (e.g., computer facilities and a library), consequently leaving adolescents feeling unsafe and uncared for. In a

qualitative study with 20 adolescents living on the streets in the rural Eastern Free State, Theron and Malindi (2010) reported that social workers were described as “enabling adults” (p. 725). The resources offered by social workers contributed to street adolescents’ resilience. In particular, adolescents attributed their positive adjustment to their challenging life-worlds to social workers’ actions. They encouraged adolescents to think more positively and attend school, and they referred adolescents living on the street other community and governmental resources (e.g., shelters). A similar study by Malindi (2014) identified that access to schooling and knowledge promoted at-risk adolescents’ resilience. Likewise, Pienaar et al. (2011) explored resilience in HIV/Aids-infected and/or -affected adolescents in a residential care facility near Bloemfontein. Results indicated that the facility offered schooling and referred adolescents to other community professionals (e.g., a nurse and psychologist). In this study, “growth-fostering relationships” (p. 133) with community professionals were identified as promotive of resilience. The care facility provided training and support to encourage a sense of pride and instil skills used to deal with adversities. Pienaar et al. (2011) and Theron and Malindi (2010) are examples of how formal resources not only provide adolescents with much-needed support, but, in some instances, assist adolescents towards other health-promoting resources.

The formal resources that social ecologies offer to those at-risk of negative outcomes can be subcategorised into mandatory and voluntary resources. Mandatory resources are formal services that adolescents do not voluntarily steer towards, or ask for. Instead, individuals are required to make use of such support, possibly due to adverse life circumstances/events (e.g., dysfunctional family contexts or neglect/abuse) or engagement in risk-taking behaviours (e.g., criminal acts or substance abuse). In such instances, social ecologies typically respond by mandating/urging adolescents to make use of services such as foster homes, homeless shelters, or substance abuse or addiction programmes. Voluntary

resources refer to those that adolescents freely choose to use in order to cope well with adverse life circumstances/events (e.g., support educators, a helpline, or community recreation programmes) (Ungar, Liebenberg, Dudding, Armstrong, & Van de Vijver, 2013).

In addition to mandatory and voluntary formal resources, adolescents' social ecologies provide informal pathways of resilience. For the most part, informal pathways are embedded within naturally occurring relationships – adolescents' relationship with themselves and with their community, peers, family members, and culture (Zautra, 2014). South African studies of adolescent resilience regularly refer to relationships informing resilience (Theron & Theron, 2010). For example, Phasha (2010) identified that informal support from neighbours, friends, and teachers aided the healing of adolescents who had been sexually abused as children. Their support allowed adolescents to accept their past experiences, move forward with their lives, and gain confidence to dream of a better future. In this study, support also strengthened adolescents' relationships with themselves and helped them to feel worthwhile. This, in turn, encouraged adolescents to strive to be positive role models to their peers. Theron et al. (2013) found that the love and care of family members (particularly grandmothers), positive peer support, and community promotion of constructive values and spirituality offered meaningful support to Basotho adolescents who were at-risk. Similarly, Theron and Dunn (2010) referred to the "cultural buffer" (p. 239) of religious faith as being protective to Afrikaner youths. Strong spiritual belief is not unique to Afrikaner culture (Park & Slattery, 2014); nevertheless, white Afrikaans-speaking adolescents, who were traditionally raised to value religion, indicated that their faith gave them support, comfort, and advice during their parents' divorce. Their religious beliefs also supported a positive outlook on life because they encouraged adolescents to focus on their future and to not dwell on past trials and tribulations.

Even though at-risk adolescents' social ecologies offer supports (i.e., informal and/or formal resources), the value of these resources depends on the meaning adolescents attach to them. The meaningfulness of resources increases in proportion to the contextual and cultural appropriateness of resources (Masten, 2014; Panter-Brick, 2015; Ungar, 2013). For example, Ungar et al. (2013) and Van Rensburg, Theron, Rothmann, and Kitching (2013) found that Canadian and South African adolescents, respectively, were more likely to experience services as meaningful if they experienced that their cultural backgrounds, personal values, and religious beliefs were respected by staff offering the service. Another example is African adolescents living in a township in Durban, KwaZulu-Natal, who identified that having African teachers who respected and understood them supported their resilience (Dass-Brailsford, 2005). Because they shared common roots, these African teachers identified with the adolescents and understood their context, values, and communities. Also, teachers shared parallel backgrounds of hardship with participants and were living proof that one could rise above hardship. As a result, teachers could fulfil the role of "mentor, confidante and counsellor" (p. 587) and could encourage self-esteem and self-confidence among participants. These teachers' culturally and contextually salient actions meant that the support they offered was meaningful (Panter-Brick, 2015).

There is a growing understanding that even when a social ecology provides formal and/or informal supports in culturally and contextually meaningful ways, how adolescents use these supports will differ (Hopkins, Zubrick, & Taylor, 2014; Ungar, 2013). Specific lived experiences, the chronicity of risk, the impact of culture and context, as well as adolescents' subjective perceptions of the value, availability, and/or accessibility of resources, influence which protective mechanisms will be favoured. Hence, one universal pathway of resilience, applicable to all individuals, is unlikely (Hopkins et al., 2014; Masten, 2014; Ungar, 2013; Ungar, Ghazinour, & Richter, 2013; Wright, Masten, & Narayan, 2013).

Studies of spiritual resources as supports to South African adolescents at-risk illustrate the variability of resource navigation within a single social-ecological context – that is, that adolescents who share a country, community, or culture might navigate towards spiritual resources differently. South African studies show that the use of spiritual resources (i.e., religious and traditional African practices) support resilience processes (Dass-Brailsford, 2005; Kruger & Prinsloo, 2008; Phasha, 2010; Pienaar et al., 2011). Nevertheless, there is some contention around religious and traditional African practices co-existing (Mashau, 2009; Matsaneng, 2010). Also, how individual adolescents choose to draw on traditional African practices and/or religious practices reflects socialisation, lived experiences, and cultural backgrounds (Brittian, Lewin, & Norris, 2013). For example, spiritual practices such as African rituals (e.g., praying to ancestors) are described in the literature as a traditional African pathway of resilience (Dass-Brailsford, 2005; Phasha, 2010; Theron et al., 2013). However, Theron and Theron's (2013) multiple case study of black African adolescents from disadvantaged contexts reported diverse participant allegiance to ancestral practices, despite ancestral bonds forming part of traditional African cultural heritage. In this study, some adolescents described connections with their ancestors as protective, while others preferred to rely on their bond with their faith. One adolescent explained their choice of support: "I respect the power of ancestors very much, but my grandfather was a very strong Christian so that's what he instilled in my life. So, I never got a chance to relate to ancestors because that was not the belief system from my home" (p. 406-407).

Likewise, a study by Brittian et al. (2013) found that black African adolescents from Soweto (a historically disadvantaged neighbourhood in the Johannesburg metropolitan area) differed regarding the co-existence of traditional African and spiritual resources. One adolescent stated: "You can mix culture and Christianity together because there are things

you have to do in your culture and you can go to church at the same time” (p. 652). Others felt that spiritual and traditional African practices did not fit together and, so, favoured one spiritual resource above the other. One adolescent, for instance, explained that Christianity did not involve believing in ancestors.

Also, Ungar et al. (2013) emphasised that varied pathways of resilience were influenced by individuals’ perception of what resources were accessible and available to them when experiencing adversities. For example, in a qualitative study by Theron and Theron (2014), one resilient black South African student indicated that she elicited support from an educational resource (i.e., teacher) because she perceived this resource as being accessible. Similarly, a mixed-method study by Anthony and Nicotera (2008) reported that adolescents made use of community resources and opportunities (i.e., after-school programmes and boys’ and girls’ clubs) because they considered these to be safe spaces where they could receive help with their homework or read a book.

To summarise, the aforementioned demonstrates how potentially varied the pathways are that adolescents take towards resilience. These pathways will probably differ with regard to culture, context, individual lived experiences, as well as adolescents’ perceptions of the value, availability, and/or accessibility of resilience-promoting resources. Consequently, the aforesaid illustrates how complex and dynamic resilience processes are and that these processes depend on more than social ecologies making resources available.

Goal of this Study

Although the variability of adolescents’ informal and formal resource-use in the course of their navigations and negotiations for positive outcomes is fairly well documented in qualitative studies, there is little quantitative, generalisable evidence of adolescents’ differential perceptions of resilience-promoting resources (Ungar, 2013). The same applies to studies documenting South African adolescents’ resilience processes. There are qualitative

accounts of how varied informal and formal resources support/promote resilience in South African sociocultural ecologies, but little quantitative evidence regarding formal supports (Brittian et al., 2013; Theron & Theron, 2013, 2014). Furthermore, there are no quantitative studies that investigate how adolescents' perceptions of resources are associated with adolescents' use of formal resources. Thus, this study, firstly, aims to investigate adolescents' self-reported perceptions of resilience-promoting resources (i.e., individual, caregiver, and contextual resources) and how these perceptions might/might not differ significantly across two distinct groups from the same social ecology (i.e., groups identified as functionally resilient and formal service-using). Secondly, this study aims to understand how such significantly varied perceptions of resilience-promoting resources (if any) relate to adolescents' reported use of formal supports. The literature is critical of explanations of resilience that marginalise or silence adolescents' explanations of what has supported them to adjust well. The current study respected this criticism and invited adolescents to self-report their perceptions (Bottrell, 2009; Theron & Liebenberg, 2015; Ungar, 2015; Wright et al., 2013).

Method

Contextual Background

The Pathways to Resilience Research Project is a five-country international study (Canada, China, Colombia, New Zealand, and South Africa) investigating adolescent resilience from a social-ecological perspective across cultures and contexts (see www.resilienceproject.org). The South African investigation took place in the Thabo Mofutsanyana District, Free State province, and the main study gathered data from 1 137 adolescents (Theron et al., 2013). For the purpose of this article, a subset of the data, as described below, was used. Adolescents living in the Thabo Mofutsanyana District

experience multiple daily risks related to high levels of unemployment, violent crime, poverty, and HIV/Aids threatening their resilience; yet some adolescents in this district have developed well (Berry, Biersteker, Dawes, Lake, & Smith, 2013; Theron, Liebenberg, & Malindi, 2014).

The South African Pathways to Resilience Research Project was guided by an advisory panel (AP). The AP was made up of local community leaders and members who were knowledgeable about local adolescents and local adolescent resilience processes (see Theron, 2013 and Theron et al., 2013 for detail). The inclusion of this AP ensured cultural and contextual relevance, as well as ethical rigour, in the process of investigating resilience in an African context (Elias & Theron, 2012).

Participants

Quantitative data generated by 407 participants (211 girls, 195 boys and 1 undisclosed) was used to compare adolescents' (from the same social ecology) perceptions of resilience-promoting resources (see Table 1). Participants were between 13 and 19 years old ($M = 15.62$, $SD = 1.74$). Adolescents were either in, or had completed, Grades 3 to 12 ($M = 7.60$, $SD = 1.73$), and the majority of participants self-identified as black South African (i.e., 97.05%). The sample was comprised of two distinct groups, namely, 186 adolescents who were mandated to use formal services (SU sample) and 221 functionally resilient (FR sample) adolescents. As mentioned in the contextual background, adolescents from the Thabo Mofutsanyana District experience high levels of poverty and associated challenges (Theron et al., 2014).

The community perceived adolescents in the SU sample as needing formal supports/services to cope well with the challenges that predicted vulnerability. These formal supports/services included health care (e.g., nurses and doctors), educational support (e.g., a supportive teacher or special school), social/residential support (e.g., foster homes or

children's homes), and mental health care (e.g., a counsellor or hospital treatment for mental health issues). Accordingly, with the support of the AP, the SU sample was purposefully recruited via a local shelter for adolescents on the street ($n = 17$), two local children's homes ($n = 28$), a local, pro-children's rights non-governmental organisation (NGO) that provided adolescents with health care and educational supports ($n = 118$), and the local Department of Social Development ($n = 23$).

In comparison, the FR sample had no history of mandatory service-/resource-use for the six months prior to the study. The recruitment of the FR sample was guided by AP-defined criteria (see Theron et al., 2013 for detail). Accordingly, adolescents who displayed a resilient personality, accepted their risky circumstances, made progress at school, dreamed, were value-driven, and had an effective support system were nominated to the study. In other words, these adolescents had apparently adjusted well enough to their challenging social ecology without the support of mandatory formal services.

Comparison of these two groups (independent t-tests) indicated that no statistically significant differences were present between the SU and FR samples on age ($t(404) = -.74, p = .46$), grade passed ($t(401) = -0.93, p = .35$), school attendance ($t(404) = -0.65, p = .52$), and perceptions of their community as violent ($t(398) = -0.10, p = .92$).

Table 1

Demographics of Participants

Variable	Category	FR sample		SU sample		Total	
		<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Gender	Girls	124	56.11	87	46.77	211	51.84
	Boys	96	43.44	99	53.23	195	47.91
	<i>Missing</i>	1	0.45	0	0	1	0.25
Racial group	Black	216	97.74	179	96.24	395	97.05
	White	3	1.36	3	1.61	6	1.47
	Coloured	1	0.45	3	1.61	4	0.98
	Indian	0	0	1	0.54	1	0.25
	<i>Missing</i>	1	0.45	0	0	1	0.25
Attending school	Yes	219	99.10	182	97.85	401	98.53
	No	2	0.90	3	1.61	5	1.23
	<i>Missing</i>	0	0	1	0.54	1	0.25
Grade passed	3	1	0.45	1	0.54	2	0.49
	4	6	2.71	7	3.76	13	3.19
	5	23	10.41	11	5.91	34	8.35
	6	37	16.74	28	15.05	65	15.97
	7	23	10.41	49	26.34	72	17.69
	8	46	20.81	37	19.89	83	20.39
	9	44	19.91	29	15.59	73	17.94
	10	38	17.19	16	8.60	54	13.27
	11	1	0.45	4	2.15	5	1.23
	12	0	0	2	1.08	2	0.49
	<i>Missing</i>	2	0.90	2	1.08	4	0.98
Total		221		186		407	

Measures and Procedures

The Pathways to Resilience Youth Measure (PRYM) (Resilience Research Centre, 2010) was used in this study. It is comprised 11 scales (or parts of these scales), assessing adolescents' perceptions regarding resilience-promoting resources in their physical and social ecologies as well as formal resource-usage in the last six months (the PRYM did not measure informal service-usage). The following seven scales were used to model adolescents' perceptions of resources and experiences of risks within their social ecology: the Child Youth Resilience Measure (CYRM) (Liebenberg, Ungar, & Van de Vijver, 2012), the 4-H Study of Positive Youth Development (4HSQ) (Phelps et al., 2007), the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001), the National Longitudinal Study of Children and

Youth Brief Questionnaire (NLSCY), the Ontario Student Drug Use and Health Survey (OSDUHS), the Boston Neighbourhood Survey (BNS) (Resilience Research Centre, 2010), and the Youth Services Survey (Resilience Research Centre, 2010). The scales and sub-scales used in this study are summarised in Table 2.

The PRYM was self-completed by adolescents, in groups of 30 to 45, after school hours. On average, it took up to 90 minutes to complete. Three Sesotho-speaking fieldworkers, who were specifically trained to assist in the Pathways to Resilience Research Project, assisted in the administration of the PRYM. On the advice of the AP, the fieldworkers read the PRYM aloud in English and used code switches (i.e., synonyms in Sesotho that were agreed to by the AP) when adolescents were uncertain of some words. Ethical clearance was approved by all the authors' institutions and the Department of Basic Education, Free State province, South Africa (Theron et al., 2014). Participants and their caregivers provided written consent prior to adolescents' completion of the PRYM.

Table 2

Latent Variables and Measurement Instruments

Latent variable	Instrument	Construct	Item example	Response options
Personal resources (PER)	Individual sub-scale of the Child Youth Resilience Measure (CYRM) (11 items). Measures adolescents' perceptions regarding individual resilience-promoting resources. ‡ ($\alpha = .80$) (Liebenberg et al., 2012)	Individual personal skills, peer support, and social skills	"I am able to solve problems without hurting myself or others" "My friends stand by me during difficult times" "I know where to go in my community to get help"	"Not at all" to "A lot" on a five-point scale
Physical and psychological caregiving (CARE)	Relationship with caregiver sub-scale in CYRM (seven items). Measures adolescents' perceptions regarding caregiving resilience-promoting resources. ‡ ($\alpha = .83$) (Liebenberg et al., 2012)	Physical and psychological caregiving	"I can talk to my caregiver about how I feel" "My caregiver stands by me during difficult times"	"Not at all" to "A lot" on a five-point scale
Contextual resources (CON)	Context sub-scale of the CYRM (10 items). Measures adolescents' perceptions regarding contextual resilience-promoting resources. ‡ ($\alpha = .79$) (Liebenberg et al., 2012)	Cultural, educational, and spiritual resources	"I enjoy my community's traditions" "Community is proud of my nationality" "I think it is important to serve my community"	"Not at all" to "A lot" on a five-point scale
Antisocial behaviour (RISK1)	4-H Study of Positive Youth Development (4HSQ) Delinquency Scale (five items) ‡ ($\alpha = .73$) (Phelps et al., 2007)	Antisocial behaviour	"Got into trouble with the police" "Damaged property"	"Never" to "Five or more times" on a five-point scale
Health risk behaviour (RISK2)	4HSQ Risk Scale (nine items) ‡ ($\alpha = .86$) (Phelps et al., 2007)	Health risk behaviour	"Drank beer, wine, alcoholic drinks" "Sniffed glue, sprays, or petrol"	"Never" to "Regularly" on a four-point scale
Disruptive behaviour	Strengths and Difficulties Questionnaire (SDQ) (five items)	Disruptive behaviour	"I lose my temper" "I fight a lot"	"False", "Sometimes", and "True" on a three-

(RISK3)	‡ ($\alpha = .80$) (Goodman, 2001)			point scale
Negative peer support (RISK4)	National Longitudinal Study of Children and Youth Brief Questionnaire (NLSCY) (four items) (Resilience Research Centre, 2010)	Peer-group behavioural risks	“Do drugs” “Break the law”	“None” to “All” on a four-point scale
Poor caregiver presence (RISK5)	Ontario Student Drug Use and Health Survey (OSDUHS) (three items) (Resilience Research Centre, 2010)	Presence of caregiver	“How many days a week is your parent/guardian/caregiver at home when you do the following things: 1. When you wake up in the morning? 2. When you come home from school or work? 3. When you go to bed at night?”	“No days” to “Five days or more” on a six-point scale
Lack of community safety (RISK6)	Boston Neighbourhood Survey (BNS) (six items) (Resilience Research Centre, 2010)	Lack of community safety	“People in my community get along with one another” “How safe do you consider your community to be?”	“Not at all” to “A lot” “Likely”, “Unlikely”, and “Very unlikely” on a four-point scale
Barriers to community/school participation (RISK7)	4HSQ (five items) (Phelps et al., 2007). Barriers included money, transportation, caregivers telling adolescents they could not participate, responsibilities at home, working a paid job, or did not feel comfortable participating.	Barriers to community/school participation	“You have too many responsibilities at home” “You are working at a paid job”	“Not at all” to “A lot” on a three-point scale
Service-usage	Youth Services Survey (Resilience Research Centre, 2010). Adolescents were questioned regarding how often various mandatory and voluntary services had been used in the last six months.	Formal service-usage	“Nurse”, “Doctor”, “Social work services”, “Counsellor”, “Traditional healer”, “Foster home”, “Foster placements”, “NGO-driven services”, “Drop-in centre”, “Substance abuse or addiction services”	“Never”, “Once”, “Couple of times”, “Three times or more”, and “Could not get it” on a five-point scale

‡ Refers to available reliabilities from previous studies.

Analytic Procedure

Some adolescent resilience studies (Goel, Amatya, Jones, & Ollendick, 2014; Jung et al., 2012; Stokar, Baum, Plischke, & Ziv, 2014) compare means of constructs/items by assuming that factor loadings and thresholds/intercepts are invariant between groups that are compared. This approach potentiates item and construct bias (Chen, 2008; He & Van de Vijver, 2015). The authors of this study did not assume invariance and, therefore, as a result, employed measurement invariance testing using multigroup modelling in Mplus 7.2, subsequently avoiding/removing biased items (He & Van de Vijver, 2015; Muthén & Muthén, 1998-2012). Descriptive statistics and ANOVAs were computed with the use of SPSS 22.0 (IBM Corp, Released 2013).

A categorical estimator was employed, specifically a weighted least square estimator (WLSMV), which makes use of a modified χ^2 statistic. The WLSMV estimator was used due to the three- to six-point Likert scales used in the PRYM (Resilience Research Centre, 2010). A measurement model (baseline model), representing the adolescents' perceptions of resources and risks within the context of this study, was developed and, subsequently, modelled. Statistics used to measure the fit of the measurement model with regard to the data were chi-square (χ^2), degrees of freedom (*df*), the Tucker-Lewis index (TLI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and RMSEA 90% confidence intervals (CI) and their significance (*p*). Scores higher than .90 for TLI/CFI and RMSEA estimates and CIs smaller than .08 (*p* > .05) indicated close fit of the model (Byrne, 2012; Wang & Wang, 2012). Cronbach's alphas should not be used to calculate reliability when latent variables are used and the assumption of tau equivalence is violated; therefore, composite reliabilities (ρ) were calculated (Raykov, 2012).

The baseline model (measurement model) was tested for acceptable fit in both samples (FR and SU samples). This was followed by the testing for measurement invariance,

which consisted of three consecutive steps. Step 1: *configural invariance*: the baseline model was used in a multigroup form to test a configural model. Parameters were allowed to vary freely (in both the FR and SU samples). Step 2: *weak (metric) measurement invariance*: factor loadings were constrained to be equal for the two samples, and chi-square difference testing ($\Delta\chi^2$) was used to compare the FR and SU samples. Step 3: *strong (scalar) measurement invariance*: factor loadings and thresholds were constrained to be equal for the two samples, and chi-square difference testing ($\Delta\chi^2$) was used to compare the FR and SU samples (Wang & Wang, 2012). Only when at least partial metric (weak) and partial scalar (strong) invariance is proven can factor means be compared (Van de Schoot, Lugtig, & Hox, 2012). Thus, if factor loadings and thresholds are invariant, scores from both samples share metric (weak) and scalar (strong) invariance (Wang & Wang, 2012). With the use of the WLSMV estimator, the conventional approach to chi-square (χ^2) difference testing is not appropriate. When interpreting the results, only the change in chi-square ($\Delta\chi^2$), change of degrees of freedom (Δdf), as well as their significance (p), were interpreted and not the change in CFI (ΔCFI) due to the adjusted chi-square used by the WLSMV estimator (Meade, Johnson, & Braddy, 2008; Muthén & Muthén, 1998-2012).

Furthermore, as a result of metric and scalar invariance or, at least, partial metric and partial scalar invariance, *latent variable differences* could be calculated in order to compare the latent variable means. Latent variable differences were computed during multigroup modelling using parameterisation type 1. Parameterisation 1 entailed fixing the first item of every latent variable's factor loading to 1, specifying means and thresholds as variant among both FR and SU samples, and fixing one threshold of every latent variable to 0 (Little, Siegers, & Card, 2006). As a result, the latent variable means scores were calculated, and subsequently, differences in latent variable means scores (ΔM) were specified.

Lastly, an analysis of variance (ANOVA) was employed to analyse the data generated by adolescents' completion of the Youth Services Survey (YSS) (see Table 2) to understand whether adolescents' varied perceptions (if any) of resilience-promoting resources were associated with their reported use of formal supports (i.e., counsellors, traditional healers, support educators, drop-in centres, NGO-driven services, foster homes, and social work services).

Results

Measurement Model

A measurement model, based on a Social-Ecological Explanation of Resilience (Ungar, 2011, 2012), was developed from the SU sample to simulate the resources and risks black South African adolescents' perceived within social ecologies (i.e., the Thabo Mofutsanyana District). The model consisted of 10 first-order latent variables, namely, personal strengths (11 observed variables), physical and psychological caregiving (seven observed variables), contextual resources (10 observed variables), antisocial behaviour (five observed variables), health risk behaviour (nine observed variables), disruptive behaviour (five observed variables), negative peer support (five observed variables), poor caregiver presence (three observed variables), lack of community safety (six observed variables), and barriers to community/school participation (six observed variables) (see Table 2).

The developed model (SU sample) (CFI = .94, TLI = 0.94, RMSEA = .03, 90% CI [.02, .03], $p > .05$) was verified in an independent sample (FR sample) (CFI = .96, TLI = .96, RMSEA = .02, 90% CI [.02, .03], $p > .05$) of adolescents from the same social ecology. The levels of significance of the CIs in both samples were greater than .05, indicating that the model had close fit. In addition, the fit indices pointed out that the 10-factor measurement model could be employed as a configural model during invariance testing; see Table 3. In

addition, all but three (SU sample: RISK3 – $\rho = .58$ and RISK6 – $\rho = .35$; FR sample: RISK6 – $\rho = .53$) latent variables showed acceptable reliabilities (Table 4).

Table 3

Fit Statistics of Baseline Models

Group	χ^2	<i>df</i>	RMSEA	90% CI	<i>p</i>	CFI	TLI
SU	2384.65	2099	.03	[.02,.03]	1.00	.94	.94
FR	2368.04	2099	.02	[.02,.03]	1.00	.96	.96

Note: χ^2 – chi-square; SU – formal service-using sample; FR – functionally resilient sample; *df* – degree of freedom; RMSEA – root mean square error of approximation; 90 % CI – RMSEA 90% confidence interval; *p* – statistical significance; CFI – comparative fit index; TLI – Tucker-Lewis index.

Table 4

Correlation Matrix and Reliability of Constructs for SU and FR Samples before Removal of Problematic Items

Variable	ρ	1	2	3	4	5	6	7	8	9
<u>SU</u>										
1. PER	.87	-	-	-	-	-	-	-	-	-
2. CARE	.88	.70**	-	-	-	-	-	-	-	-
3. CON	.89	.95**	.72**	-	-	-	-	-	-	-
4. RISK1	.91	-.32**	-.25**	-.35**	-	-	-	-	-	-
5. RISK2	.96	-.41**	-.42**	-.48**	.68**	-	-	-	-	-
6. RISK3	.58	-.43**	-.35**	-.47**	.70**	.73**	-	-	-	-
7. RISK4	.92	-.22*	-.30**	-.21*	.50**	.66**	.47**	-	-	-
8. RISK5 (R)	.90	-.34**	-.36**	-.37**	.01	.20*	.17	.03	-	-
9. RISK6 (R)	.35	-.40**	-.48**	-.47**	.08	.43**	.05	.51**	.22	-
10. RISK7	.81	.06	-.09	.04	.53**	.32**	.47**	.10	.00	.31
<u>FR</u>										
1. PER	.86	-	-	-	-	-	-	-	-	-
2. CARE	.92	.85**	-	-	-	-	-	-	-	-
3. CON	.87	.96**	.71**	-	-	-	-	-	-	-
4. RISK1	.89	-.32**	-.35**	-.37**	-	-	-	-	-	-
5. RISK2	.95	-.42**	-.48**	-.44**	.84**	-	-	-	-	-
6. RISK3	.68	-.54**	-.52**	-.56**	.69**	.64**	-	-	-	-
7. RISK4	.93	-.49**	-.41**	-.49**	.40**	.65**	.50**	-	-	-
8. RISK5 (R)	.95	-.22**	-.20*	-.27**	.10	.17	.09	.09	-	-
9. RISK6 (R)	.53	-.42**	-.41**	-.36**	.17	.27**	.20*	.33**	.04	-
10. RISK7	.84	-.35**	-.35**	-.32**	.63**	.50**	.66**	.22*	.04	.20*

Note: ρ – reliability; SU – formal service-using sample; FR – functionally resilient sample; PER – personal resources; CARE – physical and psychological caregiving; CON – contextual resources; RISK1 – antisocial behaviour; RISK2 – health risk behaviour; RISK3 – disruptive behaviour; RISK4 – negative peer support; RISK5 – poor caregiver presence; RISK6 – lack of community safety; RISK7 – barriers to community/school participation; R – items interpreted in reverse.

* $p < .05$. ** $p < .01$.

Measurement Invariance

The configural model was specified, and acceptable fit was established (see Table 5). A p -value $> .05$ with regard to the RMSEA CIs indicated close fit (CFI = .95, TLI = .95, RMSEA = .03, 90% CI [.02, .03], $p > .05$). Subsequently, the configural model was compared to a metric model that allowed factor loadings between the SU and FR samples to be invariant. A significant change in $\Delta\chi^2$ indicated that the SU sample and FR sample were significantly different ($\Delta\chi^2 = 128.21$, $\Delta df = 56$, $p = .00$). A modification index (MI) of 57.28 indicated that the factor loading on health risk behaviour (RISK2 – “How many times in the past year have you done the following things: used dagga?”) was not invariant. The parameter was, subsequently, freed in both samples. As a result, partial metric invariance was achieved ($\Delta\chi^2 = 67.00$, $\Delta df = 55$, $p = .13$). In the following step, the metric model was compared to a scalar model constrained by thresholds; a significant change in $\Delta\chi^2$ indicated that the SU sample and FR sample were significantly different ($\Delta\chi^2 = 129.78$, $\Delta df = 65$, $p = .00$). An MI of 21.50 indicted that an item on health risk behaviour (RISK2 – “How many times in the past year have you done the following things: used dagga?”) was not invariant; the constraint on the item was freed in both samples, and still a significant change in $\Delta\chi^2$ was observed ($\Delta\chi^2 = 90.17$, $\Delta df = 64$, $p = .02$). The MIs (8.88), furthermore, indicated that an item on disruptive behaviour (RISK3 – “To what extent do the sentences describe you: I do as I am told?”) was variant. The constraint on the item was freed in both samples. Subsequently, partial scalar invariance was attained ($\Delta\chi^2 = 76.66$, $\Delta df = 63$, $p = .12$) (see Table 5).

These findings confirmed that both the SU and FR samples responded the same way to items (i.e., questions in the PRYM), with the exception of the three instances (two items, see Table 5) of biased/non-equivalent items, as indicated earlier. Thus, when the factor loading and threshold of “How many times in the past year have you done the following things: used dagga?” and the threshold of “To what extent do the sentences describe you: I do

as I am told?” were not constrained to be equal, metric invariance and scalar invariance, respectively, were obtained – indicating equivalence and non-bias among the remaining items.

Latent Variable Differences

Table 6 illustrates the differences of the latent variable means between the SU and FR samples (CFI = .95, TLI = .95, RMSEA = .03, 90% CI [.02, .03], $p > .05$). The two biased items (see Table 5) were removed to ensure measurement invariance across all items with regard to factor loadings and thresholds (Byrne, 2012; Van de Schoot et al., 2012). The results indicated that the factor mean scores of CARE (ΔM 0.34, $p = .01$) were significantly higher in the FR sample. The results, furthermore, indicated that the mean scores of RISK1 ($\Delta M = 0.47$; $p = .00$) and RISK3 ($\Delta M = 0.18$; $p = .01$) were significantly lower in the FR sample. In addition, the mean scores for PER, CON, RISK2, RISK4, RISK5, and RISK6 were not significantly different in both samples. In other words, the mean scores related to physical and psychological caregiving were significantly higher in the FR sample, and the risks related to antisocial, disruptive behaviour and barriers to community participation were significantly higher in the SU sample. Scores with regard to personal resources, contextual resources, health risk behaviour, negative peer support, poor caregiver presence, and lack of community safety were indifferent among groups.

Analysis of Variance

Analyses of variance (ANOVA) were performed in SPSS 22.0 (IBM Corp, Released 2013). With the use of factor scores for the physical and psychological caregiving latent variable (estimated in Mplus 7.2), the association of the latter and formal support-usage was calculated. Among the FR sample, higher perceptions of physical and psychological caregiving were associated with more frequent usage of voluntary resources such as doctors ($F = 3.25$, $df = 4$, $p = .01$), support groups (e.g., Soul Buddyz, Addaaf, Naledi ya bophelo) (F

= 3.43, $df = 4$, $p = .01$), support educators ($F = 4.59$, $df = 4$, $p = .00$), traditional healers ($F = 4.99$, $df = 4$, $p = .00$), and helplines ($F = 3.91$, $df = 4$, $p = .00$). In the FR sample, significantly higher perceptions of caregiving were associated with a lower frequency of usage of historic mandatory formal resources such as social work services ($F = 4.30$, $df = 4$, $p = .00$), foster homes ($F = 4.71$, $df = 4$, $p = .00$), substance abuse programmes ($F = 9.62$, $df = 4$, $p = .00$), and hospital treatment for mental health issues such as anorexia, anxiety, depression, or others ($F = 3.90$, $df = 4$, $p = .01$). In comparison, higher perceptions of physical and psychological caregiving in the SU sample were associated with less usage of substance abuse programmes ($F = 4.74$, $df = 4$, $p = .00$).

Table 5

Testing for Measurement Invariance across SU and FR Samples

Model	MI	Estimates SU	Estimates FR	χ^2	<i>df</i>	$\Delta\chi^2$	Δdf	<i>p</i>	CFI	TLI	RMSEA	90% CI	<i>p</i>
1. Configural model	-	-	-	4904.74	4301	-	-	-	.95	.95	.03	[.02,.03]	1.00
2. Full weak (metric) invariance	-	-	-	4998.51	4357	128.21	56	.00	.94	.94	.03	[.02,.03]	1.00
3. Partial weak (metric) invariance:													
Factor loading freed: “How many times in the past year have you done the following things: used dagga?”	57.28	.81	.97	4945.12	4356	67.00	55	.13	.95	.95	.03	[.02,.03]	1.00
4. Full strong (scalar) invariance	-	-	-	5032.39	4421	129.78	65	.00	.95	.95	.03	[.02,.03]	1.00
5. Partial strong (scalar) invariance:													
Threshold freed: “How many times in the past year have you done the following things: used dagga?”	21.50	2.99	8.15	5010.73	4420	90.17	64	.02	.95	.95	.03	[.02,.03]	1.00
Threshold freed: “To what extent do the sentences describe you: I do as I am told?”	8.88	-0.66	-1.26	5003.57	4419	76.66	63	.12	.95	.95	.03	[.02,.03]	1.00

Note: MI – modification index; χ^2 – chi-square; *df* – degree of freedom; $\Delta\chi^2$ – change in chi-square; Δdf – change in degrees of freedom; *p* – obtained significance value; CFI – comparative fit index; TLI – Tucker-Lewis index; RMSEA – root mean square error of approximation; 90% CI – RMSEA 90% confidence interval; *p* – statistical significance of CI.

Table 6

Factor Mean Invariance

Variable	M_{SU}	M_{FR}	ΔM	p
PER	0.73	0.72	0.01	.94
CARE	0.76	1.10	0.34	.01
CON	1.26	1.37	0.11	.34
RISK1	-0.66	-1.13	0.47	.00
RISK2	-1.18	-1.20	0.02	.89
RISK3	-0.81	-0.99	0.18	.01
RISK4	-1.34	-1.39	0.05	.76
RISK5	0.91	1.04	0.13	.48
RISK6	0.16	0.11	0.05	.58
RISK7	-0.18	-0.34	0.16	.05 ¹⁴

Note: M_{SU} – latent variable mean scores for formal service-using sample; M_{FR} – latent variable mean scores for functionally resilient sample; ΔM – change in latent variable mean score; p – obtained significance value; PER – personal resources; CARE – physical and psychological caregiving; CON – contextual resources; RISK1 – antisocial behaviour; RISK2 – health risk behaviour; RISK3 – disruptive behaviour; RISK4 – negative peer support; RISK5 – poor caregiver presence; RISK6 – lack of community safety; RISK7 – barriers to community/school participation.

Discussion

Even though some social ecologies provide individuals who are at-risk with meaningful formal and informal supports, how adolescents use these supports might differ due to, among others, specific lived experiences, contextual influences, and adolescents' subjective perceptions (Masten, 2014; Ungar, 2013; Ungar et al., 2013; Wright et al., 2013). Firstly, the results of this study confirmed that adolescents described by their community as functionally resilient (FR) and formal service-using (SU) had similar, but also significantly varied, perceptions of resilience-promoting resources. Secondly, the results offered proof that significantly higher perceptions of physical and psychological caregiving were associated with increased use of voluntary support (e.g., doctors, support educators, traditional healers, helplines, and support groups) and decreased use of formal supports (e.g., social work services, foster homes, substance abuse programmes, and hospital treatment for mental health issues).

¹⁴ 0.053

In order to compare adolescents' perceptions in the functionally resilient and formal service-using samples, the authors employed measurement invariance testing and removed biased items before group means were compared. In social science research, particularly cross-cultural psychology, measurement invariance testing is often used to test the equivalence of factor structures and item bias across groups, for example, cultures, languages, or countries (Joshani, Wissing, Khumalo, & Lamers, 2013; Kim et al., 2014; Ponizovsky, Dimitrova, Schachner, & van de Schoot, 2013). Unlike other resilience studies, for example Goel et al. (2014); Jung et al. (2012), and Stokar et al. (2014), this study did not assume that adolescents who shared a language, culture, and country attached similar meanings to the items in the PRYM. Therefore, the authors employed measurement invariance testing to identify possible biases and ensure that groups could be compared (Chen, 2008; He & Van de Vijver, 2015). In the present study, in three instances, the authors established inequivalent factor loadings as well as thresholds. Two items were not comparable across the SU and FR samples. Thus, lack of invariance of two items confirmed the need for caution against assumptions of measurement invariance.

Adolescents' perceptions of resilience-promoting resources differed significantly with regard to caregiving resources (i.e., physical and psychological caregiving). This difference was despite adolescents from both groups reporting similar perceptions of caregiver presence. Regardless of this similarity, the SU sample perceived less physical and psychological caregiving. It would, therefore, seem that the mere presence of caregivers does not guarantee experiences of caregiving. The SU sample's significantly lower perception of physical and psychological caregiving (e.g., lack of emotional support, food, and/or a safe environment) might reflect their circumstances (e.g., their residence in shelters for homeless children or children's homes). Such residence is occasionally associated with low levels of physical and psychological caregiving, mostly due to the lack of caregiver ↔ adolescent relationships,

although substitute caregivers (e.g., housemothers) are present (Altena, Beijersbergen, & Wolf, 2014; Groark, McCall, McCarthy, Eichner, & Gee, 2013). In instances where SU adolescents accessed the supports of a child-rights-focused NGO or the Department of Social Development, their significantly lower perceptions possibly reflect disadvantaged home life. There is some evidence that adolescents from disadvantaged families experience less caregiving, even though caregivers are physically present (Brown, Ackerman, & Moore, 2013; Jeon, Buettner, & Hur, 2014). This possibly relates to caregivers being absent (i.e., working elsewhere or being uninvolved) or too tired/careworn to provide physical and/or psychological care (Donald, Lazarus, & Lolwana, 2010; Jeon et al., 2014; Kwon & Wickrama, 2014; Mogotiane, Chauke, van Rensburg, Human, & Kganakga, 2010; Nduna & Jewkes, 2012). However, such circumstantial hypotheses do not explain the FR sample's significantly elevated perceptions of caregiving. They, too, came from families that were challenged by poverty where, arguably, caregivers were tired/careworn as well. This raises questions about what influences adolescents' perceptions of caregiving sources and urges a follow-up qualitative study.

Another possible reason for decreased perceptions of care among adolescents in the SU sample, could relate to their elevated risk for anti-social and disruptive behaviour. This forces consideration of whether or how disruptive behaviour shaped caregivers' actions and attitudes and perhaps strained their inclination to care. Were caregivers less likely to demonstrate care in instances where youths in the SU sample were anti-social or disruptive? As in the preceding hypothesis, this urges a follow-up study directed at caregivers themselves.

An important finding from this study is the potential of perceptions of caregiving to galvanise adolescents' use of formal resilience-supporting resources; higher perceptions of physical and psychological caregiving were related to more frequent use of voluntary

resources (e.g., doctors, support educators, traditional healers, helplines, and support groups) in the FR sample. Voluntary supports (e.g., support educators and traditional healers) are often cited in South African resilience literature as resilience-promoting (Dass-Brailsford, 2005; Malindi, 2014; Phasha, 2010; Theron, 2013; Theron & Theron, 2010). Apparently, perceptions of care support help-seeking behaviours and encourage adolescents to navigate towards voluntary supports that promote their well-being. Given the emphases of earlier and current resilience studies on the importance of relational capital to resilience, this finding is perhaps not surprising (see, for example, Jordan, 2013; Luthar, 2006; Masten, 2006; Nystad, Spein, & Ingstad, 2014).

Increased perceptions of physical and psychological caregiving were also associated with the FR sample's decreased historic use of mandatory supports (i.e., lower reported use of social worker services, foster homes, substance abuse programmes, and hospital treatment for mental health issues in the time up to six months before the study started). Similarly, higher perceptions of physical and psychological caregiving in the SU sample were associated with less reported historic and current use of substance abuse programmes – also a mandatory support. A systematic review by Ryan, Jorm, and Lubman (2010) of caregiver (i.e., parental) practices that reduced substance abuse (i.e., alcohol use) indicated that caregiver monitoring, positive caregiver ↔ adolescent relationships, and caregiver support, among others, decreased adolescent alcohol use. Possibly, higher perceptions of caregiving decrease self-harming behaviours (such as substance abuse), thereby decreasing the need for, and use of, such mandatory supports as substance-abuse programmes.

In summary, according to a social-ecological understanding of resilience, adolescents' use of meaningful resources (informal or formal) supports positive adjustment (Ungar, 2011, 2012). Results from this study suggested that positive perceptions of physical and psychological caregiving were key to adolescents' use of resources and, subsequent, positive

outcomes. In other words, it is not enough for social ecologies to make meaningful resources available; social ecologies need to prioritise caregiving. This has important implications for professionals and practitioners working with adolescents.

Implications for Practitioners

The results of the present study have two significant implications. Firstly, relational aspects (i.e., perceptions of psychological and physical caregiving) are key to adolescents' eventual use of supports, and so practitioners need to support caregivers to understand this centrality. Consequently, caregivers need to be guided to prioritise relationship-building and to understand that caregiving is about more than caregiver presence. Relationship-building should include psychological caregiving, not only the provision of shelter and food. The authors acknowledge that qualitative follow-up studies are needed to understand better what meaningful psychological and physical care entails, but in the meantime, the current results call for mindfulness of the importance of psychological and physical care.

The centrality of care to resource-use is equally important for practitioners and service providers who work with adolescents. They, too, need to provide physical and psychological caregiving. The importance of physical caregiving (e.g., providing food and clothing) for resilience was amplified in a recent study on teachers' contributions to positive outcomes of black South African students from deprived circumstances (Theron & Theron, 2014). Similarly, recent accounts of how service providers supported functional outcomes emphasises the importance of psychological caregiving. This included respecting adolescents' agency and having/gaining more knowledge of adolescents' values in order to provide meaningful, culturally appropriate, resilience-supporting services (Sanders & Munford, 2014; Sanders, Munford, Liebenberg, & Ungar, 2014; Theron et al., 2014; Ungar, 2013).

Secondly, the results call for attention to the need for social change, since in disadvantaged contexts (such as that of this study), structural barriers and social injustice

potentially hinder caregivers' provision of physical and psychological caregiving (Schratz & Walker, 1995). It is no coincidence that poor attachment and weak relational bonding are associated with adolescents living in structurally disadvantaged communities and poor families (Donald et al., 2010; Jeon et al., 2014; Mogotiane et al., 2010; Nduna & Jewkes, 2012). In such circumstances, socio-economic challenges can obstruct caregivers' capacity and opportunity to care. Even in instances where adolescents' perceive care, despite the probable socio-economic challenges to their caregivers' capacity to care, social change would support sustained care. Accordingly, it is not enough to teach caregivers to prioritise relationships that provide physical and psychological care. In addition, social ecologies must be adapted in ways that will address and alleviate structural and socio-political barriers to caregiving. This means that academics, researchers, practitioners (e.g., psychologists and social workers), caregivers, and adolescent care-workers should lobby for law and policy change that will support equitable social ecologies that do not obstruct caregivers' physical and psychological capacity to care.

Limitations and Future Research

Limitations to the current study should be noted. Firstly, due to the cross-sectional nature of the data collected, the results of this study only provide a time-limited understanding of adolescents' varied perceptions of resilience-promoting resources and how these varied perceptions are related to formal support-usage (Monette, Sullivan, & DeJong, 2011). Secondly, the sample sizes were relatively small; larger samples are needed to confirm the results of the present study. Thirdly, the authors did not study the invariance of means of sex and age groups because the sample sizes were too small to assess measurement invariance using latent variable modelling (Byrne, 2012). Fourthly, in the absence of qualitative data and causal designs, the findings reported in this article cannot be explained in terms of what

informed adolescents' varied perceptions of caregiving resources. Consequently, follow-up phenomenological and/or quasi-experimental studies are necessary (Creswell, 2012). Finally, the PRYM is a self-report measure. Self-report instruments are mostly associated with the likelihood of item and construct biases, even though some literature argues against this (Haefel & Howard, 2010). However, the use of measurement invariance was an attempt to avoid such problematic items and constructs.

Ungar (2011, 2012, 2014) hypothesised that it is the responsibility of the social ecology to make meaningful resources available in order to promote resilience and the responsibility of adolescents to make good use of such resources. In the light of the findings of this study, there is a need for large-scale, longitudinal research to further investigate the centrality of adolescents' perceptions of caregiving to meaningful resource-use. There is also a need for research with a social-change agenda to investigate how social ecologies can promote and/or advocate for life-worlds that facilitate meaningful caregiving (Schatz & Walker, 1995).

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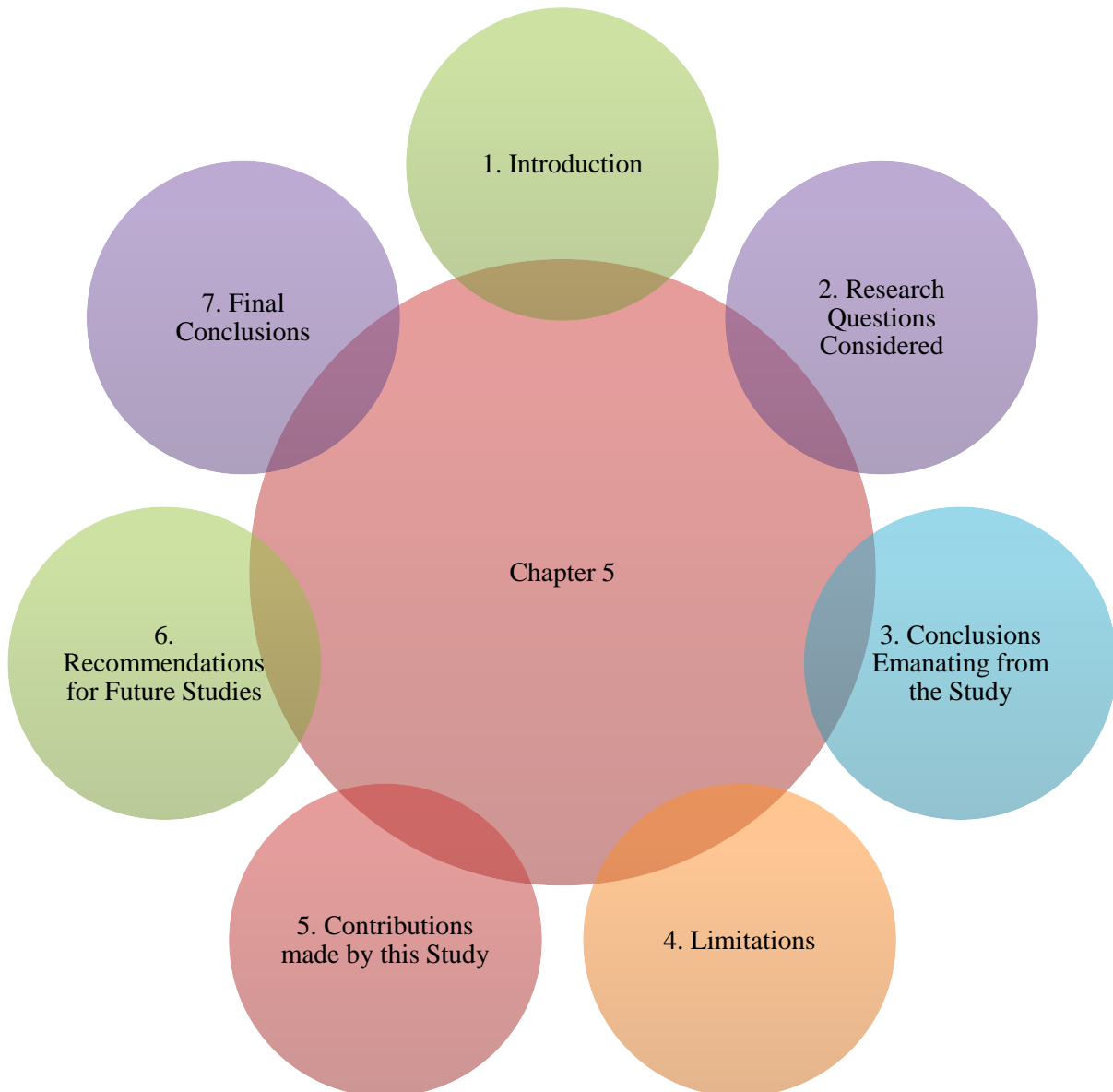
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CHAPTER 5

Conclusions, Limitations, and Recommendations for Future Studies



1. INTRODUCTION

The purpose of this chapter is to present and discuss conclusions from the three manuscripts that make up this study. Chapter 5 will revisit the research questions, elaborate on conclusions that emanated from them, discuss limitations, consider contributions made, and suggest recommendations for future studies. Lastly, final conclusions pertaining to this study will be discussed.

2. RESEARCH QUESTIONS RECONSIDERED

The purpose of this study was to investigate black South African youth resilience processes from a social-ecological perspective, using a sample of black South African youth. Accordingly, the purpose of this study was addressed by three sub-aims that resulted in six sub-questions. See Figure 1 for a summary of the sub-aims, sub-questions, methods used to address them, and the results that emerged in answer to these questions.

In Section 3 below, the researcher integrated the separate answers that emerged to provide a more composite understanding of what this study revealed about black South African youths' resilience processes.

Table 1

Summary of sub-aims, sub-questions, the methods used, and the results per manuscript

Sub-aim 1: Evaluate how well quantitative studies of South African youth resilience (1996 to 2012) have explained resilience processes in South African youth.

Sub-question 1: How well does existing quantitative research on South African youths' resilience explain the resilience processes of South African youth?

• In Manuscript 1, the researcher conducted a systematic review in order to determine international critiques of resilience research and to what extent South African studies of youth resilience failed to address such documented critiques. The following caveats were identified in South African youth resilience studies: conflicting conceptualisations of resilience, varying/absent conceptualisations of key terms, overreliance on cross-sectional research designs, undeclared or outdated theoretical frameworks, problematic measurement of resilience, inadequate information about psychometric properties of resilience scales, unsophisticated statistical analysis, and arbitrary decisions influencing analysis and interpretations. In spite of this, there were some steps in the right direction. The recent work of one study demonstrated the importance of individual, contextual, and cultural influence for the transactional processes of resilience in South African youth. Nevertheless, this synthesis flagged the need for future studies of South African youth resilience that are grounded in complex, person↔ecological conceptualisations and that employ culturally relevant measures and sophisticated statistical analyses.

Sub-aim 2: Model Ungar’s Social-Ecological Explanation of Resilience in a sample of black South African school-going youth, and investigate how resource (that is, schooling) meaningfulness contributes to resilience processes.

Sub-question 2: How does a model based on Ungar’s Social-Ecological Explanation of Resilience compare to alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures?

• Manuscript 2 modelled and tested Ungar’s Social-Ecological Explanation of Resilience in 730 school-going black South African youths and compared such a model against alternative measurement models based on a social-ecological understanding of resilience consisting of varied factor structures. Using latent variable analysis in Mplus 7.2, Ungar’s conceptual explanation illustrated that, in the context of this study, resilience processes were contingent on black South African youths interacting with both challenges and resources as well as on the meaning youths attached to available and accessible social-ecological resources (that is, schooling).

Sub-question 3: Is school engagement a culturally appropriate functional outcome of black South African youths’ resilience?

• In Manuscript 2, a structural model based on a social-ecological understanding of resilience indicated a significant relationship between resilience and school engagement. The significant relationship, as well as fit statistics, supported the reliability of the model specified. Thirty-two percent of the variance in school engagement was accounted for by resilience, indicating a practically significant relationship of large effect between resilience and school engagement.

Sub-question 4: What contributes to schooling as a meaningful resource?

• In Manuscript 2, multiple regression analyses indicated that three observed variables made a strong contribution: an apposite (that is, “right”), necessary (that is, “needed”), and respectful education

Sub-aim 3: Investigate youths’ perceptions of resilience-promoting resources.

Sub-question 5: Do youths’ self-reported perceptions of resilience-promoting resources differ significantly across two distinct groups (that is, groups identified as functionally resilient and formal service using) from the same social ecology?

• In order to compare youths’ perceptions in the functionally resilient and formal service-using samples, researchers employed measurement invariance testing and removed biased items before group means were compared in Manuscript 3. The results indicated that youths’ perceptions of resilience-promoting resources differed significantly with regard to caregiving resources (that is, physical and psychological caregiving). This difference was despite youths from both groups reporting similar perceptions of caregiver presence. Regardless of this similarity, the SU sample perceived less physical and psychological caregiving.

Sub-question 6: How do such significantly varied perceptions of resilience-promoting resources (if any) relate to youths’ reported use of formal supports?

• The association of the physical and psychological caregiving and formal support-usage was calculated in Manuscript 3 with the use of analyses of variance (ANOVA). The results indicated that higher perceptions of physical and psychological caregiving were related to more frequent use of voluntary resources in the FR sample. Also, increased perceptions of physical and psychological caregiving were associated with the FR sample’s decreased historic use of mandatory supports. Furthermore, higher perceptions of physical and psychological caregiving in the SU sample were associated with less reported historic and current use of substance abuse programmes, also a mandatory support.

3. CONCLUSIONS EMANATING FROM THE STUDY

In Manuscript 1, the researcher reported on a systematic review of international critiques of resilience research and the extent to which South African youth resilience studies addressed these critiques. The results implied that there was too little sophisticated, culturally relative quantitative evidence about South African youths' constructive transactions with their social ecologies towards positive outcomes. This limitation related to researchers using outdated theoretical frameworks or not declaring their theoretical frameworks, the abundance of cross-sectional studies, researchers' use of simple analyses (for example, univariate and bivariate), and the lack of culturally relevant measures.

Manuscript 2 addressed some of these concerns by grounding the research design in an up-to-date theoretical framework (that is, Ungar's Social-Ecological Explanation of Resilience) that respected the sociocultural life-worlds of South African youth. It also took advantage of the statistical strengths of multivariate analysis. The researcher, subsequently, modelled and tested Ungar's Social-Ecological Explanation of Resilience in a sample of school-going black South African youth using latent variable modelling. What was established was that South African youths adjusted well to challenges associated with poverty and violence because of resilience processes that were co-facilitated by social ecologies as predicted by Ungar (2011, 2012). The researcher, furthermore, concluded that school engagement was a functional outcome of the resilience processes among black South African youth. In particular, qualitative studies have found that some black South African youths consider education to be necessary because education is culturally valued and urged by cultural leaders, parents, and elders (Theron & Theron, 2014; Theron, et al. 2013); Manuscript 2 provided quantitative evidence of the aforementioned. Thus, in the context of this study, social ecologies should not only offer schooling as resources, but should ensure that schooling is culturally and contextually meaningful. Third, since meaningful resources (that is, schooling) encouraged resilience, Manuscript 2 also aimed to investigate what contributed to schooling as a meaningful resource. It emerged that an apposite, necessary and respectful education was a meaningful one.

Manuscript 3 provided deeper insight into aspects of the black South African youth resilience process. Manuscript 3 aimed to investigate youths' self-reported perceptions of resilience-promoting resources (that is, individual, caregiver, and contextual resources) and how these

perceptions might/might not differ significantly across two distinct groups from the same social ecology (that is, groups identified as functionally resilient and formal service-using). Also, Manuscript 3 aimed to understand how such significantly varied perceptions of resilience-promoting resources (if any) related to youths' reported use of formal supports, if at all. What emerged was that positive perceptions of caregiving (that is, physical and psychological) were crucial to youths' use of resilience-promoting resources and subsequent functional outcomes. Social ecologies should, therefore, encourage caregiving and not only rely on providing meaningful resources. The aforementioned conclusion resulted in implications for both caregivers and practitioners. Firstly, caregivers need to prioritise relationship-building and understand that caregiving is about more than caregiver presence. Secondly, practitioners also need to provide physical and psychological caregiving that includes respecting youths' agency and having/gaining more knowledge of youths' values in order to provide meaningful, culturally appropriate, resilience-supporting services. Lastly, those concerned with youths and their ability to overcome adversities (for example, academics, researchers, practitioners, caregivers, and youth care-workers) should advocate for change in policy and law, so that social ecologies will not obstruct caregivers' capacity to provide physical and psychological care, and/or youths' capacities to elicit care.

In conclusion, taken together, this study allowed a more detailed understanding of the resilience processes of 1 137 black South African youths. It provided sophisticated quantitative proof that their positive outcomes required interaction with both challenges and resources, as well as the meaning youths attached to available and accessible social-ecological resources (Ungar, 2011, 2012). Education, in particular, emerged as a culturally relevant resource that was more likely to be meaningful to black South African youths when it was perceived as apposite, necessary, and respectful (Theron & Theron, 2014; Theron et al., 2013). Furthermore, black South African youths' perceptions of caregiving resources were central to their resilience processes, as their use of formal resources reflected their perceptions of caregiving resources. In instances of higher perception of caregiving, black South African youths made more use of voluntary formal resources and less use of mandatory formal resources. Thus, the social ecology (particularly meaningful education resources and caregiving resources) was key to the resilience processes of the black South African youths who participated in the Pathways to Resilience Research Project.

4. LIMITATIONS

Although this study yielded a more detailed understanding of the resilience processes of black South African youths, this contribution should be read against a number of methodological limitations. These include the following:

Manuscript 1 made use of a specific set of selection criteria in order to identify international critiques of youth resilience studies as well as South African studies of youth resilience. The exclusion of studies not published in English and of unpublished theses, articles not available online, or articles without “review”, “issues”, “critique”, “commentary”, “evaluation”, “frameworks”, “future directions”, “research development”, and “resilience/resiliency/resilient” in their titles, keywords, or abstracts could have excluded important international critique or quantitative studies of youth resilience. Thus, sampling bias is possible due to the sampling of studies pertaining to this specific set of selection criteria (He & Van de Vijver, 2015).

Moreover, Manuscript 1 highlighted the limitations of cross-sectional designs. The Pathways to Resilience Research Project (www.resilienceresearch.org) was designed as a cross-sectional study. Therefore, the results reported in this study only provided a time-limited understanding of black South African youths’ resilience processes due to the absence of causal designs (see Manuscripts 2 and 3) (Creswell, 2012; Monette, Sullivan, & DeJong, 2011). In other words, although this researcher was advantaged in being able to access the South African Pathways to Resilience Research Project data set, her choice to work with a data set that was designed by an international team of researchers did mean that she inherited a data set that had limitations (also see below).

The measurement instrument (that is, PRYM) that informed the data was of a self-reporting nature (see Manuscripts 2 and 3). Furthermore, no survey of caregivers’ or relevant adults’ understandings of black South African youths’ resilience processes, or barriers to these processes, was included, similar to the study of Afghan youths’ resilience (see Panter-Brick, Eggerman, Gonzalez, & Safdar, 2009). As a result, the information gathered regarding resources and risk within youths’ social ecologies was limited to youths’ own perceptions and could result in possible construct and item biases (Chen, 2008; He & Van de Vijver, 2015).

However, in Manuscript 3, the researchers did include procedures to assess measurement invariance in an attempt to investigate item and construct biases for different groups.

The data generated in the South African Pathways to Resilience Research Project were limited in other ways. For example, these data did not include levels of caregiver education/employment or income level, which could have affected youth perceptions of resilience-promoting resources, since youths' membership in disadvantaged families (that is, being unemployed, a low education level) has been associated with lower experiences of caregiving (Jeon et al., 2014; Kwon & Wickrama, 2014) (see Manuscript 3). Across all five country sites, the Pathways to Resilience Research Project assumed poverty, given the residential areas from which participants came. Although residential area is typically used as a proxy for poverty in South African studies (Swartz & Bhana, 2009), this replication in the Pathways to Resilience Research Project limited the data, since no measurement of poverty was available for analysis. The Pathways to Resilience Research Project data set was also limited to one geographical region and was, therefore, not representative of all black youth in South Africa (Creswell, 2012).

Also, the data generated in the Pathways to Resilience Research Project included youth perceptions of resources, but did not account for what influenced these perceptions. It is possible that positive/adverse experiences preceding data generation could have influenced how youths perceived specific resources at that point in time (see Manuscript 3). To account for what influenced youths' perceptions of resources, a qualitative follow-up study is needed.

Lastly, only small samples of functionally resilient and formal service-using youths were available in the current data set, restricting the researcher's assessment of metric and scalar variance regarding sex and age with the use of latent variable modelling (Byrne, 2012) (see Manuscript 3). In addition, full scalar invariance was not achieved in Manuscript 3, and the researcher did not further investigate the one invariant factor loading, as well as two invariant thresholds, since that was not the purpose of the manuscript. Moreover, common method variance is another problematic limitation in latent variable modelling (Johnson et al., 2011; Podsakoff et al., 2003). However, in Manuscript 2, the researcher tested for common method variance by comparing a one-factor model with alternative measurement models. Furthermore, the researcher did not measure the effect of response styles between the samples in Manuscript 3, which could have resulted in biases (that is, method or instrument bias) (He

& Van de Vijver, 2015). However, this is not as problematic, since it was not the goal of Manuscript 3 to compare cultural groups.

5. CONTRIBUTIONS MADE BY THIS STUDY

The contribution of the current study was fourfold, as set out below.

5.1 Aspects of Quantitative Studies of South African Youth Resilience that Necessitate Attention

Numerous concerns regarding quantitative studies of South African youth resilience resulted from Manuscript 1. Subsequently, results flagged that prospective quantitative studies of South African youth resilience needed to:

- ground quantitative research designs in up-to-date theoretical frameworks in ways that respected the sociocultural life-worlds of South African youths;
- take advantage of the statistical strengths of multivariate analysis;
- conduct studies using available scales, while employing various methods of multivariate analysis to establish contextual and cultural equivalence and avoid potentially biased findings;
- prioritise the development and validation of contextually and culturally suitable instruments;
- publish the psychometric results of scales to further stimulate the development, validation, and use of contextually and culturally appropriate resilience scales with South African youth;
- give careful consideration to how experiences of risk (lived versus exposed) and functional outcomes are chosen, measured, and reported;
- use validated risk and protective factor measures, as well as culturally and contextually appropriate cut-off scores, to ensure that actual at-risk, resilient youths are being investigated, potentially evading sampling biases; and
- prioritise longitudinal studies of South African youth resilience to further understand the long-term wellness of South African youths who are at-risk.

All of the above potentially support theoretical and methodological rigour in future quantitative investigations of South African youths' resilience processes.

5.2 Theoretical Contributions to Resilience Theory

The measurement model based on Ungar's Social-Ecological Explanation of Resilience (Manuscript 2) offered statistical detail that validated prior hypotheses (Ungar, 2011, 2012) and narrative South African accounts (Malindi & Machenjedge, 2012; Theron, 2013; Theron et al., 2013) of the relationship between an individual youth and his/her environment, where the individual asked for, or steered towards, support, and the social ecology offered culturally meaningful resources. In addition, the results from Manuscript 2 confirmed local (Theron et al., 2013) and international (Motti-Stefanidi & Masten, 2013; Ungar & Liebenberg, 2013) literature that reported school engagement as a functional outcome of resilience processes. Manuscript 2 also provided empirical statistical evidence that resilience processes were related to youths' perceptions of how apposite and necessary culturally salient resources were. Thus, understanding that education that was interpreted as **apposite** and **necessary** influenced youths' resilience processes extended understandings of what made education resources popular with black South African youth. The model, based on Ungar's Social-Ecological Explanation of Resilience (Manuscript 2) added to nascent theories of resilience as a social-ecological construct (Wu et al., 2014) using latent variable modelling. Lastly, the results from Manuscript 3 suggested that positive perceptions of physical and psychological caregiving were key to youths' use of resources and subsequent positive outcomes of resilience processes. As no previous studies provided quantitative evidence that perceptions of caregiving influenced youths' resource-use, this finding extended resilience literature.

5.3 Methodological Contributions

Measurement invariance testing and evidence found for the lack of invariance of two items (see Manuscript 3) confirmed the need for caution against assumptions of measurement invariance, even though groups being compared derived from the same social ecology. In addition, Manuscripts 2 and 3 answered Masten (2012, 2013), Panter-Brick (2015), and Manuscript 1's call for studies of resilience that utilised sophisticated and culturally appropriate methodologies.

5.4 Contributions to Practice

Implications arose from the findings of Manuscript 3 that could possibly contribute to practice:

- Practitioners (for example, psychologists and social workers) need to guide caregivers to prioritise relationship-building and to understand that caregiving is about more than caregiver presence.
- Practitioners too, need to provide physical and psychological caregiving. This includes respecting youths' agency and having/gaining more knowledge of youths' values in order to provide a meaningful, culturally appropriate, resilience-supporting service.
- Academics, researchers, practitioners (for example, psychologists and social workers), caregivers, and youth care-workers should lobby for law and policy change that will support equitable social ecologies that do not obstruct caregivers' physical and psychological capacity to care.

6. RECOMMENDATIONS FOR FUTURE STUDIES

The recommendations below respond to the limitations noted above:

Manuscript 1 deepened Theron and Theron (2010)'s review of studies of South African youth resilience. Similarly, to continue to promote quality resilience research, a follow-up review is needed of how the critiques made public in Manuscript 1 were applied and how such application supported resilience research or not. In addition, future systematic review studies should engage in additional data generation methods to avoid possible sampling biases. For example, Panter-Brick et al. (2014) did a systematic review of parenting interventions that engaged fathers. In addition to a systematic database search, the authors used thematic hand searches to access gray literature (that is, literature not in a search engine database), such as books/chapters, conference proceedings, and/or NGO databases. As suggested by McDonagh, Peterson, Raina, Chang, and Shekelle (2013), researchers could also engage in dual review; this entails two independent reviewers selecting articles based on the inclusion criteria.

Manuscripts 1 to 3 highlighted the absence of long-term understandings of South African youth resilience; as a result, longitudinal studies of South African youth resilience are overdue. Such studies should also investigate the influences of youths' perceptions, over time, of the suitability and necessity of schooling (see Manuscript 2) as well as how varied perceptions influence resource-use (see Manuscript 3). There is also a need for phenomenological follow-up studies and/or causal designs (for example, quasi-experimental studies) to further investigate the influences of youths' perceptions of the suitability and necessity of schooling (see Manuscript 2) as well as how varied perceptions of resilience-promoting resources influence resource-use (see Manuscript 3).

Due to the small sample sizes used in Manuscript 3, replication studies are needed with larger sample sizes to validate youths' varied perceptions of caregiving resources. Such replication studies are also needed in Europe, Asia, the Americas, Australasia, and the rest of Africa in order to quantitatively validate the model based on Ungar's Social-Ecological Explanation of Resilience in other populations of youths (see Manuscript 2) and to further investigate youths' self-reported perceptions of resilience-promoting resources (see Manuscript 3). These follow-up studies will, furthermore, allow researchers to assess metric and scalar measurement invariance of sex and gender using latent variable modelling. Moreover, future studies should include representative samples of black youth in South Africa. Power analysis should be considered when sampling is done (Creswell, 2012).

Researchers should moreover prioritise the investigation of invariant factor loadings and intercepts/thresholds during measurement invariance in order to fully understand why items are incomparable across samples. In addition, common method invariance remains problematic in latent variable modelling; however, researchers should compare their hypothesised models against one-factor models to avoid problematic issues such as inflated or deflated correlations between items within a latent variable. Furthermore, Van de Vijver, Baena, and He (2014) has urged researchers to also investigate response styles (e.g. acquiescence, extremity, midpoint responding, social desirability) as causes for bias.

Lastly, due to the Pathways to Resilience Research Project data set being limited to one geographical region, the generalisation of this study's results needs to be confirmed using a systematic study that includes the other eight provinces in South Africa. In addition, future youth resilience studies should also include demographic and social indicators (for example,

employment, education, socio-economic status, and health status), allowing for investigations of the mediating and moderating effects of such indicators on youth resilience processes.

7. FINAL CONCLUSIONS

The purpose of this study was achieved by first conducting a systematic review that pinpointed aspects of quantitative South African youth resilience studies that required consideration. When the researcher employed sophisticated quantitative methodologies, the youth ↔ social-ecological transactions of resilience processes were highlighted. Also, this study emphasised the importance of care for subsequent resource-use and so emphasised the need for attention to structural and other barriers to care. In the light of this finding, those concerned about the youths' well-being are urged to lobby for law and policy change in order to support social ecologies to further support physical and psychological caregiving among youth who are at-risk of negative outcomes due to experiences of poverty and violence.

ADDENDUM A

Pathways to Resilience Youth Measure (PRYM): Functionally Resilient and School-going Samples

PATHWAYS TO RESILIENCE YOUTH MEASURE

For Office Use Only

Participant ID:

Country ID: South Africa

Site ID: Bethlehem / QwaQwa

Referral Agency:

Department ID:

Administration:

Date of Administration:

Thank you for participating in the Pathways to Resilience Research Project. Please answer the following questions as honestly as you are comfortable with. There are no wrong answers.

We want to learn about the sorts of help that works best for young people and about the types of services they use. Before answering the attached questionnaire, please can you tell us if you are **currently** or have used **during the last 6 months**, any of the following?

- [1] Community-based service provider (e.g. Boitelo Youth Network, Hlokomela wa Heno, Tshwaranang, Tswelopele, etc.)

- [2] Correctional Services / Justice (e.g. been questioned by the police, been on probation, had to do community service, victim-offender mediation, correctional supervision, restorative justice, family time order, compulsory schools attendance; after-care services; reporting orders, etc.)

- [3] Educational Support (e.g. Life Skills Training, Career Guidance, Counselling, Social Worker from Education Department, Psychologist from Education Department, Learning Support Facilitator, etc.)

- [4] Child, Youth and Family Services (Social services) (e.g. Social worker from social Development, Foster placement, Drop-in-centre, Shelter, Children's Home, etc.)

- [5] Mental Health (e.g. Counsellor, Psychologist or Psychiatrist, Drug Addiction Program, etc.)

- [] None of the above

SECTION A:

1. How old are you now? _____

2. What is your gender? Female [1] Male [2]

3. People often identify themselves with a particular racial group. To which of the following groups do you belong? (Mark or check the one that best describes you).

[1] Black

[2] White

[3] Coloured

[4] Indian

[5] Other (please specify): _____

4. What is your ethnicity? (For example, Tswana, Zulu, Sotho, Xhosa, Afrikaans, English, etc.)Please list as many groups as you want to.

5. Are you in school?

[1]Yes

[2] No

What was the last grade you passed? _____

F6. Who are you living with now?

[1] Biological parents (both)

[2] Single biological parent (mother)

[3] Single biological parent (father)

[4] Guardian specify _____

[5] Foster parent specify _____

[6] Shelter

[7] Children's home

[8] I live on my own

[9] Child headed family

[10] Other (please describe) _____

7. If you said you were living with one or more parents for Question 6, is one or more of these people your birth parents?

[1] Yes

[0] No

[99] Not applicable

8a. How many brothers and sisters (including step-siblings and half-siblings) do you know of? _____

8b. How many brothers and sisters do you live with? _____

9. What language(s) do you speak at home? (Please list in order of importance)

10. Are you currently in a relationship, or dating someone, or having an affair?

[1] Yes

[0] No

11. Do you have a child?

[1] Yes (Go to question 12)

[0] No (Go to question13)

12. Are you caring for your child at the moment?

[1] Yes

[0] No

[99] Not applicable

13. How many bedrooms are in your house? _____

14. How many people (including yourself) normally sleep at this house?

Number of adults _____

Number of children/youth _____

15. How many meals do you eat per day? _____

SECTION B:

How much do the sentences below DESCRIBE YOU? Circle your answer.

	Does NOT describe me at All	Describes me a little	Describes me somewhat	Describes quite a bit	Describes me A LOT
1. I cooperate with people around me	Not at all	A little	Somewhat	Quite a bit	A lot
2. I try to finish what I start	Not at all	A little	Somewhat	Quite a bit	A lot
3. People think that I am fun to be with	Not at all	A little	Somewhat	Quite a bit	A lot
4. I am able to solve problems without hurting myself or others (for example without using drugs and/or without being aggressive)	Not at all	A little	Somewhat	Quite a bit	A lot
5. I know my own strengths	Not at all	A little	Somewhat	Quite a bit	A lot
6. Spiritual beliefs make me strong	Not at all	A little	Somewhat	Quite a bit	A lot
7. I think it is important to serve my community	Not at all	A little	Somewhat	Quite a bit	A lot
8. My friends are on my side	Not at all	A little	Somewhat	Quite a bit	A lot
9. My friends stand by me during difficult times	Not at all	A little	Somewhat	Quite a bit	A lot

To what extent do the sentences below DESCRIBE YOU?

10. I try to be kind to other people.	Not true	Somewhat true	Certainly true
11. I usually share things with others, for example clothes, food etc.	Not true	Somewhat true	Certainly true
12. I help when someone is hurt, upset or sick	Not true	Somewhat true	Certainly true
13. I am kind to people younger than me	Not true	Somewhat true	Certainly true
14. I often offer help to others (parents, teachers, peers etc.)	Not true	Somewhat true	Certainly true
15. I have one or more good friends	Not true	Somewhat true	Certainly true
16. Many other people my age like me	Not true	Somewhat true	Certainly true

How many of your CLOSE FRIENDS do the following activities?

17. Smoke cigarettes	None	A Few	Most	All
18. Drink alcohol	None	A Few	Most	All
19. Do drugs	None	A Few	Most	All

20. Are sexually involved	None	A Few	Most	All
21. Break the law (other than by using illegal drugs)	None	A Few	Most	All

To what extent do the sentences below DESCRIBE YOUR SITUATION? When we say “caregiver(s)” we mean the Person or people who look after you the most.

22. My caregiver(s) watch me closely	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
23. My caregiver(s) know a lot about me	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
24. If I am hungry, there is something to eat	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
25. I talk to my caregiver(s) about how I feel	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
26. My caregiver(s) stand(s) by me during difficult times	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
27. I feel safe when I am with my caregiver(s)	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
28. I enjoy my caregivers cultural and family traditions	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable

To what extent do the sentences below DESCRIBE YOUR SITUATION?

29. I would rather be alone than with people of my own age	Not true	Somewhat true	Certainly true
30. Other people pick on me or bully me	Not true	Somewhat true	Certainly true
31. I get along better with adults than with people my own age	Not true	Somewhat true	Certainly true

How many days a week is your parent/guardian/caregiver at home when you do the following things?

32. When you wake up in the morning?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable
33. When you come home from school or work?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable
34. When you go to bed at night?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable

35. Think of the person that is most like a mother and most like a father to you, that you spend a lot of time with. Who are these people? Please mark ONLY one “X” in each column.

	A. My mother figure is my . . .	B. My father figure is my . . .
Biological mother/father	1	1
Adoptive mother/father	2	2
Stepparent, girlfriend/boyfriend or partner of legal guardian	3	3
Foster mother/father	4	4

Grandparent, aunt/uncle, or other relative	5	5
Another person (please specify)	6	6
Nobody	7	7

36. Thinking of the mother and father figures you identified in Question 35, how much affection do you receive from each of these people? Please mark one "X" in each column.

	A. Mother figure	B. Father figure
A great deal	3	3
Some	2	2
Very little	1	1
None at all	0	0
Not applicable	99	99

37. Overall, how would you describe your relationship with the mother and father figures you identified above? Please mark one "X" in each column.

	A. Mother figure	B. Father figure
Very close	3	3
Somewhat close	2	2
Not very close	1	1
Not applicable	99	99

To what extent do the sentences below describe your situation at school?

38. Getting an education is important to me	Not at all	A little bit	Some what	Quite a bit	A lot
39. I feel I belong at my school	Not at all	A little bit	Some what	Quite a bit	A lot
40. Teachers at my school who see learners hurting each other will do something to stop them	Not at all	A little bit	Some what	Quite a bit	A lot

41. How far do you hope to go with your education? (Choose only one) I hope to complete ...

- [1] Grade 9
- [2] High school
- [3] Further Education and training (FET)/College
- [4] University
- [5] Masters/doctoral degree
- [0] I don't know
- [6] Other _____

42. During the last 12 months (or the last full school year you attended), how many times did you bunk A DAY of school without permission?

- [0] Never
- [1] Once
- [2] A few times a year
- [3] Once a month
- [4] A couple of times a month
- [5] Once a week
- [6] A few times a week
- [7] Everyday

43. During the last 12 months (or during the last full school year you attended), how many times did you get SUSPENDED?

- [0] Never
- [1] Once
- [2] Once, for lack of attendance
- [3] A few times a year
- [4] Once a month
- [5] A couple of times a month
- [6] Once a week

44. Were you ever EXPELLED from school?

- [1] Yes
- [0] No

45. Have you ever FAILED a grade or had to repeat a year?

- [1] Yes
- [0] No

To what extent do the sentences below describe you?

46. I have role models (people I look up to)	Not at all	A little bit	Some what	Quite a bit	A lot
47. I know how to behave in different social situations (e.g. with my friends/ at church)	Not at all	A little bit	Some what	Quite a bit	A lot
48. I am given opportunities to show others that I am becoming an adult and can act responsibly	Not at all	A little bit	Some what	Quite a bit	A lot
49. I know where to go in my community to get help	Not at all	A little bit	Some what	Quite a bit	A lot
50. I have opportunities to develop skills that will be useful later in life (like job skills and skills to care for others)	Not at all	A little bit	Some what	Quite a bit	A lot
51. I am proud of my cultural background	Not at all	A little bit	Some what	Quite a bit	A lot

52. I am treated fairly in my community	Not at all	A little bit	Some what	Quite a bit	A lot
53. I participate in organized activities (e.g. church, mosque, bible study)	Not at all	A little bit	Some what	Quite a bit	A lot
54. I enjoy my community's traditions	Not at all	A little bit	Some what	Quite a bit	A lot
55. I am proud of my nationality	Not at all	A little bit	Some what	Quite a bit	A lot

SECTION C:

Thinking about your experiences at your school, please indicate to what extent you agree with the following sentences.

1. Overall, I am satisfied with my schooling	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
2. I feel like I have choices at school	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
3. My teachers and/or other school staff stand by me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
4. At school, there is an adult I can talk to when I'm having a problem	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
5. I have a say in school activities, and can ask for what I need	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
6. I receive an education that is right for me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
7. It is easy for me to come to school	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
8. The location of my school is convenient	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
9. Teachers and/or staff respect my religious and spiritual beliefs	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
10. Teachers and/or staff speak in a way that I understand	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
11. Teachers and/or staff are sensitive to my cultural background	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
12. I am now better able to cope when things go wrong	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
13. This was the education I needed	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
14. I needed more help at school, but I couldn't get it	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

15. What has been most helpful about your school?

16. What has been least helpful about your school?

17. Overall, how would you rate your school?

[3] Very helpful

[2] Somewhat helpful

[1] Not helpful at all

Please tick all of the services you have had during your entire life. How often did you use each service?

	How often have you used each of these services?	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Health Services	18. A nurse	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	19. Doctor	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	20. Clinic	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	21. Specialist doctor (a doctor you were sent to by your family doctor. E.g. for skin problems, allergies.)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	22. Home based care	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	23. Dentist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	24. Emergency services at a hospital	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	25. Been admitted to hospital	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Educational Services	27. Support educator	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	28. Occupational therapist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	29. Extra help from a teacher	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	30. Special school	Never	Once in	A couple	3 times	Needed, but could not get

		needed it	my life	of times	or more	it
	31. Speech therapist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	33. Social worker, therapist or psychologist you saw at the school	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Social Services	34. Social worker	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	35. Foster placement with foster parent	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	36. Foster home	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	37. Drop - in centre	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	38. Home based care	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	39. Intensive family intervention to deal with family or individual problems	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	40. Homeless shelter	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	41. Special recreation program or holiday program	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Mental Health Services	42. A counsellor, psychologist or psychiatrist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	43. Group therapy	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	44. Substance abuse or addictions services	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	45. Support group (e.g. Soul Buddyz, Addaaf, Naledi ya bophelo)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	46. Medication (prescribed for depression, anxiety, ADHD, etc.)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	47. Hospital treatment for things like anorexia, anxiety, depression or another mental health problem	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	48. A help-line	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Criminal Justice Services	49. Gone to court not as a witness (when charged)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	50. Been questioned by police not as a	Never	Once in	A couple	3 times	Needed, but

	witness	needed it	my life	of times	or more	could not get it
	51. Been put in jail	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	52. Been on probation	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	53. Had to do community service	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Cultural or Spiritual Services	54. Traditional healer	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	55. Pastoral or spiritual counsellor	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	56. Religious or cultural leader	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	57. Community elder	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it

Are there other services you have used? Please list them below, then circle how often you have used them.	Once in my life	A couple of times	Three times or more
58.	Once in my life	A couple of times	Three times or more
59.	Once in my life	A couple of times	Three times or more
60.	Once in my life	A couple of times	Three times or more

61. Please think of a service/program/youth group you have had a lot of contact with recently. If you ticked a service on the front page, you might want to think of that one. What was it?

This service was:

[3] Very helpful

[2] Somewhat helpful

[1] Not helpful at all

Thinking about this service (see Question 61), please indicate to what extent the following sentences describe your experience with this service.

62. Overall, I am satisfied with the service I received	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
63. I helped choose this services	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
64. The people helping me stood by me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

65. I felt I had someone within the service to talk to when I was in trouble	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
66. I had a say over how this service was delivered to me, and could ask for what I wanted	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
67. I received the service that was right for me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
68. I could get the service when I needed it	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
69. The location of the service was convenient, and easy to get to	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
70. Staff respected my religious and spiritual beliefs	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
71. Staff spoke in a way that I understood	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
72. Staff were sensitive to my cultural background and personal values	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
73. I am now better able to cope when things go wrong	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
74. This was the service I needed	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
75. There was a service I needed, but couldn't get	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

76. What has been most helpful about this service?

77. What could have made this service better?

SECTION D:

To what extent do the sentences below describe your neighbourhood? Circle one answer for each question.

1. People in my community can be trusted	Not at all	A little	Quite a bit	A lot	Don't know
2. People in my community get along with each other	Not at all	A little	Quite a bit	A lot	Don't know
3. There is litter, broken glass or rubbish around my community	Not at all	A little	Quite a bit	A lot	Don't know

4. If a group of youth in your community was bunking school, how likely is it that your neighbours would do something about it?

[3] Very likely

[2] Likely

[1] Unlikely

[0] Very unlikely

[98] Unsure

5. If a child or young person was being abused by his or her family, how likely is it that your neighbours would report it?

[3] Very likely

[2] Likely

[1] Unlikely

[0] Very unlikely

[98] Unsure

6. How safe do you consider your community to be?

[2] Very safe

[1] Somewhat safe

[0] Not safe at all

7. How would you describe your school (or the last school you attended)? Would you say: My school is/was a bad place to be (I don't want to be there) or My school is/was a good place to be (I want to be there)? Circle one answer:

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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SECTION E:

How often have you felt like this during the past WEEK? Please circle the answer that describes YOU.

1. I had times that I cried	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
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2. I felt depressed	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
3. I was happy	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
4. I felt that I could not stop feeling sad even with help from my family or friends	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
5. I felt hopeful about the future	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
6. I enjoyed life	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
7. I had trouble keeping my mind on what I was doing	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
8. I did not feel like eating; my appetite was poor	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
9. My sleep was restless	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
10. I felt like I was too tired to do things	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
11. I felt that people disliked me	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
12. I felt lonely	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)

How many times in the past year have you done the following things?

13. Stolen something from a shop	Never	1 Time	2 Times	3-4 Times	5 Or More Times
14. Got into trouble with the police	Never	1 Time	2 Times	3-4 Times	5 Or More Times
15. Hit or beat up someone	Never	1 Time	2 Times	3-4 Times	5 Or More Times
16. Damaged property (such as breaking windows, scratching a car, putting paint on walls, etc.)	Never	1 Time	2 Times	3-4 Times	5 Or More Times
17. Carried a weapon (such as a gun, knife, traditional weapon, etc.)	Never	1 Time	2 Times	3-4 Times	5 Or More Times

How many times in the past year have you done the following things?

18. Smoked cigarettes	Never	Once or twice	Occasionally	Regularly
19. Used chewing tobacco or snuff	Never	Once or twice	Occasionally	Regularly
20. Drank beer, wine, alcoholic drinks	Never	Once or twice	Occasionally	Regularly
21. Sniffed glues, sprays or petrol	Never	Once or twice	Occasionally	Regularly
22. Used dagga	Never	Once or twice	Occasionally	Regularly
23. Used any other drug, such as ecstasy, speed, heroin, crack or cocaine, mandrax, etc.	Never	Once or twice	Occasionally	Regularly
24. Taken steroids without a doctor's prescription	Never	Once or twice	Occasionally	Regularly
25. Had willing sexual intercourse	Never	Once or twice	Occasionally	Regularly
26. Had unprotected sexual intercourse	Never	Once or twice	Occasionally	Regularly

To what extent do the sentences below DESCRIBE YOU?

27. I lose my temper	False	Sometimes	True
28. I do as I am told	False	Sometimes	True
29. I fight a lot	False	Sometimes	True
30. I am accused of lying or cheating	False	Sometimes	True
31. I take things that are not mine from home, school, or elsewhere	False	Sometimes	True
32. I pick on or bully others (using SMS, notes, physically or emotionally)	False	Sometimes	True

33. In the past year, what things have you experienced that have improved your life? For each experience, how big an influence did it have on your life? (For example, getting a job, moving, passing my grade, travelling somewhere special, forming a special relationship with someone, etc.)

Experience that improved my life

Effect

a. _____

b. _____

c. _____

Not at all	A little	Somewhat	Quite a bit	A lot
Not at all	A little	Somewhat	Quite a bit	A lot
Not at all	A little	Somewhat	Quite a bit	A lot

b. A few times a year Once a month A couple of times a month Once a week A few times a week Everyday

c. A few times a year Once a month A couple of times a month Once a week A few times a week Everyday

How often do you do each of these activities?

3. Volunteer (help others without pay) your time?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
4. Do paid work?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
5. Go out with your friends?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
6. Been a leader in a group or organization?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday

How often in the past year have the following reasons stopped you from participating in community or school activities/attending school?

7. Not having enough money	Not at all	A little	Quite a bit	A lot	Don't know
8. Not having transportation	Not at all	A little	Quite a bit	A lot	Don't know
9. Your parent(s)/guardian(s)/caregiver(s) tell you that you can't participate	Not at all	A little	Quite a bit	A lot	Don't know
10. You have too many responsibilities at home	Not at all	A little	Quite a bit	A lot	Don't know
11. You are working at a paid job	Not at all	A little	Quite a bit	A lot	Don't know
12. You didn't feel comfortable participating	Not at all	A little	Quite a bit	A lot	Don't know

On an average school or workday, how many hours do you spend doing the following activities?

13. Working on homework (<i>If you are not in school, please do not answer</i>)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
14. Watching TV	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
15. Playing video games	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
16. On the internet (but not playing video games)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours

17. Talking to friends electronically (by SMS, etc.)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
18. Doing chores/jobs at home	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
19. Reading for pleasure	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
20. Improving one of your skills	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
21. Exercising or being physically active	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours

ADDENDUM B

Pathways to Resilience Youth Measure (PRYM): Formal Service-using Sample

PATHWAYS TO RESILIENCE YOUTH MEASURE

For Office Use Only

Participant ID:

Country ID: South Africa
Site ID: Bethlehem / QwaQwa
Referral Agency:
Department ID:
Date of Administration:

Administration:

Thank you for participating in the Pathways to Resilience Research Project. Please answer the following questions as honestly as you are comfortable with. There are no wrong answers.

We want to learn about the sorts of help that works best for young people and about the types of services they use. Before answering the attached questionnaire, please can you tell us if you are **currently** or have used **during the last 6 months**, any of the following?

- [1] Community-based service provider (e.g. Boitelo Youth Network, Hlokomela wa Heno, Tshwaranang, Tswelopele, etc.)
- [2] Correctional Services / Justice (e.g. been questioned by the police, been on probation, had to do community service, victim-offender mediation, correctional supervision, restorative justice, family time order, compulsory schools attendance; after-care services; reporting orders, etc.)
- [3] Educational Support (e.g. Life Skills Training, Career Guidance, Counselling, Social Worker from Education Department, Psychologist from Education Department, Learning Support Facilitator, etc.)
- [4] Child, Youth and Family Services (Social services) (e.g. Social worker from social Development, Foster placement, Drop-in-centre, Shelter, Children's Home, etc.)
- [5] Mental Health (e.g. Counsellor, Psychologist or Psychiatrist, Drug Addiction Program, etc.)
- [] None of the above

SECTION A:

1. How old are you now? _____

2. What is your gender? Female [1] Male [2]

3. People often identify themselves with a particular racial group. To which of the following groups do you belong? (Mark or check the one that best describes you).

[1] Black

[2] White

[3] Coloured

[4] Indian

[5] Other (please specify): _____

4. What is your ethnicity? (For example, Tswana, Zulu, Sotho, Xhosa, Afrikaans, English, etc.)Please list as many groups as you want to.

5. Are you in school?

[1]Yes

[2] No

What was the last grade you passed? _____

F6. Who are you living with now?

[1] Biological parents (both)

[2] Single biological parent (mother)

[3] Single biological parent (father)

[4] Guardian specify _____

[5] Foster parent specify _____

[6] Shelter

[7] Children's home

[8] I live on my own

[9] Child headed family

[10] Other (please describe) _____

7. If you said you were living with one or more parents for Question 6, is one or more of these people your birth parents?

[1] Yes

[0] No

[99] Not applicable

8a. How many brothers and sisters (including step-siblings and half-siblings) do you know of? _____

8b. How many brothers and sisters do you live with? _____

9. What language(s) do you speak at home? (Please list in order of importance)

10. Are you currently in a relationship, or dating someone, or having an affair?

[1] Yes

[0] No

11. Do you have a child?

[1] Yes (Go to question 12)

[0] No (Go to question13)

12. Are you caring for your child at the moment?

[1] Yes

[0] No

[99] Not applicable

13. How many bedrooms are in your house? _____

14. How many people (including yourself) normally sleep at this house?

Number of adults _____

Number of children/youth _____

15. How many meals do you eat per day? _____

SECTION B:

How much do the sentences below DESCRIBE YOU? Circle your answer.

	Does NOT describe me at All	Describes me a little	Describes me somewhat	Describes quite a bit	Describes me A LOT
1. I cooperate with people around me	Not at all	A little	Somewhat	Quite a bit	A lot
2. I try to finish what I start	Not at all	A little	Somewhat	Quite a bit	A lot
3. People think that I am fun to be with	Not at all	A little	Somewhat	Quite a bit	A lot
4. I am able to solve problems without hurting myself or others (for example without using drugs and/or without being aggressive)	Not at all	A little	Somewhat	Quite a bit	A lot
5. I know my own strengths	Not at all	A little	Somewhat	Quite a bit	A lot
6. Spiritual beliefs make me strong	Not at all	A little	Somewhat	Quite a bit	A lot
7. I think it is important to serve my community	Not at all	A little	Somewhat	Quite a bit	A lot
8. My friends are on my side	Not at all	A little	Somewhat	Quite a bit	A lot
9. My friends stand by me during difficult times	Not at all	A little	Somewhat	Quite a bit	A lot

To what extent do the sentences below DESCRIBE YOU?

10. I try to be kind to other people.	Not true	Somewhat true	Certainly true
11. I usually share things with others, for example clothes, food etc.	Not true	Somewhat true	Certainly true
12. I help when someone is hurt, upset or sick	Not true	Somewhat true	Certainly true
13. I am kind to people younger than me	Not true	Somewhat true	Certainly true
14. I often offer help to others (parents, teachers, peers etc.)	Not true	Somewhat true	Certainly true
15. I have one or more good friends	Not true	Somewhat true	Certainly true
16. Many other people my age like me	Not true	Somewhat true	Certainly true

How many of your CLOSE FRIENDS do the following activities?

17. Smoke cigarettes	None	A Few	Most	All
18. Drink alcohol	None	A Few	Most	All
19. Do drugs	None	A Few	Most	All

20. Are sexually involved	None	A Few	Most	All
21. Break the law (other than by using illegal drugs)	None	A Few	Most	All

To what extent do the sentences below DESCRIBE YOUR SITUATION? When we say “caregiver(s)” we mean the person or people who look after you the most.

22. My caregiver(s) watch me closely	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
23. My caregiver(s) know a lot about me	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
24. If I am hungry, there is something to eat	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
25. I talk to my caregiver(s) about how I feel	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
26. My caregiver(s) stand(s) by me during difficult times	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
27. I feel safe when I am with my caregiver(s)	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable
28. I enjoy my caregiver’s cultural and family traditions	Not at all	A little	Somewhat	Quite a bit	A lot	Not applicable

To what extent do the sentences below DESCRIBE YOUR SITUATION?

29. I would rather be alone than with people of my own age	Not true	Somewhat true	Certainly true
30. Other people pick on me or bully me	Not true	Somewhat true	Certainly true
31. I get along better with adults than with people my own age	Not true	Somewhat true	Certainly true

How many days a week is your parent/guardian/caregiver at home when you do the following things?

32. When you wake up in the morning?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable
33. When you come home from school or work?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable
34. When you go to bed at night?	No days	1 Day	2 Days	3 Days	4 Days	5 Days or more	Not applicable

35. Think of the person that is most like a mother and most like a father to you, that you spend a lot of time with. Who are these people? Please mark ONLY one “X” in each column.

	A. My mother figure is my . . .	B. My father figure is my . . .
Biological mother/father	1	1
Adoptive mother/father	2	2
Stepparent, girlfriend/boyfriend or partner of legal guardian	3	3
Foster mother/father	4	4

Grandparent, aunt/uncle, or other relative	5	5
Another person (please specify)	6	6
Nobody	7	7

36. Thinking of the mother and father figures you identified in Question 35, how much affection do you receive from each of these people? Please mark one "X" in each column.

	A. Mother figure	B. Father figure
A great deal	3	3
Some	2	2
Very little	1	1
None at all	0	0
Not applicable	99	99

37. Overall, how would you describe your relationship with the mother and father figures you identified above? Please mark one "X" in each column.

	A. Mother figure	B. Father figure
Very close	3	3
Somewhat close	2	2
Not very close	1	1
Not applicable	99	99

To what extent do the sentences below describe your situation at school?

	Not at all	A little bit	Some what	Quite a bit	A lot
38. Getting an education is important to me					
39. I feel I belong at my school					
40. Teachers at my school who see learners hurting each other will do something to stop them					

41. How far do you hope to go with your education? (Choose only one) I hope to complete ...

[1] Grade 9

[2] High school

[3] Further Education and training (FET)/College

[4] University

[5] Masters/doctoral degree

[0] I don't know

[6] Other _____

42. During the last 12 months (or the last full school year you attended), how many times did you bunk A DAY of school without permission?

- [0] Never
- [1] Once
- [2] A few times a year
- [3] Once a month
- [4] A couple of times a month
- [5] Once a week
- [6] A few times a week
- [7] Everyday

43. During the last 12 months (or during the last full school year you attended), how many times did you get SUSPENDED?

- [0] Never
- [1] Once
- [2] Once, for lack of attendance
- [3] A few times a year
- [4] Once a month
- [5] A couple of times a month
- [6] Once a week

44. Were you ever EXPELLED from school?

- [1] Yes
- [0] No

45. Have you ever FAILED a grade or had to repeat a year?

- [1] Yes
- [0] No

To what extent do the sentences below describe you?

46. I have role models (people I look up to)	Not at all	A little bit	Some what	Quite a bit	A lot
47. I know how to behave in different social situations (e.g. with my friends/ at church)	Not at all	A little bit	Some what	Quite a bit	A lot
48. I am given opportunities to show others that I am becoming an adult and can act responsibly	Not at all	A little bit	Some what	Quite a bit	A lot
49. I know where to go in my community to get help	Not at all	A little bit	Some what	Quite a bit	A lot
50. I have opportunities to develop skills that will be useful later in life (like job skills and skills to care for others)	Not at all	A little bit	Some what	Quite a bit	A lot

51. I am proud of my cultural background	Not at all	A little bit	Some what	Quite a bit	A lot
52. I am treated fairly in my community	Not at all	A little bit	Some what	Quite a bit	A lot
53. I participate in organized activities (e.g. church, mosque, bible study)	Not at all	A little bit	Some what	Quite a bit	A lot
54. I enjoy my community's traditions	Not at all	A little bit	Some what	Quite a bit	A lot
55. I am proud of my nationality	Not at all	A little bit	Some what	Quite a bit	A lot

SECTION C:

Thinking about the services you and your family have received from _____, please indicate the extent to which the following sentences describe your experience with this service.

1. Overall, I am satisfied with the service I received	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
2. I helped choose this service	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
3. The people helping me stood by me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
4. I felt I had someone within the service to talk to when I was in trouble	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
5. I had a say over how this service was delivered to me, and could ask for what I wanted	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
6. I received the service that was right for me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
7. I could get the service when I needed it	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
8. The location of the service was convenient, and easy to get to	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
9. Staff respected my religious and spiritual beliefs	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
10. Staff spoke in a way that I understood	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
11. Staff were sensitive to my cultural background and personal values	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
12. I am now better able to cope when things go wrong	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
13. This was the service I needed	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
14. There was a service I needed, but couldn't get	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

15. What has been most helpful about this service?

16. What has been least helpful about this service?

17. Overall, how would you rate this service?

[3] Very helpful

[2] Somewhat helpful

[1] Not helpful at all

Please tick all of the services you have had during your entire life. How often did you use each service?

	How often have you used each of these services?	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Health Services	18. A nurse	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	19. Doctor	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	20. Clinic	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	21. Specialist doctor (a doctor you were sent to by your family doctor. E.g. for skin problems, allergies.)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	22. Home based care	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	23. Dentist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	24. Emergency services at a hospital	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	25. Been admitted to hospital	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Educational Services	27. Support educator	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	28. Occupational therapist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	29. Extra help from a teacher	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	30. Special school	Never	Once in	A couple	3 times	Needed, but could not get
		needed it	my life	of times	or more	it

	31. Speech therapist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	33. Social worker, therapist or psychologist you saw at the school	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Social Services	34. Social worker	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	35. Foster placement with foster parent	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	36. Foster home	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	37. Drop - in centre	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	38. Home based care	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	39. Intensive family intervention to deal with family or individual problems	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	40. Homeless shelter	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	41. Special recreation program or holiday program	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Mental Health Services	42. A counsellor, psychologist or psychiatrist	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	43. Group therapy	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	44. Substance abuse or addictions services	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	45. Support group (e.g. Soul Buddyz, Addaaf, Naledi ya bophelo)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	46. Medication (prescribed for depression, anxiety, ADHD, etc.)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	47. Hospital treatment for things like anorexia, anxiety, depression or another mental health problem	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	48. A help-line	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Criminal Justice Services	49. Gone to court not as a witness (when charged)	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	50. Been questioned by police not as a witness	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it

	51. Been put in jail	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	52. Been on probation	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	53. Had to do community service	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
Cultural or Spiritual Services	54. Traditional healer	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	55. Pastoral or spiritual counsellor	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	56. Religious or cultural leader	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it
	57. Community elder	Never needed it	Once in my life	A couple of times	3 times or more	Needed, but could not get it

Are there other services you have used? Please list them below, then circle how often you have used them.	Once in my life	A couple of times	Three times or more
58.	Once in my life	A couple of times	Three times or more
59.	Once in my life	A couple of times	Three times or more
60.	Once in my life	A couple of times	Three times or more

61. Please think of a service/program/youth group you have had a lot of contact with recently. If you ticked a service on the front page, you might want to think of that one. What was it?

This service was:

- [3] Very helpful
- [2] Somewhat helpful
- [1] Not helpful at all

Thinking about this service (see Question 61), please indicate to what extent the following sentences describe your experience with this service.

62. Overall, I am satisfied with the service I received	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
63. I helped choose this services	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
64. The people helping me stood by me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
65. I felt I had someone within the service to talk to when I was in trouble	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
66. I had a say over how this service was delivered to me, and could ask for what I wanted	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
67. I received the service that was right for me	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
68. I could get the service when I needed it	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
69. The location of the service was convenient, and easy to get to	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
70. Staff respected my religious and spiritual beliefs	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
71. Staff spoke in a way that I understood	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
72. Staff were sensitive to my cultural background and personal values	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
73. I am now better able to cope when things go wrong	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
74. This was the service I needed	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
75. There was a service I needed, but couldn't get	Strongly disagree	Disagree	Undecided	Agree	Strongly agree

76. What has been most helpful about this service?

77. What could have made this service better?

SECTION D:

To what extent do the sentences below describe your neighbourhood? Circle one answer for each question.

1. People in my community can be trusted	Not at all	A little	Quite a bit	A lot	Don't know
2. People in my community get along with each other	Not at all	A little	Quite a bit	A lot	Don't know
3. There is litter, broken glass or rubbish around my community	Not at all	A little	Quite a bit	A lot	Don't know

4. If a group of youth in your community was bunking school, how likely is it that your neighbours would do something about it?

- [3] Very likely
- [2] Likely
- [1] Unlikely
- [0] Very unlikely
- [98] Unsure

5. If a child or young person was being abused by his or her family, how likely is it that your neighbours would report it?

- [3] Very likely
- [2] Likely
- [1] Unlikely
- [0] Very unlikely
- [98] Unsure

6. How safe do you consider your community to be?

- [2] Very safe
- [1] Somewhat safe
- [0] Not safe at all

7. How would you describe your school (or the last school you attended)? Would you say: My school is/was a bad place to be (I don't want to be there) or My school is/was a good place to be (I want to be there)? Circle one answer:

Strongly disagree	Disagree	Undecided	Agree	Strongly agree
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SECTION E:

How often have you felt like this during the past WEEK? Please circle the answer that describes YOU.

1. I had times that I cried	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
-----------------------------	---	-----------------------------------	------------------------	-----------------------------------

2. I felt depressed	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
3. I was happy	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
4. I felt that I could not stop feeling sad even with help from my family or friends	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
5. I felt hopeful about the future	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
6. I enjoyed life	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
7. I had trouble keeping my mind on what I was doing	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
8. I did not feel like eating; my appetite was poor	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
9. My sleep was restless	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
10. I felt like I was too tired to do things	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
11. I felt that people disliked me	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)
12. I felt lonely	Rarely/ none of the time (less than 1 day)	Some of the time (1 to 2 days)	Often (3 to 4 days)	Most of the time (5 to 7 days)

How many times in the past year have you done the following things?

13. Stolen something from a shop	Never	1 Time	2 Times	3-4 Times	5 Or More Times
14. Got into trouble with the police	Never	1 Time	2 Times	3-4 Times	5 Or More Times
15. Hit or beat up someone	Never	1 Time	2 Times	3-4 Times	5 Or More Times
16. Damaged property (such as breaking windows, scratching a car, putting paint on walls, etc.)	Never	1 Time	2 Times	3-4 Times	5 Or More Times
17. Carried a weapon (such as a gun, knife, traditional weapon, etc.)	Never	1 Time	2 Times	3-4 Times	5 Or More Times
					Times

How many times in the past year have you done the following things?

18. Smoked cigarettes	Never	Once or twice	Occasionally	Regularly
19. Used chewing tobacco or snuff	Never	Once or twice	Occasionally	Regularly
20. Drank beer, wine, alcoholic drinks	Never	Once or twice	Occasionally	Regularly
21. Sniffed glues, sprays or petrol	Never	Once or twice	Occasionally	Regularly
22. Used dagga	Never	Once or twice	Occasionally	Regularly
23. Used any other drug, such as ecstasy, speed, heroin, crack or cocaine, mandrax, etc.	Never	Once or twice	Occasionally	Regularly
24. Taken steroids without a doctor's prescription	Never	Once or twice	Occasionally	Regularly
25. Had willing sexual intercourse	Never	Once or twice	Occasionally	Regularly
26. Had unprotected sexual intercourse	Never	Once or twice	Occasionally	Regularly

To what extent do the sentences below DESCRIBE YOU?

27. I lose my temper	False	Sometimes	True
28. I do as I am told	False	Sometimes	True
29. I fight a lot	False	Sometimes	True
30. I am accused of lying or cheating	False	Sometimes	True
31. I take things that are not mine from home, school, or elsewhere	False	Sometimes	True
32. I pick on or bully others (using SMS, notes, physically or emotionally)	False	Sometimes	True

33. In the past year, what things have you experienced that have improved your life? For each experience, how big an influence did it have on your life? (For example, getting a job, moving, passing my grade, travelling somewhere special, forming a special relationship with someone, etc.)

Experience that improved my life

Effect

a. _____

b. _____

c. _____

Not at all	A little	Somewhat	Quite a bit	A lot
Not at all	A little	Somewhat	Quite a bit	A lot
Not at all	A little	Somewhat	Quite a bit	A lot

b. _____ A few times a year Once a month A couple of times a month Once a week A few times a week Everyday

c. _____ A few times a year Once a month A couple of times a month Once a week A few times a week Everyday

How often do you do each of these activities?

3. Volunteer (help others without pay) your time?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
4. Do paid work?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
5. Go out with your friends?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday
6. Been a leader in a group or organization?	Never	A Few Times A Year	Once A Month	A Couple Of Times A Month	Once A Week	A Few Times A Week	Everyday

How often in the past year have the following reasons stopped you from participating in community or school activities/ attending school?

7. Not having enough money	Not at all	A little	Quite a bit	A lot	Don't know
8. Not having transportation	Not at all	A little	Quite a bit	A lot	Don't know
9. Your parent(s)/guardian(s)/caregiver(s) tell you that you can't participate	Not at all	A little	Quite a bit	A lot	Don't know
10. You have too many responsibilities at home	Not at all	A little	Quite a bit	A lot	Don't know
11. You are working at a paid job	Not at all	A little	Quite a bit	A lot	Don't know
12. You didn't feel comfortable participating	Not at all	A little	Quite a bit	A lot	Don't know

On an average school or workday, how many hours do you spend doing the following activities?

13. Working on homework (If you are not in school, please do not answer)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
14. Watching TV	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
15. Playing video games	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
16. On the internet (but not playing video games)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours

17. Talking to friends electronically (by SMS, etc.)	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
18. Doing chores/jobs at home	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
19. Reading for pleasure	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
20. Improving one of your skills	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours
21. Exercising or being physically active	Never	Less Than 1 Hour	1-2 Hours	3-4 Hours	5-6 Hours	7 Or More Hours

ADDENDUM C

Summary of Scales used in this Study

Instrument	Manuscript	Sub-scale/sub-cluster/items	Construct	Item example	Response options
Child Youth Resilience Measure (CYRM) (Liebenberg, Ungar, & Van de Vijver, 2012)	3	Individual sub-scale (11 items) of the Child Youth Resilience Measure (CYRM) (11 items) ‡ ($\alpha = 0.80$)	Personal skills, peer support, and social skills		
	2	Five items from the Individual Personal Skills sub-cluster of the Child Youth Resilience Measure (CYRM)	Personal skills	“I try to finish what I start” “I know my own strengths”	“Does not describe me at all” to “Describes me a lot” on a five-point scale
	2	Two items from the Individual Peer Support sub-cluster of the CYRM	Peer support	“My friends are on my side” “My friends stand by me during difficult times”	“Does not describe me at all” to “Describes me a lot” on a five-point scale
	2	Four items from the Individual Social Skills sub-cluster of the CYRM	Social skills	“I know how to behave in different social situations” “I know where to go in my community to get help”	“Not at all” to “A lot” on a five-point scale
	2/3	Relationship with caregiver sub-scale in CYRM (seven items) ‡ ($\alpha = 0.83$)	Physical and psychological caregiving	“I can talk to my caregiver about how I feel” “My caregiver stands by me during difficult times”	“Not at all” to “A lot” on a five-point scale

	3	Context sub-scale of the (CYRM (10 items) ‡ ($\alpha = 0.79$))	Cultural, educational, and spiritual resources		
	2	Five items from the Cultural Context sub-cluster of the CYRM	Cultural context	“I am proud of my cultural background” “I enjoy my community’s traditions”	“Not at all” to “A lot” on a five-point scale
	2	Three items from the Spiritual Context sub-cluster of the CYRM	Spiritual context	“Spiritual beliefs make me strong” “I think it is important to serve my community”	“Does not describe me at all” to “Describes me a lot” on a five-point scale
	2	Two items from the Educational Context sub-cluster of the CYRM	Educational context	“Getting an education is important to me” “I feel I belong at my school”	“Not at all” to “A lot” on a five-point scale
4-H Study of Positive Youth Development (4HSQ) (Phelps et al., 2007)	2/3	Delinquency Scale (five items) ‡ ($\alpha = 0.73$)	Antisocial behaviour	“Got into trouble with the police” “Damaged property”	“Never” to “Five or more times” on a five-point scale
	2/3	Risk Scale (nine items) ‡ ($\alpha = 0.86$)	Health risk behaviour	“Drank, beer, wine, alcoholic drinks” “Sniffed glue, sprays, or petrol”	“Never” to “Regularly” on a four-point scale
	3	Barriers to community/school participation (five items)	Barriers to community/school participation	“You have too many responsibilities at home” “You are working at a paid job”	“Not at all” to “A lot” on a three-point scale
Strengths and Difficulties Questionnaire (Goodman, 2001)	2	Five items ‡ ($\alpha = 0.80$)	Disruptive behaviour	“I lose my temper” “I fight a lot”	“False”, “Sometimes”, “True” on a three-point scale
National Longitudinal Study of Children and Youth Brief	2/3	Four items	Peer-group behavioural risks	“Do drugs” “Break the law”	“None” to “All” on a four-point scale

Questionnaire (NLSCY) (Resilience Research Centre, 2010)	2	Four items	School engagement	<p>“During the last 12 months (or during the last full school year you attended), how many times did you skip a day of school without permission?”</p> <p>“During the last 12 months (or during the last full school year you attended), how many times did you get suspended?”</p>	<p>“Never” to “Every day”, “Never” to “Once a week”, and “Yes” and “No” on a two-, five-, and six-point scale</p>
	2	Four items	Poor relationship with mother and father figures	<p>“Thinking of the mother/father you identified above, how much affection do you receive from him/her?”</p> <p>“Overall, how would you describe your relationship with the mother/father?”</p>	<p>“A great deal” to “Not at all” on a four-point scale “Very close” to “Not very close” on a four-point scale</p>
Ontario Student Drug Use and Health Survey (OSDUHS) (Resilience Research Centre, 2010)	3	Three items	Monitoring of caregiver	<p>“How many days a week is your parent/guardian/caregiver at home when you do the following things:</p> <ol style="list-style-type: none"> 1. When you wake up in the morning? 2. When you come home from school or work? 3. When you go to bed at night?” 	<p>“No days” to “Five days or more” on a six-point scale</p>
Boston Neighbourhood Survey (BNS) (Resilience Research Centre, 2010)	2/3	Six items	Lack of community safety	<p>“People in my community get along with one another”</p> <p>“How safe do you consider your community to be?”</p>	<p>“Not at all” to “A lot” “Likely”, “Unlikely”, “Very unlikely” on a four-point scale</p>

Youth Services Survey (Resilience Research Centre, 2010)	2	14 items from the Youth Services Survey (YSS) measuring youths' perception of their school. Two items measuring whether their educational needs were met	Satisfaction with schooling	"My teachers and/or other school staff stand by me during difficult times" "I have a say in school activities and can ask for what I need"	"Strongly agree" to "Strongly disagree" on a five-point scale
	2	14 items from the YSS measuring youths' perception of quality of another service. Two items measuring whether the opportunity used was the opportunity needed by the youths	Satisfaction with another resource/service	"I felt I had someone within the service to talk to when I was in trouble" "I received the service that was right for me"	"Strongly agree" to "Strongly disagree" on a five-point scale

ADDENDUM D

North-West University Ethical Approval



NORTH-WEST UNIVERSITY
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Faks: (018) 299-4910
Web: <http://www.nwu.ac.za>

Ethics Committee
Tel +27 18 299 4850
Fax +27 18 293 5329
Email Ethics@nwu.ac.za

31 March 2009

Prof Linda Theron

ETHICS APPROVAL OF PROJECT

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Ethics number:	Project title: Pathways to Resilience
	N W U - 0 0 0 0 6 - 0 9 - A 2
Approval date: 12 March 2009	Expiry date: 11 March 2014

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principle investigator) must report in the prescribed format to the NWU-EC:
 - annually (or as otherwise requested) on the progress of the project,
 - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviations from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-EC retains the right to:
 - request access to any information or data at any time during the course or after completion of the project;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the project are revealed or suspected,
 - it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,
 - the required annual report and reporting of adverse events was not done timely and accurately,
 - new institutional rules, national legislation or international conventions deem it necessary.

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

Prof MMJ Lowes
(chair NWU Ethics Committee)

Prof M. Monteith
(Chairman: NWU Ethics Committee: Teaching and Learning)

ADDENDUM E

Permission to Conduct Research, Department of Basic Education in the Free State Province

8.Oct. 2009 9:51

No. 7286 P. 3



Enquiries : IM Malimane
Reference no. : 16/4/1/35-2009

Tel: 0514048662
Fax: 051 4477318

2009-10-07

Director, Thabo Mofutsanyana Education District
Private Bag 817
Witsieshoek
9870

Dear Mr Chele

NOTIFICATION OF A RESEARCH PROJECT IN YOUR DISTRICT

Please find attached a copy of the letter giving Mr. MJ MALINDI and PROF. LC THERON permission to conduct research in the Thabo Mofutsanyana District. They will conduct this research in identified school with learners in Grades 8 – 11.

Yours sincerely


FR SEVLO
DIRECTOR: QUALITY ASSURANCE

Directorate: Quality Assurance
Private Bag X20565, Bloemfontein 9300
Syfrets Center, 65 Maitland Street, Bloemfontein
Tel: 051 404 8750 / Fax: 051 447 7318
E-mail: quality@edu.fs.gov.za

www.fs.gov.za

08-OCT-2009 08:58

From:

ID:

Page: 003 R=95%

ADDENDUM F

Informed Consent Forms: Functionally Resilient and School-going Samples



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Tel: (016) 910-3076
(016) 910-3094/073 88 33 064
Fax: (016) 910-3078
E-mail: Macalane.Malindi@nwu.ac.za
Linda.Theron@nwu.ac.za

PATHWAYS TO RESILIENCE: FORMAL SERVICE AND INFORMAL SUPPORT USE PATTERNS AMONG YOUTH IN CHALLENGING SOCIAL ECOLOGIES

CONSENT FORM FOR YOUTH: PATHWAYS TO RESILIENCE YOUTH MEASURE

Hello,

On behalf of a team of researchers led by Dr. Michael Ungar from Dalhousie University, Canada, we invite you to take part in a research study. We hope to interview youth like you in different communities in Atlantic Canada who have different kinds of experience with child welfare, mental health, education, corrections, a community support organisation or community recreational programs. We want to know what kinds of services you've used and why.

Your participation in this study is voluntary and you may leave it at any time, for up to one year from today.

The study is described below. This description tells you about the risks, inconvenience, and discomfort which you might experience. This study may not benefit you directly, but it will help us better understand how to be of real help to young people. You should discuss any questions you have about this study with me, Macalane Malindi (016-910 3094), the person who will be doing the study with you.

Purpose of the study:

We are hoping to better understand how the different kinds of services available to youth are being used by young people and how these services help or don't help them.

Study design:

We would like to meet with about 1200 youth in South Africa. We are asking all these young people to complete a questionnaire, the ***Pathways to Resilience Youth Measure (PRYM)***. We would also like to meet with some of the youth again, to conduct an individual interview, and so might come back to you to invite you to participate in this other research as well.

Who can participate in the study?

You may participate in this study if you are:

1. Between the ages of 13 and 19 (or thereabouts), and;
2. Have had to deal with significant difficulties in your life with which you are dealing well.

Who will be conducting the research?

The principal investigator of this study is Michael Ungar, Ph.D., Professor at the School of Social Work, Dalhousie University. The director of research is Linda Liebenberg PhD, Resilience Research Centre, Dalhousie University, Halifax, Canada. The South African team director is Prof **Petra Engelbrecht** (Faculty of Education, Potchefstroom Campus, NWU) and the project leader is **Linda Theron**, School of Educational Sciences, Vaal Triangle Campus, North-West University and **Macalane Malindi** (School of Educational Sciences, Vaal Triangle Campus, North-West University) is the South African community liaison officer.

What you will be asked to do:

To understand how to better help young people we are asking that you meet with us, to complete a questionnaire. It will take about 60 minutes to complete. You may take extra time if you. Meetings will happen at a time and place that you are comfortable with. We also may ask to speak with

1

you again as we will be inviting some participants to take part in longer one-on-one interviews about their lives and their experience receiving services. Please let me know if we can contact you again.

Possible risks and discomforts:

You should know that when we meet to talk about your experiences and answer the questionnaire, you may be asked some questions that could make you feel uncomfortable or be upsetting to you. If this happens you should let me, or anyone of the contacts provided on this letter, know so that we can refer you to someone to talk to about what has upset you. Also, please let me know if you do not want to answer any of the questions I ask.

Possible benefits:

Taking part in this study will not benefit you. It is hoped though that what is learned will be of future benefit to others. Also, once we have the findings from this study, the research team will be working with a service provider in your community to try and apply some of the lessons learnt from young people who have participated. Because of this, the findings of this study should be useful for informing policy, program development and available services.

Compensation / Reimbursement:

You will be offered a burger if you fill out the questionnaire as a token of appreciation for your part in this research project.

Confidentiality and anonymity:

While the research team cannot promise that your participation in this study will be kept anonymous (that is, people around you might know or find out that you have participated in the study), you should know that we will protect your privacy and that all the information you provide will be kept strictly confidential. This means that we will not tell other people who are not involved in the study about what you have said here today or how you have answered your questionnaire. Also, all the information we collect will be anonymous. This means that it will have no personal information on it like your name and we will not publish your name in anything we write about this study. Only the forms you sign will identify you personally and that information will be stored at North-West University. Your questionnaires will be labelled with a unique number so we can keep track of which questionnaires belong to you, but no one else can identify you. The questionnaires will be stored in a locked cabinet in a different office at North-West University for five years after we have published this study. Again only the members of the research team will have access to the information you provide.

Once information has been collected, members of the research team will publish a summary in books, magazines, websites and talk about the results to people who are interested in improving services for youth. It is important for you to know that we are not interested in the responses of any one person, but rather what young people like yourself as a group have experienced. Your identity will never be revealed. Should we use a quote from your questionnaire, we will ensure that details are changed to make it impossible to identify you as the one who said it (like your age, your school, where you live, what your parents do, and other things that could be used to identify you). There is only one situation that would make it necessary to share what you say with others and identify you. If you tell us that you are being harmed, or in serious danger, or your brothers or sisters are in danger of being hurt, we have a professional and legal obligation to get help. Likewise, if indicate that you are going to hurt yourself or someone else, we must legally tell someone who can help keep you and others safe.

Questions, problems or concerns:

If you have any questions, problems or concerns you are welcome to contact any of the following research members:

- Dr. Linda Theron (South African Project Leader). Her phone number is 016 910 3076 and she is available Monday to Thursday between 9a.m. and 4:30p.m.
- Dr. Macalane Malindi (South African Community Liaison Officer). His phone number is 016-910 3094 and he is available Monday to Friday between 9a.m. and 4:30p.m
- You can also leave a message for Linda or Macalane with Mrs Maureen Meiring, 016-910 3060. She is available Monday to Friday between 9a.m. and 4:30p.m.

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may also contact Patricia Lindley, Director of Dalhousie University's Office of Human Research Ethics Administration, for assistance at 902 494-1462, patricia.lindley@dal.ca. Or, you can contact Research Director (Educational Sciences, NWU): Prof Cornelia Roux at Cornelia.Roux@nwu.ac.za or at 018-299 4780.

Many thanks for taking the time to look over this letter.

Regards

The Research Team



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PO Box 1174, Vanderbijlpark
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Tel: (016) 910-3076
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CONSENT FORM FOR YOUTH: PATHWAYS TO RESILIENCE YOUTH MEASURE

PATHWAYS TO RESILIENCE: FORMAL SERVICE AND INFORMAL SUPPORT USE PATTERNS AMONG YOUTH IN CHALLENGING SOCIAL ECOLOGIES

SIGNATURE PAGE FOR YOUTH: PATHWAYS TO RESILIENCE YOUTH MEASURE

"I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However I realize that my participation is voluntary and that I am free to withdraw from the study at any time": (If you agree, please place an "X" in the „yes" boxes to show that you understand and agree with each statement. You do not need to consent to all study activities in order to participate)

1. I understand the information about the study provided in the Information Letter. Any questions I had were answered. **Yes, I understand []**
2. If I am uncomfortable answering any question, I may choose not to answer. **Yes, I understand []**
3. Information will be collected directly from me by means of a questionnaire. **Yes, I understand []**
4. I give permission for the researchers to contact me to invite me to participate in a one-on-one interview and understand that I have the right to refuse to do this if I wish. **Yes, I understand []**
5. I give permission for the service that referred me to this study to release their last known contact details for me in case I have moved since starting the study. **Yes, I understand []**
6. I understand that what I say may be quoted in publications, presentations and the final report. I also understand that I will never be identified personally. If I become concerned with anything I said, I can ask for parts, or all, of my questionnaire responses not to be quoted. **Yes, I understand []**

Full name of youth participant

Signature of youth participant

Signature of researcher

Signature of guardian/parent / adult in loco parentis

Date

Date

FUTURE CONTACT PAGE

You may contact me: yes / no.

If yes, the best way to reach me is:

Address: _____

Email: _____

Second Email: _____

Phone Number: _____

Cell Phone Number: _____

No, you may not contact me about future participation in this study.

Would you like us to send you a short summary of the study when it is complete?

Yes

No

Please provide an address to which you would like it sent:

Address: _____

Email: _____

Second Email: _____

Informed Consent Forms: Formal Service-using Sample



NORTH-WEST UNIVERSITY
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Your participation in this study is voluntary and you may leave it at any time, for up to one year from today.

The study is described below. This description tells you about the risks, inconvenience, and discomfort which you might experience. This study may not benefit you directly, but it will help us better understand how to be of real help to young people. You should discuss any questions you have about this study with me, Macalane Malindi (016-910 3094), the person who will be doing the study with you.

Purpose of the study:

We are hoping to better understand how the different kinds of services available to youth are being used by young people and how these services help or don't help them.

Who will be conducting the research?

The principal investigator of this study is Michael Ungar, Ph.D., Professor at the School of Social Work, Dalhousie University. The director of research is Linda Liebenberg PhD, Resilience Research Centre, Dalhousie University, Halifax, Canada. The South African team director is Prof **Petra Engelbrecht** (Faculty of Education, Potchefstroom Campus, NWU) and the project leader is **Linda Theron**, School of Educational Sciences, Vaal Triangle Campus, North-West University and **Macalane Malindi** (School of Educational Sciences, Vaal Triangle Campus, North-West University) is the South African community liaison officer.

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Who can participate in the study:

You may participate in this study if you are:

1. Between the ages of 13 and 19 (or thereabouts), and;
2. Have used at least:
 - a.) One government service (Child Welfare, Mental Health, Education or Corrections) within the past 6 month period for at least 1 month; OR
 - b.) One community-based or informal service (e.g., a voluntary organization that provides support to youth) within the past 6 month period for at least 1 month.

What you will be asked to do:

To understand how to better help young people we are asking that you meet with us, to complete a questionnaire. It will take about 90 minutes to complete. You may take extra time if you need. Meetings will happen at a time and place that you are comfortable with. We also may ask to speak with you again as we will be inviting some participants to take part in longer one-on-one interviews about their lives and their experience receiving services. Please let me know if we can contact you again.

Possible risks and discomforts:

You should know that when we meet to talk about your experiences and answer the questionnaire, you may be asked some questions that could make you feel uncomfortable or be upsetting to you. If this happens you should let me, or anyone of the contacts provided on this letter, know so that we can refer you to someone to talk to about what has upset you. Also, please let me know if you do not want to answer any of the questions I ask.

Possible benefits:

Taking part in this study will not benefit you. It is hoped though that what is learned will be of future benefit to others. Also, once we have the findings from this study, the research team will be working with a service provider in your community to try and apply some of the lessons learnt from young people who have participated. Because of this, the findings of this study should be useful for informing policy, program development and available services.

Compensation / Reimbursement:

You will be offered a hamburger if you fill out the questionnaire as a token of appreciation for your part in this research project.

Confidentiality and anonymity:

While the research team cannot promise that your participation in this study will be kept anonymous (that is, people around you might know or find out that you have participated in the study), you should know that we will protect your privacy and that all the information you provide will be kept strictly confidential. This means that we will not tell other people who are not involved in the study about what you have said here today or how you have answered your questionnaire. Also, all the information we collect will be anonymous. This means that it will have no personal information on it like your name and we will not publish your name in anything we write about this study. Only the forms you sign will identify you personally and that information will be stored at North-West University. Your questionnaires will be labelled with a unique number so we can keep track of which questionnaires belong to you, but no one else can identify you. The questionnaires will be stored in a locked cabinet in a different office at North-West University for five years after we have published this study. Again only the members of the research team will have access to the information you provide.

Once information has been collected, members of the research team will publish a summary in books, magazines, websites and talk about the results to people who are interested in improving services for youth. It is important for you to know that we are not interested in the responses of any one person, but rather what young people like yourself as a group have experienced. Your identity will never be revealed. Should we use a quote from your questionnaire, we will ensure that details are changed to make it impossible to identify you as the one who said it (like your age, your school, where you live, what your parents do, and other things that could be used to identify you). There is only one situation that would make it necessary to share what you say with others and identify you. If you tell us that you are being harmed, or in serious danger, or your brothers or sisters are in danger of being hurt, we have a professional and legal obligation to get help. Likewise, if indicate that you are going to hurt yourself or someone else, we must legally tell someone who can help keep you and others safe.

Questions, problems or concerns:

If you have any questions, problems or concerns you are welcome to contact any of the following research members:

- Prof Linda Theron (South African Project Leader). Her phone number is 016-910 3076 and she is available Monday to Thursday between 9a.m. and 4:30p.m.
- Dr. Macalane Malindi (South African Community Liaison Officer). His phone number is 016-910 3094 and he is available Monday to Friday between 9a.m. and 4:30p.m.
- You can also leave a message for Linda or Macalane with Mrs Maureen Meiring, 016-910 3060. She is available Monday to Friday between 9a.m. and 4:30p.m.

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may also contact Patricia Lindley, Director of Dalhousie University's Office of Human Research Ethics Administration, for assistance at 902 494-1462, patricia.lindley@dal.ca. Or, you can contact Research Director (Educational Sciences, NWU): Prof Cornelia Roux at Cornelia.Roux@nwu.ac.za or at 018- 299 4780.

Regards

The Research Team



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PATHWAYS TO RESILIENCE: FORMAL SERVICE AND INFORMAL SUPPORT USE PATTERNS AMONG YOUTH IN CHALLENGING SOCIAL ECOLOGIES

SIGNATURE PAGE FOR YOUTH: PATHWAYS TO RESILIENCE YOUTH MEASURE

"I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However I realize that my participation is voluntary and that I am free to withdraw from the study at any time": (If you agree, please place an "X" in the 'yes' boxes to show that you understand and agree with each statement. You do not need to consent to all study activities in order to participate)

1. I understand the information about the study provided in the Information Letter. Any questions I had were answered. **Yes, I understand []**
2. If I am uncomfortable answering any question, I may choose not to answer. **Yes, I understand []**
3. Information will be collected directly from me by means of a questionnaire. **Yes, I understand []**
4. I give permission for the researchers to contact me to invite me to participate in a one-on-one interview and understand that I have the right to refuse to do this if I wish. **Yes, I understand []**
5. I give permission for the service that referred me to this study to release their last known contact details for me in case I have moved since starting the study. **Yes, I understand []**
6. I understand that what I say may be quoted in publications, presentations and the final report. I also understand that I will never be identified personally. If I become concerned with anything I said, I can ask for parts, or all, of my questionnaire responses not to be quoted. **Yes, I understand []**

Full name of youth participant

Signature of youth participant

Signature of parent/caregiver/adult in loco parentis

Signature of researcher

Date

Date

FUTURE CONTACT DETAILS

I would like to be contacted in future for follow-up studies and to learn about the results of this study: Yes / No

The best way to reach me is:

Address: _____

Email: _____

Second Email: _____

Phone Number: _____

Cell Phone Number: _____

ADDENDUM G

Comparison of Composite Reliability and Alpha Coefficients: Manuscript 2

Latent variable	School-going sample	
	ρ	α
RISK1	0.62	0.54
RISK2	0.88	0.72
RISK3	0.88	0.68
RISK4	0.80	0.58
RISK5	0.91	0.70
RISK6	0.53	0.41
STR1	0.66	0.58
STR2	0.81	0.74
STR3	0.71	0.60
CARE	0.87	0.78
CON1	0.76	0.56
CON2	0.49	0.39
CON3	0.72	0.47
SAT1	0.91	0.86
SAT2	0.92	0.88
ENG	0.71	0.45

Note: ρ – composite reliability; α – alpha coefficients; RISK1 – lack of community safety; RISK2 – negative peer support; RISK3 – poor relationship with mother and father figures; RISK4 – antisocial behaviour; RISK5 – health risk behaviour; RISK6 – disruptive behaviour; – personal skills; STR2 – peer support; STR3 – social skills; CARE – relationship with caregiver; CON1 – cultural contexts; CON2 – spiritual context; CON3 – educational context; SAT1 – satisfaction with school; SAT2 – satisfaction with another resource; ENG – school engagement.

ADDENDUM H

Comparison of Composite Reliability and Alpha Coefficients: Manuscript 3

Latent variable	Functionally resilient sample		Formal service-using sample	
	ρ	α	ρ	α
PER	0.86	0.78	0.87	0.81
CARE	0.92	0.86	0.88	0.82
CON	0.87	0.75	0.89	0.81
RISK1	0.89	0.77	0.91	0.86
RISK2	0.95	0.89	0.96	0.91
RISK3	0.68	0.54	0.58	0.46
RISK4	0.93	0.83	0.92	0.84
RISK5	0.95	0.89	0.90	0.85
RISK6	0.53	0.54	0.35	0.44
RISK7	0.84	0.81	0.81	0.79

Note: ρ – composite reliability; α – alpha coefficients; PER – personal resources; CARE – physical and psychological caregiving; CON – contextual resources; RISK1 – antisocial behaviour; RISK2 – health risk behaviour; RISK3 – disruptive behaviour; RISK4 – negative peer support; RISK5 – poor caregiver presence; RISK6 – lack of community safety; RISK7 – barriers to community/school participation.

ADDENDUM I

Guidelines for Authors: South African Journal of Science

The *South African Journal of Science* accepts articles from any source on the understanding that they are the original work of the authors named and that they are being offered only to the South African Journal of Science.

Various kinds and categories of article are welcome. (Please consult a recent issue of the journal for examples.) Research communications are of three kinds: Research Letters, Research Articles and Review Articles. Research Letters are shorter reports (normally no longer than 2000 words) and should be up-to-date accounts of interesting and noteworthy scientific developments. Although these reports may be concerned with very particular advances, they should be of wider than specialist interest. Research Letters are given priority in terms of rapid publication after acceptance. Research Articles are longer papers (normally no more than 6000 words in length). Here the criteria of intelligibility and wider interest are strictly applied. Review Articles (up to 6000 words long) should be up-to-date surveys of important current developments in science. Preference is given to concise, reader-friendly submissions.

Submission of manuscripts for consideration: Manuscripts should be submitted online at <http://mc.manuscriptcentral.com/sajs> Please ensure that you have complied with the guidelines and completed the publishing agreement (available from the login page) before you submit. Submissions that are incomplete or do not comply with the instructions will be returned.

Pre-submission enquiries: If you wish to enquire whether your submission might be suitable for consideration by the South African Journal of Science, please email the Editor-in-Chief at j.butleradam@gmail.com. All pre-submission enquiries must include a summary and a cover letter outlining the article's interest to a broad scientific readership.

Readability: As the journal has a multidisciplinary focus, authors are requested to write their manuscripts in a manner and style that is intelligible to specialists and non-specialists alike. Articles are judged by reviewers at the discretion of the editors. Contributions should therefore be written clearly and simply so that they are accessible to readers in other disciplines and to readers for whom English is not a first language.

Note: Please use UK spelling and not US spelling. If in doubt, consult the Oxford English Dictionary.

Format of compulsory cover letter: The cover letter should indicate briefly the significance of the work being reported. State the full name, title, affiliation and contact details (postal address, email, telephone and cell number) of each author. Please identify the author to whom all correspondence should be addressed.

Include a paragraph briefly summarising the nature of the contribution made by each of the authors listed, along the lines of the following:

Author contributions: J.K. was the project leader, L.M.N. and A.B. were responsible for experimental and project design. L.M.N. performed most of the experiments. P.R. made conceptual contributions and S.T., U.V. and C.D. performed some of the experiments. S.M. and V.C. prepared the samples and calculations were performed by C.S., J.K. and U.V. wrote the manuscript.

Authors will be required during submission to provide the names and full contact details (including email) of three potential reviewers to evaluate the work (reviewers should not be people with whom the researcher has recently collaborated or published).

Title, summary and keywords page: The article's full title should contain a maximum of 95 characters (including spaces). Five keywords should be provided. Articles and letters should begin with a fully referenced summary paragraph of up to 250 words, aimed at readers in other disciplines. This paragraph should start with 2–3 sentences that provide an introduction to the field and the particular problem being investigated. This should be followed by a one-sentence statement of the authors' main findings (or conclusions, in the case of a review paper); and a further 2–3 sentences placing these findings/conclusions in a general context so that readers are made aware of what the implications of these findings are.

Ethical guidelines: Submissions involving research conducted on human or nonhuman vertebrates should meet the highest standards regarding both the ethical consideration given and reporting of the procedures followed. Full details are necessary so that a non-specialist reader can appreciate the need for the research undertaken.

All reported research involving humans or other animals should be approved prior to commencement of the study by an institutional ethics committee. The name of the approving body and a reference number (if provided) should be included in the Methods section of the manuscript.

In addition, all manuscripts describing research involving human subjects, tissue or data should also indicate that informed consent was obtained and that the principles of the Declaration of Helsinki (<http://www.wma.net/en/30publications/10policies/b3/>) were adhered to. All manuscripts

describing research involving non-human animals should also indicate that the ARRIVE guidelines (<http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.1000412>) for reporting in vivo animal experiments were adhered to. Proper reporting should include the number, sex and health status of the individuals used, as well as full details of anaesthesia and surgical procedures. The Declaration of Helsinki and the ARRIVE guidelines are also available from sajs@assaf.org.za. Manuscripts failing to adhere to these instructions will not be considered for publication.

Plagiarism: Plagiarism is when you use someone else's work (book, article, website, etc.) or idea without acknowledging them as the source, whether it be copied verbatim or paraphrased. All cases of suspected or alleged plagiarism will be considered very seriously in accordance with the journal's Plagiarism Policy which is available on the journal's website.

Acknowledgements: If you received any significant help in conceiving, designing, or carrying out the work, or received materials from someone who did you a favour by supplying them, you must acknowledge their assistance and the service or material provided. Authors always acknowledge outside reviewers of their drafts and any sources of funding that supported the research.

References: The reference list should begin on a separate page and include no more than 60 references. The South African Journal of Science uses the Vancouver referencing style, details of which can be downloaded from the journal website at www.sajs.co.za. No other style will be permitted.

Key points include:

- A superscript number should be assigned in numerical order to each reference as it is cited in the text. Sources should be listed numerically at the end of the article, in the same order that they were cited in text. Book and journal titles are not italicised or placed in quotation marks.
- Abbreviate page numbers to p. (e.g. p. 12–25).
- Only the first words of titles and words that normally begin with a capital letter are capitalised.
- Journal titles are abbreviated according to the official ISSN abbreviations.
- If a source has more than 6 authors, list the first 6 authors followed by et al.
- If the journal has continuous page numbering, you may omit the month/issue number.

General specifications of manuscripts

Format of text: Manuscripts should be typed in Times New Roman font, 12 point size with one and a half line spacing. Please save manuscripts for upload in .DOC (not .DOCX) format. Please ensure authors' names and affiliations and any acknowledgements are omitted to facilitate the double-blind review process.

Unique fonts: If these are necessary, they should be embedded in the .DOC file in order to ensure they display correctly in the HTML version.

Layout: Start each paragraph at the margin (no tabs to indent first line). Include a line space between paragraphs to separate.

Heading styles: First level headings: (Boldface, normal case, centred, on a separate line, 14pt).
Second level headings: (Boldface, normal case, justified at left margin, on a separate line, 14pt).
Third level headings: (Boldface, normal case, justified at left margin, on a separate line, 12pt)

Quotations in the text: Single quotation marks are used for all quotations; to highlight a quote within a quote, please use double quotation marks. If citations are longer than 30 words, please do not use single quotation marks; rather indent the citation and italicise it.

Tables and figures: There should be no more than 10 figures and tables in total per article. All captions should be provided together on a separate page. Figures should be provided as high-resolution images in TIF format (avoid GIF or compressed formats). Excel files should be uploaded as individual sheets, not the entire workbook.

Equations: Use English Equation Editor if you have equations in your manuscript; other versions will not convert correctly.

Acronyms: If a phrase with an established acronym or abbreviation is used, and appears more than five times in your article, please include the acronym/abbreviation in brackets after first mention of the phrase, then use the acronym/abbreviation only. Please note that you should not define acronyms or abbreviations in any of your headings. If either has been used in your abstract, you need to define them again on their first use within the main text.

Units: The use of units should conform to the SI convention and be abbreviated accordingly. Metric units and their international symbols are used throughout, as is the decimal point (not the decimal comma), and the 24-hour clock.

Spacing and punctuation: There should be one space (not two) between sentences; one space before unit terms (e.g. 5 kg, 5 cm, 5 mmol, 5 days, 5 °C); but no space before %.

Thousands/millions are marked with a space, not a comma, from 10 000 (e.g. 10 000, 1 000 000 but 1000). Ranges are expressed with an extended hyphen, not with a short hyphen (e.g. 1990–2000).

Dates: Dates are written in the following style: 12 July 1908.

Permission: Permission should be obtained from the author and publisher for the use of quotations, illustrations, tables and other materials taken from previously published works that are not in the public domain. The author is responsible for the payment of any copyright fee(s) if these have not been waived. The letters of permission should accompany the manuscript. The original source(s) should be mentioned in the figure legend or as a footnote to a table.

Proofs: Authors can provide feedback on the publication process of their manuscript, at two stages:

1. After copy-editing of the Word document
2. On the PDF proof after layout

Revisions and corrections must be received promptly (within 48 hours) to avoid delays in publication. Substantial changes made at PDF proof stage will be charged to the author.

Reprints: The journal is published on an open-access model and authors can download their material from the journal website freely and distribute it under the Creative Commons Attribution Licence.

Strict adherence to these guidelines will expedite the publication process.

Vancouver referencing style guide

In text

- A superscript number should be assigned in numerical order to each reference as it is cited in the text. A number must be used even if the author is given in the text (e.g. Jones⁵ reported that...).
- The original number assigned to a reference should be used each time the reference is cited in text.
- When multiple references are cited together, use a hyphen to join the first and last numbers that are inclusive (e.g. ...was reported⁵⁻⁸) and commas (without spaces) to separate non-inclusive numbers (e.g. ...was reported^{5-8,12}).

- The superscript citation number should be placed outside full stops and commas and inside colons and semi-colons. If the source applies to only a part of the sentence, the number should appear directly after the end of that part of the sentence without a space.

Reference list

- Sources should be listed numerically at the end of the article, in the same order that they were cited in text.
- Book and journal titles should not be italicised nor placed in quotation marks.
- Only the first word of the article title and words that normally begin with a capital letter should be capitalised.
- Journal titles should be abbreviated.
- If the journal has continuous page numbering, the month/issue number can be omitted.
- If there are more than six authors, the first six authors should be listed, followed by et al.

Some common examples:

Journal article

Author's surname Initials, Author's surname Initials. Title of article. Abbreviated journal title. Year of publication; volume(issue number): page numbers.

Journal article on the Internet:

Author's surname Initials, Author's surname Initials. Title of article. Abbreviated journal title [serial on the Internet]. Year of publication month day [cited year month day]; volume(issue): [number of pages]. Available from: URL

Article in press

Author's surname Initials, Author's surname Initials. Title of article. Abbreviated journal title. In press Year.

Article not in English

Author's surname Initials, Author's surname Initials. Title of article in original language [translated title in English]. Abbreviated journal title. Year of publication; volume(issue number): page numbers. Original language.

Book

Author/editor's surname Initials. Title of book. ed. [if not 1st]. City of publication: publisher's name; year of publication.

Chapter in a book

Author's surname Initials. Title of chapter. In: Editor's surname Initials, editor. Title of book. ed. [if not 1st]. City of publication: publisher's name; year of publication. p. xx–xx. [page numbers of chapter, separated by an en dash and not elided]

Conference proceeding

Author's surname Initials. Title of paper. In: Editor's surname Initials, editor. Title of conference; date of conference; place where conference was held. City of publication: publisher's name; year of publication. p. xx–xx. [page numbers]

Newspaper article

Author's surname Initials. Title of article. Title of newspaper. Year month day; page/section.

Website / homepage

Author/Editor/Organisation's name. Title of the page [homepage on the Internet]. City of publication: publisher's name; year created [updated year month day; cited year month day].

Available from: URL

Thesis / Dissertation

Author's surname Initials. Title of thesis or dissertation [thesis/dissertation]. City: university; year.

Personal communication

Personal communications used as a reference should be avoided, unless they provide essential information that is not available from a traceable source. Personal communications should be cited in text only and should not be included in your reference list. It is advisable to get permission from

the source/author of your personal communication. Personal communications in the text should include the date and type of communication (e.g. oral or written):

Surname Initials Year, oral/written communication, month day

For a more comprehensive list of examples see <http://www.library.up.ac.za/health/Vancouver.htm>

ADDENDUM J

Guidelines for Authors: Journal of Adolescent Health

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<http://ees.elsevier.com/jah/>

Editorial Policies

General Information

The Journal of Adolescent Health publishes Original Articles, Adolescent Health Briefs, Review Articles, Clinical Observations, and Letters to the Editor.

Duplicate/Prior/Overlapping Publication or Submission

Manuscripts are submitted for review with the understanding that they are being submitted only to the *Journal of Adolescent Health*. The *Journal* will not consider for review any manuscript that has been published elsewhere, that is currently under consideration by another publication, or that is in

press. Poster and platform presentations and abstracts are not considered duplicate publications, but should be noted in the manuscript's cover letter and acknowledgements section of the manuscript.

If the submitted manuscript contains data that have been previously published, is in press, or is currently under review by another publication in any format, the authors are required to submit a reprint of the published article or a copy of the other manuscript to the Editor-in-Chief with a clarification of the overlap and a justification for consideration of the current submitted manuscript. The Editors encourage authors to report fully the complete findings of their studies. The editors recognize that large and longitudinal datasets often result in multiple publications both on different topics and on the same topics across the span of development. Therefore, it is the authors' strict responsibility both to notify the editors of the existence of multiple manuscripts arising from the same study and to cross-reference all those that are relevant.

Manuscripts accepted for peer review may be submitted to the iThenticate plagiarism checker. iThenticate compares a given manuscript to a broad range of published and in-press materials, returning a similarity report, which the editors will then examine for potential instances of plagiarism and self-plagiarism.

Failure to disclose multiple or duplicate manuscripts may result in censure by the relevant journals and written notification of the appropriate officials at the authors' academic institutions.

Authorship Criteria

As a condition of authorship, all listed authors must have seen the final draft of the manuscript, approve of its submission to the *Journal of Adolescent Health*, and be willing to take responsibility for it in its entirety.

The *Journal* limits manuscripts to 6 named authors. If you would like to request permission to submit an article with more than 6 authors, please send a detailed description of each author's contribution to tor.berg@ucsf.edu. Under no circumstances will the *Journal* consider manuscripts listing more than 10 named authors.

For manuscript's accepted for peer review, a signed Statement of Authorship will be requested from each named author. The *Journal's* Statement can be downloaded in PDF format [here](#). We prefer an electronic copy of the statement: please electronically sign the PDF using Acrobat or print the PDF,

sign it by hand, and scan it. We can also receive statements by fax at (415) 476-6106, though it may delay processing of your manuscript.

If there are concerns about how all persons listed as authors meet the criteria for authorship according to the Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication available at www.icmje.org, we will request further information from the corresponding author and, if necessary, request written documentation of each person's work on the report.

The names, along with any conflicts of interest, funding sources, and industry-relation, of persons who have contributed substantially to a study but who do not fulfill the criteria for authorship are to be listed in the Acknowledgments section. This section should include individuals who provided any writing, editorial, statistical assistance, etc.

Ethical Approval of Studies, Informed Consent, and Identifying Details

Studies of human subjects must document that approval was received from the appropriate institutional review board. When reporting experiments utilizing human subjects, it must be stated in writing, in the Methods section, that the Institution's Committee on Human Subjects or its equivalent has approved the protocol. The protocol for obtaining informed consent should be briefly stated in the manuscript. The Editor-in-Chief may require additional information to clarify the safeguards about the procedures used to obtain informed consent. Within the United States, the authors should verify compliance with the Health Insurance Portability and Accountability Act of 1996 (HIPPA) prior to submission. When reporting experiments on animal subjects, it must be stated that the institution's animal care and use committee has approved the protocol.

Authors must immediately disclose to the *Journal of Adolescent Health* in writing the existence of any investigation or claim related to the manuscript with respect to the use of human or animal subjects that may be initiated by an institutional, regulatory, or official body at any time, including investigations or claims arising subsequent to manuscript submission, approval or publication.

Clinical Trials Registration

In order to foster a comprehensive, publicly available database of clinical trials, journals increasingly are requiring the registration of clinical trials. At this time, registration is not required for submission or publication in the *Journal of Adolescent Health*. However, the Editors strongly

recommend registration of clinical trials in an appropriate registry. Please provide the site of registration and the registration number on the title page.

One such registry is ClinicalTrials.gov, a service of the U.S. National Institutes of Health, at <http://www.clinicaltrials.gov/>. A number of other registries are available.

Conflict of Interest/Disclosure Policy

According to the World Association of Medical Editors (WAME):

"...a conflict of interest (competing interest) is some fact known to a participant in the publication process that if revealed later, would make a reasonable reader feel misled or deceived (or an author, reviewer, or editor feel defensive). Conflicts of interest may influence the judgment of authors, reviewers, and editors; these conflicts often are not immediately apparent to others. They may be personal, commercial, political, academic, or financial. Financial interests may include employment, research funding (received or pending), stock or share ownership, patents, payment for lectures or travel, consultancies, nonfinancial support, or any fiduciary interest in the company. The perception of a conflict of interest is nearly as important as an actual conflict, since both erode trust."

Authors are required to disclose on the title page of the initial manuscript any potential, perceived, or real conflict of interest. Authors must describe the role of the study sponsor(s), if any, in 1) study design; 2) the collection, analysis, and interpretation of data; 3) the writing of the report; and 4) the decision to submit the manuscript for publication. Authors should include statements even when the sponsor had no involvement in the above matters.

Authors should also state who wrote the first draft of the manuscript and whether an honorarium, grant, or other form of payment was given to anyone to produce the manuscript. If the manuscript is accepted for publication, the disclosure statements may be published.

Fast-Tracking for Critical Issues in Adolescent Health and Medicine: *The Journal of Adolescent Health* has developed a fast-tracking system in order to facilitate and encourage the submission of high quality manuscripts with documented findings that may change the content of clinical practice or assist with the national and/or international dialogue about critical issues affecting adolescents and young adults. Manuscripts accepted for a fast-track review will be forwarded to two reviewers from our Editorial Board, who are given two weeks to conduct an expedited review. The *Journal* will notify authors of the outcome of the review within three weeks

of submission. If the review is favorable, fast-track authors will be asked to complete any necessary revisions within two weeks.

Upon acceptance, fast-track manuscripts are prioritized for publication, and should appear in print within two months.

Fast tracking is a rare event intended for high-priority findings and should not be viewed simply as a mechanism for an expedited review. The article should be prepared in the same manner as an Original Article.

The Editorial Process

Acceptance for Review

Manuscripts submitted to the *Journal of Adolescent Health* are reviewed internally for interest and relevance. Approximately half of all submitted manuscripts are returned to the authors without full peer review. That decision is made quickly, within two weeks of submission

Peer review and Decision

Manuscripts accepted for peer review are sent to three external reviewers. Reviewers are anonymous; authors' names are revealed. The *Journal's* goal is to complete peer review and reach a decision within seven weeks of submission.

Manuscripts will either be declined based on reviewer comments or referred back to the authors for revision. This is an invitation to present the best possible paper for further review; it is not an acceptance.

Authors are asked to complete revisions within 30 days. If the authors do not respond within 30 days, the editors may decline to consider the revision. The editors reciprocate by providing a final decision quickly upon receipt of the revision.

Acceptance for Publication

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Authors will receive typeset galley proofs via e-mail from the *Journal's* issue manager at Elsevier.

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Aalsma MA, Tong Y, Wiehe SE, et al. The Impact of Delinquency on Young Adult Sexual Risk Behaviors and Sexually Transmitted Infections. *J Adolesc Health* 2010;46:17-24.

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Books and Monographs

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America's Children: Key National Indicators of Well-Being 2009. Washington, DC: Federal Interagency Forum on Child and Family Statistics, 2009.

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Updated March 2012

ADDENDUM K

Guidelines for Authors: Journal of Research on Adolescence

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Journal of Research on Adolescence

The Official Journal of the Society for Research on Adolescence

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Multidisciplinary in scope, this compelling journal is designed to significantly advance knowledge about the second decade of life. Employing a diverse array of methodologies, it publishes original research that includes intensive measurement, multivariate-longitudinal, and animal comparative studies; demographic and ethnographic analyses; and laboratory experiments. Articles pertinent to the variety of developmental patterns inherent throughout adolescence are featured including cross-national and cross-cultural studies, systematic studies of psychopathology, as well as those pertinent to gender, ethnic, and racial diversity.

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- Advisory Panel (2010a, 16 Jan). [Minutes of meeting held in Bethlehem, Free-State province, South African regarding the Pathways to Resilience Youth Measure (PRYM)].
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