

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

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Resilience (positive adjustment to hardship) relies on a socioecologically 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 (Ungar, Trauma Violence & Abuse 2013;14(3):255–266). 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 (Luthar et al., *Child Development* 2000;71(3):543–562). We argue that, for the most part, quantitative studies of South African youth resilience did not mirror international developments of understanding resilience as a complex socioecologically 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.

Introduction

Resilience, or positive adjustment to hardship, relies on a complex transactional process between individuals and their 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.² 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 sociodemographic 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).^{1,3}

As explained by Masten and colleagues, the interpretation of resilience as a complex process evolved over decades.^{2,4-8} In the early 1970s, 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.² It was thought that these protective resources were embedded within the individual as personality traits, skills and genetic predispositions.^{4,5} 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.⁸ This limitation led to a shift in researchers exploring the mechanisms of resilience and conceptualising how these might inform processes of positive adjustment to hardship. This 1980s shift manifested as *variable-focused models* that relied on analysis of the relationship between resilience and a person's characteristics and aspects relating to their ecologies (e.g. violence, divorce, supportive families, religion).^{4,6} Researchers subsequently focused on testing and promoting these models of resilience processes through prevention, interventions and policymaking.^{5,7} This then prompted questions about how adaptive and maladaptive pathways differed in individuals who experienced adversity, and generated *pathway models* (from the 1990s onwards). However, not enough was known about how resilience processes differed across contexts and cultures.^{2,6} Studies of contextual and cultural influences on resilience led researchers to acknowledge 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.^{1,4}

As detailed below, how resilience (particularly quantitative studies of resilience) was studied in the course of this evolution has received much criticism. Studies of South African youth resilience followed a similar evolution.⁹ The purpose of this article was to conduct a systematic review of quantitative studies of South African youth resilience in order to evaluate how well these studies have avoided the pitfalls made public in the international critiques of resilience studies. In 2010, Theron and Theron⁹ published a review of published studies of South African youth resilience. Although their review did raise some criticisms of prior studies, it did not evaluate the quantitative studies of South African youth resilience against internationally voiced concerns. The current review was guided by the following questions: how does quantitative South African 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 South African youth resilience research against international commentaries, a systematic review of critical commentaries on international youth resilience studies was conducted. The inclusion criteria were (1) internationally indexed, scholarly, peer-reviewed articles and/or book chapters, (2) with titles, keywords, or abstracts that included one of 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 recommended by authors' resilience-focused networks. Only one¹⁰ 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 in which it was included. 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.^{1-4,8,10-30}

When conducting research, scholars make use of scientific approaches of investigation, which Creswell³¹ refers to 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 – reviewing the literature, specifying a purpose for research, and 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 was aimed at how researchers conceptualised resilience and related constructs such as risk and protective factors.^{11,27}

Conflicting conceptualisation of resilience

Master⁸ and Werner²⁵, among others, affirm that 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.⁴ However, Lerner¹⁹ and Luthar et al.¹¹, among others,^{21,26} became critical of a person-focused conceptualisation of resilience and encouraged understandings of resilience as a person ↔ context transaction¹⁹ (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 danger, some recent studies of resilience have 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 socioecological 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 socioecological 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. Master⁸, 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 have discouraged the conceptualisation of vulnerability as the opposite of resilience – vulnerability refers to susceptibility to adverse outcomes.^{2,11} Early studies described resilient individuals as being invulnerable^{2,11}, 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.¹¹

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 et al.¹¹ 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.² 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 that have a single or direct effect on positive adaptation (e.g. good parenting might result in good coping skills).^{11,38} In contrast, other studies conceptualised protective factors as interactive¹¹ or bidirectional¹⁹. 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 protective³⁹, whereas youths in Eurocentric contexts value different relational bonds⁴⁰. 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 as a result of 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.^{6,23} 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.^{1,2}

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 of 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.¹¹ Theoretical frameworks must be made explicit.⁴ If the theoretical framework were not declared, it would make little sense why resilience would be measured in terms of individual, socioecological processes or otherwise. Additionally, if earlier theoretical frameworks (e.g. person-focused or variable-focused theories) were used, the data collected would contribute minimally to the evolved discourse of resilience.¹¹

Over-reliance 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 these studies 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 studies of youth resilience. Provided the theoretical framework is socioecological, and measures are chosen accordingly, long-term designs will allow researchers to observe individual and

socioecological 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.^{1,10,28} 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.¹⁰ Moreover, despite current consensus that resilience is a transaction between an individual and his/her social ecology, most resilience measures do not mirror this view.^{18,24,28} Gartland et al.¹⁷ and Tol et al.²² note that many resilience measures have a limited focus and scope because they address individual characteristics and not the dynamic socioecological 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.¹⁰

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^{1,11}, which essentially translates into sampling bias¹⁰. 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 a poor understanding of their specific resilience processes.⁴²

Then, discrepancies exist in how constructs related to resilience are measured. For example, Luthar et al.¹¹ 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, but rely on available national and regional statistics (i.e. sociodemographic 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.^{4,11}

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^{4,30} 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 youths' resilience cannot be determined, and the study of resilience will be impeded.² 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 et al.¹¹ 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 faults 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

In this phase of the review, we used the critiques listed above to comment critically on quantitative resilience studies of South African youth. To select relevant studies, we included only peer-reviewed, South African 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 UN⁴⁵. 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. The findings are summarised in Table 1 and are detailed below.

Table 1: Summary of South African 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
Bloemhoff ⁴⁶	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 N = 46	Potential construct/item bias Cultural appropriateness of scale not mentioned Validation of scale not reported	PF	t-test ANCOVA	Theorised five interrelated conceptual domains of risk and related protective factors
Bloemhoff ⁴⁷	Person-focused construct	Environmental stressors	Factors that buffer the impact of environmental/biological stressors	Product of various protective factors	Shortened Protective Factors Scale N = 47	Potential construct/item bias Cultural appropriateness of scale not mentioned Validation of scale not reported	PF	t-test ANCOVA	Theorised five interrelated conceptual domains of risk and related protective factors
Bloemhoff ⁴⁸	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 Measure translated/back-translated N = 29	Potential construct/item/administration bias Cultural appropriateness of scale not mentioned Validation of scale not reported	PF	t-test ANCOVA	Theorised five interrelated conceptual domains of risk and related protective factors
Choe et al. 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 N = 424	Potential construct/item/sampling/administration bias Cultural appropriateness of scale not mentioned Validation of scale not reported	R PF	SEM	Cumulative measures of risk and protective factors
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, Resiliency Scale and Fortitude Questionnaire N = 161	Potential construct/item bias Cultural appropriateness of scales not mentioned Validation of scales not reported	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 Cultural appropriateness of scale not mentioned Validation of scale not reported	R PF	Frequency analysis	Asset-focused resilience
Jorgensen and Seedat ⁵⁰ (publication of psychometric results)	Person-focused construct	Threats to homeostasis	X	Set of individual characteristics	Connor-Davidson Resilience Scale N = 701	Potential sampling bias 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, COPE Scale and Parental Authority Questionnaire N = 360	Potential construct/item/sampling bias Cultural appropriateness of scales not mentioned Validation of scales not reported	X	Hierarchical regression analysis	X
MacDonald et al. ⁵¹	Person-focused construct	X	X	Individuals' capacity to cope	Adolescent Coping Orientation for Problem Experiences and High School Personality Questionnaire N = 42	Potential construct/item/sampling bias Cultural appropriateness of scales not mentioned Validation of scales not reported Reported use of cut-off scores	X	Correlations	X

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	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
Mampane ⁵⁶ (publication of psychometric results) Ward et al. ⁵⁷	Person-ecological transaction Process-oriented	Negative environments Negative life events	Protective factors are seen as strengths Protect against negative outcomes	Socioecological transaction Multidimensional construct	Resilience Questionnaire for Middle-adolescents in Township Schools N = 231 Social and Health Assessment, Substance Abuse Report Scale, Survey of Exposure to Community Violence, Anxiety and Depression Subscales of the Behavioural Assessment System for Children, Peer Risk Behaviours (self-developed) and Perceived Competence Scale for Children N = 377	X	R PF	EFA SEM	X X
Wild et al. ⁵⁵	Process-oriented	Death of a parent	Assets or resources are uni-directional	Interaction between multiple risk and protective factors	<ul style="list-style-type: none"> Life Events Questionnaire for Adolescents 10-item Acceptance Subscale from the Revised Child Report of Parent Behaviour Inventory Five-item Monitoring Scale Eight-item Psychological Control Scale (self-developed) Adaptation of the 11-item Measure of Peer Delinquency One item measuring respect for individuality in the adolescent's peer relationships Four items measuring how often the adolescent had spent time during the last six months with neighbours, parents of friends, community leaders and church leaders Five items measuring the presence of social disorganisation Children's Depression Inventory Children's Manifest Anxiety Scale – Revised Seven items from the Global Self-worth Subscale of the Self-esteem Questionnaire Measure translated/back-translated N = 159	Potential construct/item/sampling/ administration bias Cultural appropriateness of scales not mentioned Validation of scales not reported	R PF	Hierarchical regression analysis Correlations ANOVA	Variable-based model of resilience
Fincham et al. ⁵⁸	Process-oriented	Exposure to community violence, trauma, stress, and childhood abuse/neglect	Protective factors that buffer the effects of risks	Product of various protective factors	Child PTSD Checklist, Child Exposure to Community Violence, Childhood Trauma Questionnaire, Perceived Stress Scale and Connor-Davidson Resilience Scale N = 787	Potential construct/ item bias Cultural appropriateness of scales not mentioned Validation of scales not reported	R PF	Correlations Hierarchical multiple regression analysis	X

PF, protective factors; R, risk; X, absent; ANCOVA, analysis of covariance; SEM, structural equation modelling; ANOVA, analysis of variance; EFA, exploratory factor analysis; CFA, confirmatory factor analysis

Identifying a research problem

Conflicting conceptualisations of resilience

South African quantitative studies of resilience did not conceptualise resilience uniformly. In 5 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 as an individual's ability to bounce back after experiencing hardship⁵⁰. 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: '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 Masten⁸, Windle²⁷ and Rutter³⁵. More recent studies did not reflect the evolution of resilience conceptualisations, as described by Masten⁸.

Varying or 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 10th study,⁵⁵ risks were defined as the death of a parent, which pointed to specific life events that led to negative outcomes. The 11th study⁵⁰ 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

Over-reliance 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.^{4,6} Alignment with Wave 2 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.^{4,6}

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 between 2006 and 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 studies, 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-12 learners 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 bias¹⁰ 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).^{1,2} None included youth with disabilities or life-threatening illnesses. However, one study⁵⁵ investigated youth living in an AIDS-affected community. In addition, 6^{46-48,51,52,55} of the 13 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 South African 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 invalid. Invalid scales used to measure resilience might potentiate construct or item biases.¹⁰ 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 South African 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, South Africa. However, readers of the study were cautioned that the R-MATS needed to be administered to a nationally representative sample and the related psychometric property needed to be determined before it could be deemed valid for use in other South Africa 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 South Africa 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 South African youths.

Analysing and interpreting data

Unsophisticated statistical analysis

Quantitative studies of South African 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, analysis of variance (ANOVA) and covariance (ANCOVA). From 2007 to 2012, seven studies^{49,50,54-58} employed more advanced statistical analysis (i.e. structural equation modelling, multiple regression analysis, and exploratory and confirmatory factor analysis). 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 because of 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 11^{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 South African youth resilience to comment on whether and how local studies are compromised in light of the public critiques of international studies of resilience. We have shown that the majority of published studies contributed marginally to our knowledge regarding person ↔ ecological transactions of South African youth resilience for the reasons discussed below. In spite of this finding, there were 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 South African 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 to scrutinise the transactional nature of resilience processes of at-risk South African youth.

The problems inherent in the reviewed quantitative studies of South African youth resilience are mostly related to the use of outdated and/or undeclared theoretical frameworks informing conceptualisation and operationalisation, an abundance of cross-sectional studies, as well as overreliance on univariate and bivariate analyses. The majority of South African 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 that South African 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 invalid Western scales, suggesting possible biased findings, which potentially invalidates results.¹⁰ The lack of published psychometric results limits decisions about the validity of scales available for use with South African 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 or 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.¹¹ In particular, the exclusion of youth with disabilities or life-threatening illnesses translates into an inadequate understanding of their resilience.

The South African youth resilience studies reviewed 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, there still is little

known about how South African 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 ↔ ecological conceptualisations of resilience³⁰ and to offer complex theories of youth ↔ context resilience processes among South African youths, researchers need to ground their quantitative research designs in up-to-date theoretical frameworks in ways that respect the sociocultural life worlds of South African youths.^{4,11} Doing so 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 South African youths' resilience. Concomitant with this is that researchers take advantage of the statistical strengths of multivariate analysis. Univariate and bivariate analyses will not allow researchers to make complex, culturally congruent inferences regarding the transactional, contextually relevant 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 to avoid potentially biased findings (i.e. exploratory and confirmatory factor analysis, target rotations and differential item functioning).¹⁰ 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 South African 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.¹⁰ Finally, longitudinal studies of South African youth resilience are overdue. A continued absence of longitudinal studies will impede understanding of the long-term wellness of South African youths who are at risk.

Conclusion

We considered concerns relating to reviewed quantitative studies of South African youth resilience. The concerns are numerous and dictate sophisticated, multivariate-driven future investigations. What emerged urges future studies of South African 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 relevant transactions that inform the resilience processes of South African youth. Because many South African 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 policymakers 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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Authors' contributions

A.v.R. was the project leader and was responsible for conceptualisation, data analysis and writing of the manuscript as fulfilment of her PhD studies. L.T. was the promoter and made conceptual contributions. S.R. was co-promoter and provided conceptual contributions.

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