Teacher Resilience in South Africa: The Self-Efficacy and Teacher Efficacy of Pre-Service Teachers Preparing to Teach in a Challenged Context

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Abstract: This publication addresses a gap in high-quality, quantitative studies on teacher resilience within the less-researched context of the Global South. Specifically, it examines the self-efficacy and teacher efficacy of three cohorts of final-year pre-service teachers in South Africa (N = 1,193). This article aimed to contribute evidence on teacher resilience from an under-researched African context and population. Despite contextual challenges, the pre-service teachers indicated high intrapersonal resilience-enabling pathways, with a statistically significant relationship between their self-efficacy and teacher efficacy. The authors propose an evidence-based framework of how high levels of self-efficacy and teacher efficacy may enable prospective teachers to teach despite chronic and cumulative challenges. Few teacher resilience studies exist in the Global South and South Africa, and this study contributes to the body of literature in this field and hopes to promote place-based (e.g., Global South) research through contextual lenses to provide necessary needed evidence for teacher resilience.

Keywords: Teacher education and resilience, Self-efficacy, Teacher efficacy, Global South, Quantitative, Comparative case study design.

Introduction

Given the extremely challenged context in which teachers in South Africa – and in other similar Global South countries – teach, it is necessary to understand resources that enable teachers to continue teaching – as much as it is important to understand what constrains their capacity and leads to burnout or leaving the profession. These insights are especially meaningful for teacher education. Evidence on key resilience-enabling resources pertinent for pre-service teachers can inform the design of higher education curricula aimed at preparing teachers to continue teaching.

This article aims to contribute evidence on teacher resilience from an under-researched African context and population. Western understandings of resilience may not be applicable to a Global South context (Bosch, 2020; Ebersöhn, 2015; Masten & Wright, 2010). There is a need for an evidence-based framework for teacher resilience within challenged contexts due to: (i) the dearth of quantitative teacher resilience studies (Ainsworth & Oldfield, 2019; Kidger et al., 2016), (ii) limited knowledge about resilience in teachers overall (Beltman et al., 2018), (iii) an even greater gap in understanding pre-service teacher resilience (Mansfield et al., 2016; Morgan, 2011), particularly in developing countries

(Ebersöhn, 2015, 2016; Ebersöhn et al., 2020; Theron, 2016; Versfeld et al., 2023). Accordingly, research implores that contextualisation of resilience should be developed at a local level since context plays a key role in studies of adversity (Shean, 2015). Such understanding would include an agreed insight into resilience terms so that conceptualisation of resilience is grounded in the local community, such as a Global South context. Therefore, the purpose of the current publication was to investigate – within an under-researched South African context – two intrapersonal protective resources (self-efficacy and teacher efficacy) pertinent to teacher resilience. The research question guiding the article was: How can insight into the self-efficacy and teacher efficacy of three cohorts of final-year teacher education students inform knowledge on teacher resilience?

Theoretical Underpinning

Contextualising: Challenged Global South Space and Teacher Education

Ebersöhn (2017) denoted the plausibility that education as a buffer against adversity may differ from country to country, particularly between the Global South and Global North. Shaped by colonial histories, Global South countries have adapted to marginalisation, inequality, substantial health, limited access to resources, and social and economic risks (Ebersöhn, 2016, 2017; Ebersöhn & Loots, 2017; Montiel, 2018). Consequently, Global South spaces are often equated with the challenge in that there is an intersection of chronic and cumulative risk to development and wellbeing, be it in terms of education (high levels of illiteracy, limited educational opportunities, inadequate teacher training, a continuously changing education system), social dimensions (gender discrimination, social dislocation or displacement), economic deprivation (poverty, unemployment and limited job opportunities), or health crises (poor health care systems and high vulnerability to illness) (Francis & Webster, 2019; Montiel, 2018; Sayed & Badroodien, 2016).

South Africa denotes such a challenged space (Global South) and is characterised by inherited structural disparity stemming from its post-colonial history (Ebersöhn, 2014, 2017). These disparities have resulted in extreme inequality and concomitant adversities. Systemic, chronic and cumulative risk factors thus constrain the personal- and work-lives of teachers. Such a challenged context predicts negative outcomes for teachers, including stress, burnout, attrition and decreased quality of teaching and learning (Ebersöhn, 2017). A challenged context also includes resources, and from a resilience position, the focus of the current study is on pathways where available resources are used for positive adaptative responses to adversity (i.e., threat, risk, or challenge) (Cassidy, 2015; Fletcher & Sarkar, 2013). Researchers define resilience as a dynamic, multifaceted, multidimensional, socially constructed, developmental and interactive process between intrapersonal and ecological factors (Ebersöhn, 2019; Ungar et al., 2013).

Resilience is evident when – given a particular challenge – the predicted trajectory towards negative outcomes is circumvented and unexpected, positive outcomes are enabled. These outcomes may include relatively favourable outcomes despite risk. They may also involve overcoming distress and/or adversity or reducing vulnerability to ecological barriers, which suggests positive health, wellbeing, and fluid outcomes, even in adverse conditions (Chen & Lee, 2022; Rutter, 2012). Ebersöhn (2014) contends that, in a space of structural disparity, resilience outcomes exist on a continuum – with days where extraordinary positive outcomes are experienced and others where negative outcomes manifest. Ebersöhn (2015) further emphasised the importance of place-based (e.g., Global South) research through contextual lenses to provide necessary needed evidence for teacher resilience. Most resilience studies originate from North America or Europe without an understanding of resilience at a

local contextual level (Ebersöhn, 2017; Shean, 2015; Walter & Fox, 2021). As a fairly novel research domain, teacher resilience is mostly studied in the Global North. The contextual-nestedness of teacher resilience is established with risk factors and protective resources embedded in a specific context (Ungar, 2012).

Conceptualising Teacher Resilience, Self-Efficacy, Teacher Efficacy and Teacher Education

Teacher resilience refers to the "process of, capacity for, and outcome of positive adaptation and ongoing professional commitment and growth in the face of challenging circumstances" (Wosnitza et al., 2014, p. 2) and recurring setbacks (Mansfield et al., 2016; Peixoto et al., 2018; Wosnitza et al., 2018). Teacher resilience requires teachers to negotiate between risk factors and source relevant protective resources – whether internal to themselves or externally available in their context – to appraise and adapt to stressful situations, enabling them to continue teaching (Mansfield et al., 2016; Peixoto et al., 2018; Versfeld et al., 2023).

Ebersöhn (2014) found that resilient teachers teaching in spaces of chronic and cumulative challenges would be able to identify and access internal and external protective resources. By employing these resources in a sustained manner, they can mitigate ongoing adversity or promote unexpected positive outcomes. Teachers may therefore follow different pathways to develop resilience processes, enabling them to negotiate the perceived dissonance between available assets and adversity (Coetzee, 2013; Ebersöhn, 2014). By drawing on protective resources, teachers are able to not only "bounce back" but also thrive professionally and personally. This includes experiencing job satisfaction, fostering positive self-beliefs, maintaining wellbeing, and sustaining enthusiasm, engagement, motivation, and an ongoing commitment to the profession (Mansfield et al., 2014, 2016; Wosnitza et al., 2014). These factors contribute to job satisfaction, commitment, retention, and delivery of quality education (Ebersöhn, 2014). Thus, in the socio-ecological process of resilience (Fletcher & Sarkar, 2013; Gu, 2014; Masten, 2018; Ungar et al., 2013), one pathway teachers may use to continue teaching is to use their own intrapersonal traits. In the current article, we focused on two intrapersonal traits with relevance for teacher resilience, namely self-efficacy and teacher efficacy. The presence of these traits constitutes internal pathways that support teachers to continue teaching despite challenges (Ee & Chang, 2010; Roth & Von Collani, 2007).

Self-efficacy is the belief the individual demonstrates to organise and achieve a required action to accomplish tasks (Bandura, 1977). Self-efficacy has correlating elements relating to required skills for performance and personal appraisal of competence to perceive a sense of control over events (Bandura, 1989). As a future-oriented belief, self-efficacy influences thinking and feeling patterns which can support or hinder actions prediction of expected performance or competence (Bandura, 1997). Teacher efficacy is the self-perceived belief a teacher demonstrates in their skills to accomplish a particular teaching task (Raath & Hay, 2016; Tschannen-Moran & Woolfolk Hoy, 2007). Therefore, teacher efficacy is a teacher's context-specific judgement or belief on how they will adapt, given the acquired skills or situation, to effectively accomplish a particular teaching task (Bandura, 1986, 1993, 1997; Tschannen-Moran & Woolfolk Hoy, 2007). Others (Connor & Davidson, 2003; Ee & Chang, 2010; Masten et al., 1990) have found that self-efficacy (*confidence in recovery from setbacks (Morgan, 2011)*) and teacher efficacy (*confidence in teaching and behaviour management (Morgan, 2011)*) act as individual enablers within the microsystem of pre-service teachers (Bronfenbrenner, 1979). Teacher resilience, including pre-service teacher resilience, has gained increasing attention given global teacher shortages, workforce issues and quality teaching worldwide (Duffin et al., 2012; Wosnitza et al., 2014), including in the Global South (Ebersöhn, 2016, 2017). Quantifying factors such as self-efficacy and teacher

efficacy beliefs is crucial for understanding how teachers resile and thrive in a challenging profession (Ainsworth & Oldfield, 2019).

Ebersöhn (2014) emphasised the need for teacher developmental agendas to include knowledge of teacher resilience traits as pathways to sustain adaptation processes in spaces of high challenge. Furthermore, research from high-income countries (Fischer et al., 2018; Peixoto et al., 2020) further highlighted the critical role of intrapersonal resources in fostering teacher resilience. Intrapersonal traits are a signature element of resources from which teachers can draw (if present) during extreme and continuous hardship to resile. Thus, notwithstanding a challenged context, individual capacity (and systemic resources) may serve as capital to mitigate against adversity (Ebersöhn et al., 2020; Papatraianou & Le Cornu, 2014). The presence or absence of intrapersonal traits (e.g., self-efficacy and teacher efficacy) may enable or constrain pre-service teachers' resilience for the monumental teaching task, given disparities in a challenged context.

Systematic knowledge on the presence or absence of such traits may guide the adaptation and enhancement of pre-service teacher programmes to assist pre-service teachers with the acquisition and development of necessary resilience traits. Initial teacher education, preparation, development, or training programmes denote the procedures, policies, structures and processes that equip new teachers with the knowledge and skills needed for classroom, and societal roles (Department of Basic Education [DBE], 2019; Organisation for Economic Co-operation and Development [OECD], 2019; Republic of South Africa [RSA], 2000; Taylor, 2016). Teacher education includes formal programmes that have been established by institutions for the preparation of future teachers across various levels, including early childhood development, primary/elementary, and secondary school levels (Taylor, 2016). Knowledge of teacher resilience can also create awareness for pre-service teachers regarding traits they possess and can mobilise to buffer against adversity to thrive in the teaching profession to retain quality teachers in challenged contexts.

The current publication focusses on intrapersonal resilience-enabling pathways to teacher resilience (i.e., microsystem as theorised by Bronfenbrenner [1979]) in the context of a challenged Global South education system. Teachers may experience challenges such as burnout or stress, depression, avoiding asking for assistance, low confidence or self-efficacy, conflicts between beliefs and implemented practices, family pressures, overwhelming responsibilities, and a lack of self-belief about classroom management on the microsystem (personal level). However, chronic poverty and the resulting compounded psychosocial problems are evident at every level of the South African ecosystem (Mansfield et al., 2018; Statistics South Africa [Stats SA], 2020). On the other hand, there are assets within the teachers' microsystem (i.e., personal protective resources) whose presence or absence could enable or constrain resilience. These enablers may include self-efficacy, teacher efficacy beliefs, social, emotional, professional, and motivational capacities, coping behaviours and strategies, personal resources, vocational purpose and intrinsic value, and self-care (Ainsworth & Oldfield, 2019; Peixoto et al., 2018; Versfeld et al., 2023).

A resilience lens, rather than a focus on stress and burnout, can promote positive outcomes by fostering knowledge on adaptive responses to adversity (Ebersöhn, 2017). It is, therefore, essential to address constructs such as teacher resilience in pre-service teachers, as key indicators of why some teachers prevail despite hardship. Self-efficacy and teacher efficacy are thus protective factors that may be mobilised as resilience-enabling intrapersonal pathways to support teachers in demonstrating resilience. In the current publication, self-efficacy is operationalised as recovery from setbacks, and teacher efficacy as confidence in teaching and behaviour management of teachers (Day & Gu, 2014; Versfeld et al., 2023). Therefore, self-efficacy and teacher efficacy are viewed as an intrapersonal resilience-

enabling pathway to teacher resilience in the current article. The presence or absence of teacher efficacy may enable or constrain resilience.

The research employed a Social Cognitive Theoretical (Bandura, 1986) framework to compare self-efficacy and teacher efficacy within a challenged context, highlighting intrapersonal resilience-enabling pathways to teacher resilience. In this regard, pre-service teachers participating in the FIRE project entered with unique determinative factors (e.g., history, background, world views, gender, and culture) (Bandura, 2002). The Social Cognitive Theory (SCT), postulated by Albert Bandura (1986, 1989), underlined the notion that adaptation occurs in a reciprocal manner between the individual, ecology, and behaviour.

The FIRE Teacher Resilience Measure scales used in the current article are grounded in the conceptual underpinning of the self-efficacy theory of Bandura (1977). Therefore, the SCT seemed well-suited to understanding pre-service teachers' personal development and adaptation, highlighting the current article's potential contribution to the phenomenon of teacher resilience. Framed within Bandura's (1986) SCT, research on pre-service teachers has provided the scholarly field with various theoretical predictors (Legrain et al., 2019; Rubenstein et al., 2018). Self-efficacy is a dominant component in the SCT since Bandura considered the construct as the foundation of individual agency (i.e., potential control individuals have over their behaviour) and asserted that the feelings of personal efficacy are important in behaviour (Bandura, 1977, 1986, 1997; Yost, 2016). The current publication investigated if the latter held true within a challenged context.

Examining teacher efficacy beliefs of pre-service teachers is important since beliefs seem pliable in the beginning teaching years (Bandura, 1977, 1997) and may be resistant to change once established (Lemon & Garvis, 2016). Hence, it is necessary to explore the efficacy beliefs of pre-service teachers while in training (Lemon & Garvis, 2016). The choice of incorporating Bandara Social Cognitive view (Bandura, 1977, 1986, 2001) in self-efficacy studies has been confirmed by numerous researchers (Cassidy, 2015; Chesnut, 2017; Hewitt et al., 2017; Lemon & Garvis, 2016). However, the theory has been criticised for ambiguous definitions, methodological deficiency and inadequate evaluation or methods to validate conclusions (Biglan, 1987; Eastman & Marzillier, 1984). A valid self-efficacy appraisal (Chesnut, 2017) is also only possible if pre-service teachers can accurately recognise their abilities. Furthermore, although Bandura (1977) assumed that high self-efficacy provides the ability to cope with potentially aversive events, the SCT does not adhere to a placed based argument needed in a Global South place. Due to this limitation, we also incorporated Ebersöhn's (2014) contextualised structural disparity lens in the conceptual framework to contextualise teacher resilience and teacher efficacy beliefs within a challenged context.

The SCT postulated the notion that adaptation occurs in a social context where pre-service teachers can actively contribute (i.e., individual as active agent) to their development within a reciprocity process over time (Bandura, 1989). The individual (i.e., pre-service teachers with internal traits including for example grit, hardiness, positive emotions, and efficacy), behaviour (e.g., employing adaptive coping strategies, beliefs and protective resources) and the environment (i.e., including risk and protective factors in a challenged context) thus continuously influence one another bidirectionally. Given the SCT's assumptions, pre-service teachers may select, influence and construct their circumstances. Consequently, they are active agents (correlating with Castro et al.'s [2010] active agent view for teacher resilience), shaping themselves and their context (Bandura, 1989), which include the socio-ecological environment (Ungar, 2012; Ungar et al., 2013).

As a central feature of the SCT, self-efficacy beliefs (Bandura, 1977, 1986) can affect pre-service teachers' behaviour, perceptions, and outcomes directly or indirectly. As a result, pre-service teachers may pursue goals as well as challenges, rebound from setbacks, persist or demonstrate grit, hardiness, control and optimism when faced with obstacles (Bandura,

1986, 1993, 1997; Perkins-Gough, 2013). Therefore, even if there is adversity, self-efficacy can function as a protective resource if pre-service teachers believe they can succeed and recover from setbacks (Hewitt et al., 2017). The latter may likely "counteract" adversity or enable resilience pathways. From this perspective, self-efficacy is an element of competence (Lemon & Garvis, 2016), predicting possible enabling pathways to resilience.

Methodology and Methods

Research Design and Approach

We employed a comparative case study design to compare cross-sectional secondary data of pre-service teachers in the FIRE project using a quantitative approach. Comparative case studies are particularly valuable as they consider cultural and contextual factors, and by incorporating a temporal component, they can track changes over time, helping to identify trends (Parreira do Amaral, 2022). The use of secondary data offers notable advantages, such as eliminating the costs associated with instrument design and data collection, as these have already been handled by the primary researchers, thereby saving significant time (Gray, 2020). Advantages of quantitative research include its ability to produce objective results and the use of large sample sizes allows for statistical inference (Bakhtiyarovna, 2024).

Participants

The FIRE project was conducted from 2015 to 2017 at a South African university with final-year pre-service teachers. The sample included a total of 1,193 pre-service teachers between the age ranges of 20 years to 32 years. Of these, 18.7% identified as male, 77.9% as female, and 3.4% did not specify their gender identity. The linguistically and culturally diverse cohort (2015–2017) indicated their home language influences as follows: English (92.5%), Afrikaans (52.4%), isiZulu (24.6%), Sepedi (13.5%), Setswana (9.8%), Sesotho (6.9%), siSwati (6.6%), isiNdebele (4.6%), isiXhosa (3.3%), Xitsonga (2.1%), Tshivenda (0.8%), and "other" (2.8%). In South Africa, formal schooling comprises 13 years (Grade R-12) with enforced compulsory schooling for learners aged 7 to 15 (Grade 1-9) (RSA, 1996). Respondents could indicate multiple languages in the demographic question pertaining to language fluency, as it was an open-ended, multiple-response option question. Regarding teacher education programmes, the largest group of respondents were enrolled for the Further Education and Training (FET) (Grade 10-12) programme (36.5%), with programmes in the Foundation Phase (FP) / Early Childhood Development (ECD) (Grade R-3) (26.1%) as the second largest group. The Intermediate Phase (IP) (Grade 4-6) programme included 13.2% of respondents, while the Senior Phase (SP) (Grade 7-9) programme constituted the smallest group (8.5%). Just over one-tenth (11.4%) of respondents did not specify their enrolled pre-service teacher programme phase.

Instrument

As no validated teacher resilience measure exists for use within the South African population, the FIRE Teacher Resilience Measure was developed specifically for use in the FIRE project. This measure incorporated scales from existing measures used in Global North teacher resilience studies. Items were drawn from the FIT-Choice scale (Watt et al., 2012), the ENTREE project (Mansfield & Wosnitza, 2015; Peixoto et al., 2018; Wosnitza et al., 2014) and contextual resilience questions (Coetzee, 2013). The FIRE Teacher Resilience

Measure encompasses domains on (i) teacher professionalism (TR-Prof), (ii) teacher emotion (TR-Emot), (iii) teacher motivation (TR-Mot), (iv) teacher social capacity (TR-Soc), (v) self-efficacy (SelfEff), (vi) teacher efficacy (TeachEff), and (vii) contextual resilience questions.

For the purpose of the current article, items related to self-efficacy (SelfEff) and teacher efficacy (TeachEff) were analysed using descriptive and inferential statistical procedures on data (Leedy & Ormrod, 2015). Self-efficacy, within the current article, was operationalised as the confidence final-year pre-service teachers demonstrate in recovery from setbacks in a school setting, as depicted by the item indicators displayed in Table 1 as measured by the Teacher Resilience scale (Morgan, 2011) from the FIRE Teacher Resilience Measure. These variables may have a likely relationship with teacher resilience and are included for analysis purposes in the current publication. The level of measurement for the data was ordinal, with Likert scale options ranging from 1 = "absolutely not confident" to 7 = "strongly confident".

Measure	Question
"How confident are pre-service teachers to deal with setbacks in school?"	Getting over setbacks in school Bouncing back, when things upset me Carrying on with my school work when things go wrong Carrying on in school when events upset me Feeling certain that things will come right even if there are serious problems in school Managing negative events in school when I try Coping with most problems on any school day Some negative things that have happened in school have made me better able to deal with problems Not getting disheartened even when children's circumstances make it difficult

Table 1: FIRE Teacher Resilience Measure: Self-Efficacy (SelfEff) of Pre-Service Teachers

Teacher efficacy denoted final-year pre-service teachers' confidence in teaching and behaviour management (measured by the Teacher Efficacy scale [Morgan, 2011; Peixoto et al., 2018] from the FIRE Teacher Resilience Measure) in a challenged context. Item indicators are displayed in Table 2. These variables, which may have a likely relationship with teacher efficacy, are included for analysis purposes in the current article. The level of measurement was ordinal and options on the Likert scale were 1 = "absolutely not confident" to 7 = "strongly confident".

Measure	Question
"Teacher efficacy for teaching"	Teaching all the subjects on the curriculum effectively Explaining difficult material in ways that the children will understand it Suggesting suitable examples when the children are having difficulty understanding Teaching in a way that my students will remember important information Applying the new developments in the curriculum into my teaching Helping children focus on learning tasks and avoid distractions
"Teacher efficacy for behaviour management"	Managing inappropriate behaviour Encouraging students to take responsibility for their behaviour Dealing with the diverse learning needs of the students in my class Teaching students positive behaviour Providing students with clear specific behaviour expectations Communicating effectively with parents

Table 2: FIRE Teacher Resilience Measure: Teacher Efficacy of Pre-Service Teachers

Table 2 presents the teacher efficacy variables (Morgan, 2011; Peixoto et al., 2018) from the FIRE Teacher Resilience Measure.

We, thus, purposively included two variables, self-efficacy, and teacher efficacy. We excluded additional FIRE Teacher Resilience Measure variables (i.e., teacher professional, teacher emotions, teacher motivation and teacher social capacities included in 2015–2017), since we wanted to foreground variables denoting the confidence of pre-service teachers to both recover from setbacks, as well as in their teaching and behaviour management given a challenged context. The FIRE Teacher Resilience Measure scales used in the current publication (i.e., Teacher Resilience scale and Teacher Efficacy scale originally developed by Morgan [2011]) are grounded in the self-efficacy theory of Bandura (1997) and have been validated in other countries (e.g., Australia, Germany, Ireland, Malta, and Portugal) within the teaching landscape (Peixoto et al., 2020).

Previous studies (Beltman et al., 2018; Morgan, 2011; Peixoto et al., 2018, 2020; Wosnitza et al., 2018) found that *confidence in recovery from setbacks* and *confidence in teaching and behaviour management* were significant or strong contributors to teacher resilience in all indicated countries in comparison with social, emotional, professional and motivational capacities that differed in significance (Peixoto et al., 2018). Thus, quantifying factors influencing teachers' ability to resile in a Global South context is needed given the emergent teacher resilience field, the lack of robust resilience measures and limited research on resilience in pre-service teachers (Mansfield et al., 2016; Morgan, 2011).

Insight into pre-service teachers' intrapersonal resources may be important to attract, retain and support quality pre-service teachers to resile despite challenging circumstances. In this regard, literature highlights the importance of resilience traits (i.e., self-efficacy and teacher efficacy) for teacher resilience (Beltman et al., 2018; Gu & Day, 2013; Peixoto et al., 2018, 2020; Wosnitza et al., 2018) also in a Global South context (Coetzee et al., 2017; Ebersöhn, 2014, 2017; Ebersöhn et al., 2020; Mansfield et al., 2018; Raath & Hay, 2016; Versfeld et al., 2023). Thus, instead of using all constructs (i.e., Teacher professionalism (TR-Prof), teacher emotion (TR-Emot), teacher motivation (TR-Mot), teacher social capacity (TR-Soc), self-efficacy (SelfEff), teacher efficacy (TeachEff) and contextual resilience variables) available on the FIRE Teacher Resilience Measure, only a selection of variables (i.e., self-efficacy and teacher efficacy beliefs) related to the purpose of the current publication were selected for analysis given the set parameters. Ethical considerations included the access and permission to utilise extant data (University of Pretoria, 2015), the privacy of extant data (Leedy & Ormrod, 2015) and ethical reporting of extant data (Babbie, 2021).

Statistical Analyses

The ordinal data (Likert scale data) for both constructs (self-efficacy [9 items] and teacher efficacy [12 items]) were averaged using SPSS to create continuous scale variables for comparison. By including items (relevant scales) from all FIRE respondents (i.e., final-year pre-service teachers), the research question was addressed. Hence, insight into the self-efficacy and teacher efficacy beliefs of final-year pre-service teachers in a challenged context can inform knowledge on teacher resilience. Furthermore, confirmatory factor analysis (CFA), reliability, validity and statistical power analyses (Cohen et al., 2018; Sauro & Lewis, 2016) were conducted for rigour.

Before conducting inferential statistics, normality tests (Kolmogorov-Smirnov) showed non-normal distributions for both constructs (all $p < .001$); and, accordingly, nonparametric statistics were used. The Wilcoxon signed-rank (WSR) test, suitable for related samples with non-normal or ordinal data, was used as an alternative to the paired *t*-test (Pietersen & Maree, 2019). The nonparametric Spearman (r_s) test was used instead the

parametric Pearson correlation, to run correlations between the self-efficacy and teacher efficacy beliefs of pre-service teachers, given the ordinal data (Pietersen & Maree, 2019; Roni et al., 2020). It should be noted that correlation does not imply causation (Roni et al., 2020). Akoglu (2018) classifies r_s values in the education field as follows: 1 = perfect; $.7 \leq r_s < 1$ Strong; $.4 \leq r_s < .7$ Moderate; $.1 \leq r_s < .4$ Weak; 0 = None.

Quality Assurance

To establish the reliability and validity of the questionnaire, Cronbach's alpha is typically used for reliability and correlations for construct validity. However, before these reliability and validity tests can be conducted, the underlying factor structure of the theoretical model has to be confirmed using a CFA. For the CFA, when interpreting the goodness-of-fit (GoF) indices (such as the Chi-square (χ^2) statistic, the goodness of fit index (GFI), the adjusted GFI (AGFI), the comparative fit index (CFI) and the Tucker-Lewis index (TLI)), it's important to take note of the following. The most commonly reported index used to be the χ^2 statistic; however, it is very sensitive to sample size and is no longer relied upon as a basis for acceptance or rejection (Ximénez et al., 2022). However, the χ^2 values and their degrees of freedom (*df*) are reported, since the latter gives an indication of model complexity. Regarding the other GoF measures, recent research advocates against the use of conventional cut-off values such as CFI $\geq$ .9 as these conventional cut-off values were derived via simulation without considering sampling variability (Ximénez et al., 2022) and are debated as being too strict (Xia & Yang, 2019). Xia and Yang (2019) argue that larger GoF values (such as the CFI) and smaller badness-of-fit (BoF) values[1] (such as the root mean-square error of approximations [RMSEA]) indicate better fit, and one should not solely depend on the conventional cut-off values recommended decades ago by, e.g., Hu and Bentler (1999).

The GoF values are considered first by considering the entire scale (χ^2 = 1744.21, *df* = 188) and the two sub-scales: SE (χ^2 = 607.36, *df* = 27) and TE (χ^2 = 889.74, *df* = 54) with the *df* indicating model complexity, i.e., the lower the *df*, the less complex and vice versa, the higher the *df* the more complex the model.

Statistic	Recommended values	Entire	Self-efficacy	Teacher efficacy
RMSEA	< .10 (preferably < .08)	.083	.134	.114
GFI	0 (no fit) – 1 (perfect fit)	.865	.896	.867
AGFI	0 (no fit) – 1 (perfect fit)	.834	.827	.807
CFI	0 (no fit) – 1 (perfect fit)	.876	.867	.888
TLI	0 (no fit) – 1 (perfect fit)	.861	.823	.863

Table 3: GoF and BoF indices

From Table 3, it can be seen that the GoF indices (GFI, AGFI, CFI and TLI) are all close to 1 (ranging between .807 and .896), which indicates good fit; however, the BoF index RMSEA is above the preferably conventional cut-off values of .08 and .10 for all the scales (except the entire scale where the RMSEA is less than .10), indicating a poor model fit. This being said, recall that researchers are now cautioning against using these conventional cut-off methods and state that smaller BoF values and larger GoF values indicate a better fit. Also, where the RMSEA values are a bit high, it is only slightly larger than the cut-off recommendation of 0.10. In addition, Kenny et al. (2015) pointed out that the RMSEA has serious problems with simpler models with few degrees of freedom, which is the case for the models of sub-scales.

[1] Smaller BoF values indicate better fit, whereas larger GoF values indicate better fit.

Now that the underlying construct structure has been confirmed, reliability and validity are considered. As with previous studies (Beltman et al., 2018; Morgan, 2011; Peixoto et al., 2018, 2020; Wosnitza et al., 2018) we found the scales utilised (Self-efficacy for Teacher Resilience) (Morgan, 2011) [Cronbach's alpha = .87] and the Teacher Efficacy scale (Morgan, 2011) [Cronbach's alpha = .91] to have acceptable reliability. This reliability analysis agrees with findings from previous studies (Beltman et al., 2018; Morgan, 2011; Peixoto et al., 2018, 2020; Wosnitza et al., 2018).

Convergent and discriminant validity are subcategories of construct validity and if there is evidence of both, construct validity has been established (Sauro & Lewis, 2016). For convergent validity, items loading on the same construct must load heavily on the same construct and should not cross-load heavily on other constructs. For discriminant validity, items from different constructs should not be as highly correlated with items from the same construct. Convergent validity can be established by calculating correlations of the items belonging to the same constructs and checking that these correlations are higher than those of items belonging to different constructs.

Discriminant validity can be tested by calculating correlations of items belonging to different constructs and these correlations should be weaker than those belonging to the same constructs. Therefore, the likeliness of construct validity was reasonably established (Trochim, 2006). In addition, a power analysis was performed to calculate the achieved power. Taking a conservative approach to the research, the smallest sample size was used to compute the achieved power utilising G*Power (Faul et al., 2007). For a level of significance of .05, a sample size of $n_1 = 14$ for group 1 and $n_2 = 17$ (smallest pairwise comparison sample sizes) and a large effect size of .8 (Cohen, 1992), the achieved statistical power for the research was .757. Although the power estimate was smaller than the desired minimum achieved power of .8, it is close to it (Cohen, 1988). For the other pairwise comparisons, the achieved power was higher than .757 for each comparison.

Results

We present the results of the descriptive statistics (Figure 1) and inferential statistics (Table 3) for the self-efficacy and teacher efficacy beliefs (within-case and cross-case comparison) of pre-service teachers.

Figure 1: Comparison of the Self-Efficacy and Teacher Efficacy Beliefs of Pre-Service Teachers

As illustrated in Figure 1, the self-efficacy and teacher efficacy of pre-service teachers in a challenged context is high (mean comparison). The results indicated that *South African final-year pre-service teachers are confident in their recovery from setbacks in schools, and their teaching and behaviour management.*

Table 4 presents the results of the WSR test (*Z*) performed on within-case and cross-case data to compare pre-service teachers' self-efficacy and teacher efficacy beliefs in a challenged context. As the WSR test compares medians (and not means like the parametric *t*-test), medians are reported in Table 4 and denoted *Mdn*.

Pairwise comparison	*Z*	*p*	Significant difference	Conclusion
Self-efficacy vs Teacher efficacy (2015)	-6.007	<.001	Yes	The median for teacher efficacy of 6.00 is statistically significantly higher than the median of self-efficacy (*Mdn* = 5.78)
Self-efficacy vs Teacher efficacy (2016)	-5.089	< .001	Yes	The median for teacher efficacy of 6.08 is statistically significantly higher than the median of self-efficacy (*Mdn* = 5.89)
Self-efficacy vs Teacher efficacy (2017)	-8.092	< .001	Yes	The median for teacher efficacy of 5.92 is statistically significantly higher than the median of self-efficacy (*Mdn* = 5.78)
Self-efficacy vs Teacher efficacy (2015-2017)	-5.089	< .001	Yes	The median for teacher efficacy of 6.00 is statistically significantly higher than the median of self-efficacy (*Mdn* = 5.78)

Table 4: Summary of the results for the self-efficacy and teacher efficacy beliefs of pre-service teachers

As shown in Table 4, there was a statistically significant difference between pre-service teacher self-efficacy and teacher efficacy beliefs for in-case and cross-case analysis. The medians for pre-service teacher *self-efficacy were statistically significantly lower than the medians for teacher efficacy beliefs*. The WSR test statistics showed that the difference was statistically significant. Pre-service teachers in a challenged context may thus feel more

confident in teaching and behaviour management (teacher efficacy) than in recovery from setbacks in schools. The correlation between the self-efficacy scale and the teacher efficacy scales equalled .580 ($p < .001$), indicating a positive moderate correlation (Akoglu, 2018).

Based on the Spearman correlation coefficient (.580) with $p < .001$, *self-efficacy and teacher efficacy beliefs of pre-service teacher items had a statistically significant positive correlation*. The results, therefore, imply that the confidence of pre-service teacher to recover from setbacks is significantly related to their confidence in teaching and behaviour management in a challenged context.

Discussion

The current publication established that several cohorts of teacher education students at one South African university displayed confidence in both their everyday recovery from setbacks in schools, as well as in their teaching and behaviour management. In addition, their confidence to recover from setbacks in general in schools (self-efficacy) is significantly related to their confidence in teaching and behaviour management (teacher efficacy). However, these pre-service teachers feel more confident in teaching and behaviour management (teacher efficacy) than in recovery from setbacks in South African schools. It appears that irrespective of gender or education phase focus, this young adult age group (20 to 30-year-olds) view themselves as equipped to manage contextual adversity – both professionally and personally. They reported having professional confidence in managing teaching and behavioural challenges. Their professional confidence in managing teaching and managerial disruptions is significantly related to their confidence in recovering from contextual disturbances. However, the latter – their confidence in bouncing back from contextual challenges – is significantly lower. By implication, this pre-service teacher group may feel more confident in managing uncertainty in their teacher-lives than in their personal lives. These insights merit further investigation.

The association between self-efficacy and teacher efficacy for teachers has been established in Australia (Beltman et al., 2018), Ireland (Morgan, 2011), and Europe (Peixoto et al., 2018; Wosnitza et al., 2018). Similarly, teacher resilience studies in Ireland and Europe (Morgan, 2011; Peixoto et al., 2018) also found more confidence in teaching and behaviour management (teacher efficacy) than in recovery from setbacks in schools. In contrast, a study in Singapore found that pre-service teachers did not feel sufficiently equipped to deal with inevitable setbacks (Ee & Chang, 2010).

As postulated in the SCT, the behaviour of pre-service teachers results from a reciprocal causation between experience, skills and beliefs which develops through interaction with the environment (Bandura, 1989). Thus, the pre-service teacher's self-perceived beliefs on how capable or prepared they feel in their ability to organise or accomplish tasks to manage prospective situations or obtain a valued outcome is high. The pre-service teachers use individual traits (including self- and teacher efficacy) to actively contribute to their development (Mansfield et al., 2016; Papatraianou & Le Cornu, 2014).

From this lens (Bandura, 1986, 1993, 1997; Hewitt et al., 2017; Perkins-Gough, 2013), it is plausible that pre-service teachers have enthusiastic, positive, multi-perspective, confident outlooks on life with confidence in their ability to recover from setbacks and regulate emotions, thoughts, and actions. The aforementioned demonstrate clear links with pre-service teachers' grit and hardiness (Duckworth et al., 2007; Maddi et al., 2017), sense of coherence (Antonovsky, 1979 [salutogenic theory]), positive emotions (Fredrickson et al., 2003 [broaden-and-build theory]) and their adaptive coping processes (Skinner & Zimmer-Gembeck, 2011; Willers et al., 2013). The established relationship between self-efficacy and

teacher efficacy in developed countries (Bosch, 2020; Ebersöhn et al., 2020) can therefore enable pre-service teachers to resile despite significant risk factors. In Figure 2, we propose an evidence-based framework for self-efficacy and teacher efficacy as intrapersonal resilience-enabling pathways for teacher resilience in contexts similar to that of a challenged, South African context.

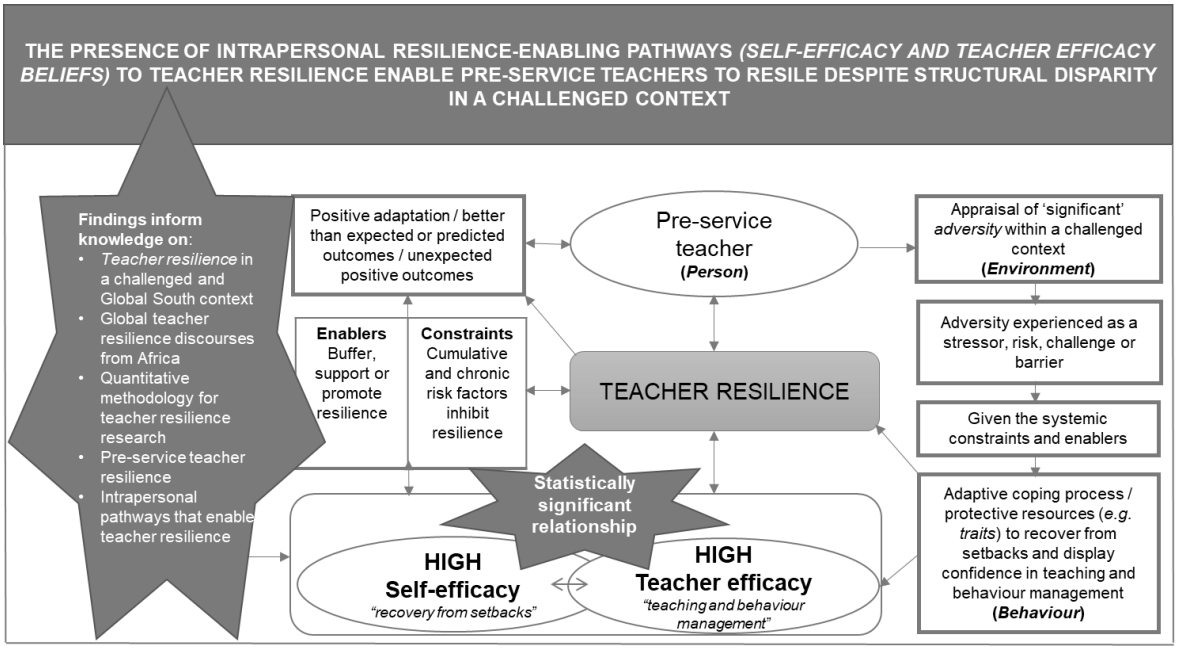

Figure 2: Evidence-Based Framework for Self-Efficacy and Teacher Efficacy as Enablers of Teacher Resilience in a Challenged Context

Pre-service teachers must be prepared to face adversity and constantly adapt to the demands required in a challenged context (Ebersöhn, 2014). Therefore, wellbeing agendas, emphasising the identification and mobilisation of resilience-enabling pathways are needed for higher and basic education. In this article, in a space of high challenge, pre-service teachers reported having high self-efficacy and teacher efficacy. When working amidst severe structural constraints, high levels of self-efficacy and teacher efficacy may therefore buffer pre-service teachers against predicted or expected outcomes (including teacher stress, burnout, and attrition [Mansfield et al., 2018; Wosnitza et al., 2014]).

Implication to Research and Practice

Irrespective of geopolitical space, teacher education policy and practice need to privilege supporting pre-service teachers to develop as teachers. As megatrends of geopolitical conflict, social isolation and growing unemployment continue to predict a teacher professional landscape of uncertainty and disruption, findings of the current article suggest that, irrespective of geopolitical space existing teacher education policies and initial teacher education programmes may benefit from an emphasis on teacher resilience. As evident from this article and associated studies (Ainsworth & Oldfield, 2019; Beltman et al., 2018; Gu, 2018; Mansfield et al., 2016; Peixoto et al., 2018) an evidence-based pathway in teacher education policy and programmes appears to be that of strengthening the intrapersonal trait capacity of teachers to manage such certain complexity. as pathways to promote job satisfaction, retention, commitment, wellbeing, and quality teaching.

In particular, findings in this study may have relevance in similar highly unequal conditions, be it teachers being prepared to teach in low-and middle-income countries, inner city neighbourhoods or remote settings across the globe, when considering teacher education policy and practice. Findings from this study emphasises potential benefits of a teacher education curriculum that privileges knowledge on self-efficacy and teacher efficacy as traits that teachers can count on to support them despite harsh conditions and constant disruptions in their professional and personal lives. Therefore, globally teacher preparation aimed at equipping teachers to teach under conditions of hardship may benefit from devoting time to strengthening teacher capacity to nurture self- and teacher efficacy which, in the long run, may enable teachers to continue teaching despite the multiple expected uncertainties they will be sure to encounter in their professional lives given such challenged environments.

Challenges limiting the generalisation of results of the article included the use of extant cross-sectional data, a single-country and institutional focus, self-reported questionnaire data, and response rate constraints. Nonetheless, the research provides an evidence-based framework for self-efficacy and teacher efficacy as intrapersonal resilience-enabling pathway for teacher resilience in a challenged context. The current publication was limited to a study of two traits as intrapersonal resources relevant for teacher resilience, however besides knowledge and use of self-efficacy and teacher efficacy traits, prospective teachers also need to be able to access and use a range of systemic resources (Ebersöhn, 2014).

Conclusions

Given the significant gaps in teacher resilience knowledge in a challenged context, this research contributes knowledge from a less-researched African context to global teacher resilience discourse. The research contributed to the existing body of knowledge relating to teacher resilience in a challenged post-colonial Global South space. Findings highlighted the unexpected or unpredicted high intrapersonal resilience-enabling pathways present in pre-service teachers in a challenged context. Thus, pre-service teachers in challenged contexts are confident in their recovery from setbacks in schools and their teaching and behaviour management. Findings from the research also indicate the utility of existing teacher resilience scales to measure intrapersonal pathways to teacher resilience in a challenged context but also pave the way for a semblance of comparable results on the scale elsewhere worldwide. These findings have practical implications not only for South Africa but also for other countries in the Global South, where educators face similar systemic and contextual challenges. Specifically, the evidence underscores the need for teacher education programs to integrate resilience-building strategies that are culturally and contextually relevant. Such strategies can enhance teacher preparedness, retention, and performance in adversity-laden environments. Moreover, this research has implications for international teacher education policy, advocating for the incorporation of resilience-focused curricula and support systems in teacher training programs worldwide. By doing so, policymakers and educational stakeholders can foster a more sustainable and effective teaching workforce capable of thriving despite chronic and cumulative challenges.

Future Research

Given the results, we suggest possible areas of future exploration for deeper insight into areas that have not been investigated in this publication.

Teacher Resilience-Building Programmes in a Challenged Context

Given that there are limited studies (Beltman et al., 2018) on the interventions to build resilience in pre-service programmes, research on the development and possible benefit of interventions or modules on teacher resilience within a Global South context seems necessary. Therefore, further research regarding the enhancement of pre-service teacher resilience through teacher resilience-building programmes is recommended.

Pre-Service Resilience Studies Within a Global South Context

To date, there are seemingly no nationwide studies investigating pre-service teacher resilience informing resilience within a Global South landscape. Given the limited knowledge beyond the Global North and the unique challenges faced in the Global South teaching landscape, it seems timely to take a national approach to research in this field. The current research could thus be expanded to other teacher preparation programmes that prepare students to teach within a Global South context. In this regard, areas of influence which we could not explore in the current study included the effect that other demographic variables (e.g., language) might have on pre-service teacher resilience. Furthermore, future researchers could seek to explore the extant data available from the additional domains (e.g. (i) teacher professionalism [TR-Prof], (ii) teacher emotion [TR-Emot], (iii) teacher motivation [TR-Mot], and (iv) teacher social capacity [TR-Soc]).

Future research on pre-service teacher resilience in a challenged context can benefit from a mixed-method design. Such a design may provide qualitative interpretations of pre-service teachers' internal protective resilience capacities (e.g., high levels of self-efficacy and teacher efficacy beliefs) in a challenged context. Since the current study focused on resilience as an internal trait only, future researchers could explore contextual factors and the resilience process of pre-service teachers in challenged contexts.

Longitudinal Studies

Besides additional pre-service resilience studies within a Global South context to inform teacher resilience knowledge in a challenged context, longitudinal studies are needed to understand pre-service teacher resilience better. A longitudinal study could benefit from multi-time measurements and multi-method approaches, including qualitative data. To administer the FIRE Resilience Measure longitudinally from the first to the fourth year for pre-service teachers, but then also during the first year of teaching and thereafter may allow the investigation of resilience's temporal and causal process dimensions (Ungar, 2012).

Inferential statistical procedures can also be performed on biographical variables such as age, which was not feasible in the current study. Such research may also provide the opportunity to explore the development of a pre-service teacher resilience trajectory in a challenged context which can assist in understanding transformation processes and clarifying different contexts affect results in different ways (Esser & Vliegenthart, 2017).

Questionnaire Development and Standardisation

Given the complex construct of resilience and suitable questions in a challenged South African context (e.g., language categories), teacher resilience measures should be further developed to conduct nationwide longitudinal research. Appraising resilience presents

challenges due to its multidimensional and dynamic nature (Beltman et al., 2018). The FIRE Teacher Resilience Measure consisted of items sourced from existing scales. The scales indicated acceptable reliability and validity in preceding studies.

The FIRE Resilience Measure has, however, not been standardised for the South African context. Further questionnaire development in this regard is necessary to consider the instrument used to determine pre-service teacher resilience in a challenged context given cross-cultural and socioeconomic influences in culturally diverse settings. Furthermore, the FIRE Teacher Resilience Measure could be translated into isiZulu (the most spoken language in South Africa) to be utilised in rural areas to investigate teacher resilience.

Providing additional reliability and validity evidence may strengthen the appropriateness of worldwide use and allow for cross-cultural comparisons to expand the generalisability of the constructs. Future researchers could also seek to establish the reliability and validity of the FIRE Teacher Resilience Measures in settings other than South African pre-service teachers. Contextual factors influencing teacher resilience should also be incorporated into questionnaire development to provide necessary information for a challenged context.

References

Ainsworth, S., & Oldfield, J. (2019). Quantifying teacher resilience: Context matters. *Teaching and Teacher Education, 82,* 117–128. https://doi.org/10.1016/j.tate.2019.03.012

Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine, 18*(3), 91-93. https://doi.org/10.1016/j.tjem.2018.08.001

Antonovsky, A. (1979). *Health, stress and coping: New perspectives on mental and physical well-being*. Jossey-Bass.

Babbie, E. (2021). *The practice of social research* (15th ed.). Wadsworth, Cengage Learning.

Bakhtiyarovna, A. G. (2024). Comparing quantitative and qualitative research approaches: Advantages and disadvantages. *American Journal of Interdisciplinary Research and Development, 28*, 323-326.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and actions: A social cognitive theory.* Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175–1184. https://doi.org/10.1037/0003-066X.44.9.1175

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117–148. https://doi.org/10.1207/s15326985ep2802_3

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman and Company.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52,* 1–26. https://doi.org/10.1146/annurev.psych.52.1.1

Bandura, A. (2002). Socio cognitive theory in cultural context. *Applied Psychology, 51*(2), 269–290. https://doi.org/10.1111/1464-0597.00092

Beltman, S., Mansfield, C. F., Wosnitza, M., Weatherby-Fell, N., & Broadley, T. (2018). Using online modules to build capacity for teacher resilience. In M. Wosnitza, F. Peixoto, S. Beltman, & C. F. Mansfield (Eds.), *Resilience in education: Concepts, contexts and connections* (pp. 237–253). Springer International Publishing. https://doi.org/10.1007/978-3-319-76690-4_14

Biglan, A. (1987). A behavior-analytic critique of Bandura's self-efficacy theory. *The Behavior Analyst, 10*(1), 1–15. https://doi.org/10.1007/BF03392402

Bosch, Z. (2020). *Comparing teacher resilience in primary schools in challenged context* [Unpublished master's thesis]. University of Pretoria.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press. https://doi.org/10.4159/9780674028845

Cassidy, S. (2015). Resilience building in students: The role of academic self-efficacy. *Frontiers in Psychology, 6,* Article 1781. https://doi.org/10.3389/fpsyg.2015.01781

Castro, A. J., Kelly, J., & Shih, M. (2010). Resilience strategies for new teachers in high-needs areas. *Teaching and Teacher Education, 26*(3), 622–629. https://doi.org/10.1016/j.tate.2009.09.010

Chen, J., & Lee, J., C.-K. (2022). Teacher resilience matters: A buffering and boosting effect between job driving factors and their well-being and job performance. *Teachers and Teaching, 28*(7), 890-907. https://doi.org/10.1080/13540602.2022.2116574

Chesnut, S. R. (2017). On the measurement of preservice teacher commitment: Examining the relationship between four operational definitions and self-efficacy beliefs. *Teaching and Teacher Education, 68,* 170–180. https://doi.org/10.1016/j.tate.2017.09.003

Coetzee, S. (2013). *Sustaining teacher career resilience in a resource-constrained rural education setting: A retrospective study* [Doctoral dissertation, University of Pretoria]. UPSpace. https://repository.up.ac.za/handle/2263/40230

Coetzee, S., Ebersöhn, L., Ferreira, R., & Moen, M. (2017). Disquiet voices foretelling hope: Rural teachers' resilience experiences of past and present chronic adversity. *Journal of Asian and African Studies, 52*(2), 201–216. https://doi.org/10.1177/0021909615570955

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression & Anxiety, 18*(2), 76–82. https://doi.org/10.1002/da.10113

Day, C., & Gu, Q. (2014). *Resilient teachers, resilient schools: Building and sustaining quality in testing times*. Routledge. https://doi.org/10.4324/9780203578490

Department of Basic Education. (2019). *Do you want to make a difference? Then become a teacher.* DBE. Retrieved June 10, 2023, from https://www.education.gov.za/Informationfor/Teachers/InitialTeacherEducation.aspx

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087–1101. https://doi.org/10.1037/0022-3514.92.6.1087

Duffin, L. C., French, B. F., & Patrick, H. (2012). The Teachers' Sense of Efficacy scale: Confirming the factor structure with beginning pre-service teachers. *Teaching and Teacher Education, 28*(6), 827–834. https://doi.org/10.1016/j.tate.2012.03.004

Eastman, C., & Marzillier, J. S. (1984). Theoretical and methodological difficulties in Bandura's self-efficacy theory. *Cognitive Therapy and Research, 8*(3), 213–229. https://doi.org/10.1007/BF01172994

Ebersöhn, L. (2014). Teacher resilience: Theorizing resilience and poverty. *Teachers and Teaching: Theory and Practice, 20*(5), 568–594. https://doi.org/10.1080/13540602.2014.937960

Ebersöhn, L. (2015). Making sense of place in school-based intervention research. *Contemporary Educational Psychology, 40,* 121–130. https://doi.org/10.1016/j.cedpsych.2014.10.004

Ebersöhn, L. (2016). Enabling spaces in education research: An agenda for impactful, collective evidence to support all to be first among un-equals. *South African Journal of Education, 36*(4), Article 1390. https://doi.org/10.15700/saje.v36n4a1390

Ebersöhn, L. (2017). A resilience, health and well-being lens for education and poverty. *South African Journal of Education, 37*(1), Article 1392. https://doi.org/10.15700/saje.v37n1a1392

Ebersöhn, L. (2019). *Flocking together: An Indigenous psychology theory of resilience in Southern Africa*. Springer. https://doi.org/10.1007/978-3-030-16435-5

Ebersöhn, L., & Loots, T. (2017). Teacher agency in challenging contexts as a consequence of social support and resource management. *International Journal of Educational Development, 53,* 80–91. https://doi.org/10.1016/j.ijedudev.2016.11.005

Ebersöhn, L., Ferreira, R., Graham, M. A., Versfeld, J., Bosch, Z., Seaworyeh, I., & Tomlinson, J. (2020). *The Isithebe social connectedness study*. Report prepared for The Synergos Institute. Centre for the Study of Resilience, University of Pretoria.

Ee, J., & Chang, A. (2010). How resilient are our graduate trainee teachers in Singapore? *The Asia-Pacific Education Researcher, 19*(2), 321–331. https://repository.nie.edu.sg/bitstream/10497/14283/1/TAPER-19-2-321.pdf https://doi.org/10.3860/taper.v19i2.1600

Esser, F., & Vliegenthart, R. (2017). Comparative research methods. In C. S. Davis & R. F. Potter (Eds.), *The international encyclopedia of communication research methods* (pp. 1–22). John Wiley & Sons. https://doi.org/10.1002/9781118901731.iecrm0035

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. https://doi.org/10.3758/BF03193146

Fischer, B., Bisterfeld, M., & Staab, O. (2018). Individual's patterns of commitment, resilience and subjective well-being of prospective physical education teachers. *Australian Journal of Teacher Education, 43*(2), 39–55. https://doi.org/10.14221/ajte.2018v43n2.3

Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist, 18*(1), 12–23. https://doi.org/10.1027/1016-9040/a000124

Francis, D., & Webster, E. (2019). Poverty and inequality in South Africa: Critical reflections. *Development Southern Africa, 36*(6), 788–802. https://doi.org/10.1080/0376835X.2019.1666703

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 84*(2), 365–376 https://doi.org/10.1037/0022-3514.84.2.365

Gray, D. E. (2020). *Doing research in the business world* (2nd ed.). Sage.

Gu, Q. (2014). The role of relational resilience in teachers' career-long commitment and effectiveness. *Teachers and Teaching: Theory and Practice, 20*(5), 502–529. https://doi.org/10.1080/13540602.2014.937961

Gu, Q. (2018). (Re)conceptualising teacher resilience: A social-ecological approach to understanding teachers' professional worlds. In M. Wosnitza, F. Peixoto, S. Beltman, & C. F. Mansfield (Eds.), *Resilience in education: Concepts, contexts and connections* (pp. 13–33). Springer International Publishing. https://doi.org/10.1007/978-3-319-76690-4_2

Gu, Q., & Day, C. (2013). Challenges to teacher resilience: Conditions count. *British Educational Research Journal, 39*(1), 22–44. https://doi.org/10.1080/01411926.2011.623152

Hewitt, S., Buxton, S., & Thomas, A. (2017). A new way of learning: How can an understanding of self-efficacy and emotional resilience be used to develop successful teaching and learning strategies for students in initial teacher education. *Teacher Education Advancement Network Journal*, *9*(1), 22–35.

Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Kenny, D. A., Kaniskan, B., & McCoach, D. B. (2015). The performance of RMSEA in models with small degrees of freedom. *Sociological Methods & Research*, *44*(3), 486-507. https://doi.org/10.1177/0049124114543236

Kidger, J., Brockman, R., Tilling, K., Campbell, R., Ford, T., Araya, R., King, M., & Gunnell, D. (2016). Teachers' wellbeing and depressive symptoms, and associated risk factors: A large cross sectional study in English secondary schools. *Journal of Affective Disorders, 192*, 76–82. https://doi.org/10.1016/j.jad.2015.11.054

Leedy, P. D., & Ormrod, J. E. (2015). *Practical research: Planning and design* (11th ed.). Pearson Education.

Legrain, P., Escalié, G., Lafont, L., & Chaliès, S. (2019). Cooperative learning: A relevant instructional model for physical education pre-service teacher training? *Physical Education and Sport Pedagogy*, *24*(1), 73–86. https://doi.org/10.1080/17408989.2018.1561838

Lemon, N., & Garvis, S. (2016). Pre-service teacher self-efficacy in digital technology. *Teachers and Teaching: Theory and Practice*, *22*(3), 387–408. https://doi.org/10.1080/13540602.2015.1058594

Maddi, S. R., Matthews, M. D., Kelly, D. R., Villarreal, B. J., Gundersen, K. K., & Savino, S. C. (2017). The continuing role of hardiness and grit on performance and retention in West Point cadets. *Military Psychology*, *29*(5), 355–358. https://doi.org/10.1037/mil0000145

Mansfield, C., Beltman, S., & Price, A. (2014). 'I'm coming back again!' The resilience process of early career teachers. *Teachers and Teaching: Theory and Practice*, *20*(5), 547–567. https://doi.org/10.1080/13540602.2014.937958

Mansfield, C., Beltman, S., Weatherby-Fell, N., & Broadley, T. (2016). Classroom ready? Building resilience in teacher education. In R. Brandenberg, S. McDonough, J. Burke, & S. White (Eds.), *Teacher education: Innovation, intervention and impact* (pp. 211–229). Springer. https://doi.org/10.1007/978-981-10-0785-9

Mansfield, C. F., Ebersöhn, L., Beltman, S., & Loots, T. (2018). Great southern lands: Making space for teacher resilience in South Africa and Australia. In M. Wosnitza, F. Peixoto, S. Beltman, & C. F. Mansfield (Eds.), *Resilience in education: Concepts, contexts and connections* (pp. 53–71). Springer International Publishing. https://doi.org/10.1007/978-3-319-76690-4_4

Mansfield, C. F., & Wosnitza, M. (2015). *Teacher Resilience Questionnaire — Version 1.5*. Murdoch University.

Masten, A. S. (2018). Resilience theory and research on children and families: Past, present, and promise [Special issue]. *Journal of Family Theory & Review, 10*(1), 12-31. https://doi.org/10.1111/jftr.12255

Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology, 2*(4), 425–444. https://doi.org/10.1017/S0954579400005812

Masten, A. S., & Wright, M. O. D. (2010). Resilience over the lifespan: Developmental perspectives on resistance, recovery and transformation. In J. W. Reich, A. Zautra, & J. S. Hall (Eds.), *Handbook of adult resilience* (pp. 213–236). The Guilford Press.

Montiel, C. J. (2018). Peace psychologists and social transformation: A Global South perspective. *Peace and Conflict: Journal of Peace Psychology, 24*(1), 64–70. https://doi.org/10.1037/pac0000290

Morgan, M. (2011). Resilience and recurring adverse events: Testing an assets-based model of beginning teachers' experiences. *The Irish Journal of Psychology, 32*(3-4), 92–104. https://doi.org/10.1080/03033910.2011.613189

Organisation for Economic Co-operation and Development. (2019). *Education at a glance 2019: OECD indicators*. OECD Publishing.

Papatraianou, L. H., & Le Cornu, R. (2014). Problematising the role of personal and professional relationships in early career teacher resilience. *Australian Journal of Teacher Education, 39*(1), 100–116. https://doi.org/10.14221/ajte.2014v39n1.7

Parreira do Amaral, M. (2022). Comparative case studies: Methodological discussion. In S. Benasso, D. Bouillet, & M. Parreira do Amaral (Eds.), *Landscapes of lifelong learning policies across Europe: Comparative case studies* (pp. 41-60). Palgrave MacMillan. https://doi.org/10.1007/978-3-030-96454-2_3

Peixoto, F., Silva, J. C., Pipa, J., Wosnitza, M., & Mansfield, C. (2020). The Multidimensional Teachers' Resilience scale: Validation for Portuguese teachers. *Journal of Psychoeducational Assessment, 38*(3), 402–408. https://doi.org/10.1177/0734282919836853

Peixoto, F., Wosnitza, M., Pipa, J., Morgan, M., & Cefai, C. (2018). A multidimensional view on pre-service teacher resilience in Germany, Ireland, Malta and Portugal. In M. Wosnitza, F. Peixoto, S. Beltman, & C. F. Mansfield (Eds.), *Resilience in education: Concepts, contexts and connections* (pp. 73–89). Springer International Publishing. https://doi.org/10.1007/978-3-319-76690-4_5

Perkins-Gough, D. (2013). The significance of GRIT: A conversation with Angela Lee Duckworth. *Educational Leadership, 71*(1), 14–20.

Pietersen, J., & Maree, K. (2019). Statistical analysis I: Inferential statistics. In K. Maree (Ed.), *First steps in research* (3rd., pp. 240–258). Van Schaik Publishers.

Raath, S., & Hay, A. (2016). Self-efficacy: A South African case study on teachers' commitment to integrate climate change resilience into their teaching practices. *Cogent Education, 3*(1), Article 1264698. https://doi.org/10.1080/2331186X.2016.1264698

Republic of South Africa. (1996). Act No. 84, 1996: South African Schools Act, 1996. Government Gazette, 377(17579).

Republic of South Africa. (2000). Act No. 31 of 2000: South African Council of Educators Act. *Government Gazette, 422*(21431).

Roni, S. M., Merga, M. K., & Morris, J. E. (2020). *Conducting quantitative research in education*. Springer. https://doi.org/10.1007/978-981-13-9132-3

Roth, M., & Von Collani, G. (2007). A head-to-head comparison of big-five types and traits in the prediction of social attitudes: Further evidence for a five-cluster typology. *Journal of Individual Differences, 28*(3), 138–149. https://doi.org/10.1027/1614-0001.28.3.138

Rubenstein, L. D., Ridgley, L. M., Callan, G. L., Karami, S., & Ehlinger, J. (2018). How teachers perceive factors that influence creativity development: Applying a Social Cognitive Theory perspective. *Teaching and Teacher Education, 70,* 100–110. https://doi.org/10.1016/j.tate.2017.11.012

Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology, 24*(2), 335–344. https://doi.org/10.1017/S0954579412000028

Sauro, J., & Lewis, J. R. (2016). *Quantifying the user experience: Practical statistics for user research* (2nd ed.). Morgan Kaufmann. https://doi.org/10.1016/B978-0-12-802308-2.00002-3

Sayed, Y., & Badroodien, A. (2016). Teachers and social cohesion in the Global South: Expanding the notion of education quality [Editorial]. *Education as Change*, *20*(3), 1–14. https://doi.org/10.17159/1947-9417/2016/1975

Shean, M. (2015). *Current theories relating to resilience and young people: A literature review*. Victorian Health Promotion Foundation. Retrieved June 10, 2023, from https://evidenceforlearning.org.au/assets/Grant-Round-II-Resilience/Current-theories-relating-to-resilience-and-young-people.pdf

Skinner, E. A., & Zimmer-Gembeck, M. J. (2011). Perceived control and the development of coping. In S. Folkman (Ed.), *The Oxford handbook of stress, health, and coping* (pp. 35–59). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195375343.013.0003

Statistics South Africa. (2020). *Poverty*. StatsSA. Retrieved June 10, 2023, from http://beta2.statssa.gov.za/?page_id=739&id=1

Taylor, W. (2016). Teacher education. In *Encyclopædia Britannica*. Retrieved June 10, 2023, from https://www.britannica.com/topic/teacher-education

Theron, L. C. (2016). Towards a culturally and contextually understanding of resilience: Privileging the voices of black, South African young people. *Journal of Adolescent Research*, *31*(6), 635–670 https://doi.org/10.1177/0743558415600072

Trochim, W. M. K. (2006). *Convergent and discriminant validity*. Research Methods Knowledge Base. Retrieved June 10, 2023, from https://www.socialresearchmethods.net/kb/convdisc.php

Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*(6), 944–956. https://doi.org/10.1016/j.tate.2006.05.003

Ungar, M. (2012). Researching and theorizing resilience across cultures and contexts. *Preventive Medicine, 55*(5), 387–389. https://doi.org/10.1016/j.ypmed.2012.07.021

Ungar, M., Ghazinour, M., & Richter, J. (2013). Annual research review: What is resilience within the social ecology of human development [Special issue]? *The Journal of Child Psychology and Psychiatry, 54*(4). https://doi.org/10.1111/jcpp.12025

University of Pretoria. (2015). *Fourth Year Intervention in Research in Education (FIRE) project: Ethical application approval (Submission number UP 14/03/01)*.

Versfeld, J., Graham, M. A., & Ebersöhn, L. (2023). Time to flock: Time together strengthens relationships and enhances trust to teach despite challenges. *Teachers and Teaching, 29*(1), 70-104. https://doi.org/10.1080/13540602.2022.2145279

Walter, H. L., & Fox, H. B. (2021). Understanding teacher well-being during the COVID-19 pandemic over time: A qualitative longitudinal study. *Journal of Organizational Psychology*, *21*(5), 36-50. https://doi.org/10.33423/jop.v21i5.4716

Watt, H. M. G., Richardson, P. W., Klusmann, U., Kunter, M., Beyer, B., Trautwein, U., & Baumert, J. (2012). Motivations for choosing teaching as a career: An international comparison using the FIT-Choice scale. *Teaching and Teacher Education, 28*(6), 791–805. https://doi.org/10.1016/j.tate.2012.03.003

Willers, M., Potgieter, J. C., Khumalo, I. P., Malan, L., Mentz, P. J., & Ellis, S. (2013). Coping and cultural context: Implications for psychological health and well-being. In M. P. Wissing (Ed.), *Well-being research in South Africa* (pp. 251-272). Springer. https://doi.org/10.1007/978-94-007-6368-5_12

Wosnitza, M., Delzepich, R., Schwarze, J., O'Donnell, M., Faust, V., & Camilleri, V. (2018). Enhancing teacher resilience: From self-reflection to professional development. In M. Wosnitza, F. Peixoto, S. Beltman, & C. F. Mansfield (Eds.), *Resilience in education: Concepts, contexts and connections* (pp. 275–288). Springer International Publishing. https://doi.org/10.1007/978-3-319-76690-4_16

Wosnitza, M., O'Donnell, M., Morgan, M., Mansfield, C. F., & Beltman, S. (2014). *Teachers resilience in Europe: A theoretical framework*. ENTREE.

Xia, Y., & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51*(1), 409-428. https://doi.org/10.3758/s13428-018-1055-2

Ximénez, C., Maydeu-Olivares, A., Shi, D., & Revuelta, J. (2022). Assessing cutoff values of SEM fit indices: Advantages of the unbiased SRMR index and its cutoff criterion based on communality. *Structural Equation Modeling: A Multidisciplinary Journal, 29*(3), 368-380. https://doi.org/10.1080/10705511.2021.1992596

Yost, P. R. (2016). Resilience practices. *Industrial and Organizational Psychology, 9*(2), 475–479. https://doi.org/10.1017/iop.2016.42

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Highlights

- Inform teacher resilience knowledge in a challenged Global South context.
- Global teacher resilience discourses from Africa.
- Quantitative methodology for teacher resilience research.
- Generated knowledge on pre-service teacher resilience.
- Intrapersonal pathways that enable teacher resilience.