



UNIVERSITY *of the*
WESTERN CAPE

**PRELIMINARY CONSTRUCT VALIDATION OF THE BRIEF
MULTIDIMENSIONAL STUDENTS' LIFE SATISFACTION SCALE AMONGST A
SAMPLE OF CHILDREN IN THE WESTERN CAPE, SOUTH AFRICA: MULTI-
GROUP ANALYSES ACROSS THREE AGE GROUPS**

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Abstract

The interest in researching children's well-being has increased substantially over the past few decades. The increasing body of knowledge within children's well-being has become known as the Child Indicator Movement. Further advancements in legislation catalysed an epistemological shift in the conceptualisation of children and childhood, encapsulated within the '*New Sociology of Childhood*'. These advancements also shifted the unit of analysis, with children transitioning from being absent in research, to being objects of research, to being subjects of research. This served to ignite the interest in researching children's '*subjective*' positions, typically known as their subjective well-being. Using data from Wave 2 of the Children's Worlds: International Survey of Children's Well-Being, the aim of the current study was to conduct a structural validation of a measure of children's subjective well-being (the Brief Multidimensional Students' Life Satisfaction Scale) amongst a sample of children from the Western Cape Province, South Africa. The study also sought to test the convergent validity of the Brief Multidimensional Students' Life Satisfaction Scale by regressing it onto the single-item Overall Life Satisfaction scale. Data were collected using a stratified random sample of children aged 8, 10, and 12-years old (N = 3 284) selected from 29 schools across the Western Cape Province (South Africa) from both urban and rural geographical districts. Data were analysed using Confirmatory Factor Analysis. The study found the Brief Multidimensional Students' Life Satisfaction Scale to be an appropriate measure for use in the South African context, specifically within the Western Cape Province of South Africa, across the 8, 10, and 12-year old age groups. The study further found scalar invariance to be tenable across the 10 and 12-year old age groups, which indicates that the two age groups are comparable across correlations, regressions, and means. This infers that meaningful comparisons can be made across the two age groups, and that children understand the items in a similar manner. Finally, adequate loadings of the latent construct (the Brief Multidimensional Students' Life Satisfaction Scale) onto the Overall Life Satisfaction scale were found, confirming evidence of convergent validity.

Declaration

I hereby declare that the following research report, 'Preliminary construct validation of the Brief Multidimensional Students' Life Satisfaction Scale amongst a sample of children in the Western Cape, South Africa: Multi-group analyses across three age groups, is my own work and all the sources used or quoted have been indicated and acknowledged by means of complete references in accordance with the American Psychological Association referencing convention.

Anton Delport

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To Beau, woof!

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1. Background

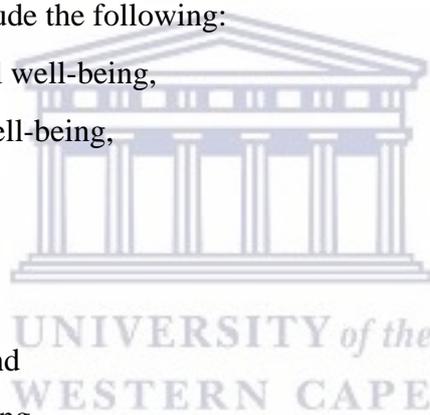
The interest in researching children's well-being has increased substantially over the past few decades driven by advancements in child rights legislation, culminating in the adoption of the United Nations Convention on the Rights of the Child in 1989. The ever-increasing body of knowledge within this discipline has become known as the Child Indicator Movement (Ben-Arieh, 2008). Initially, the Child Indicator Movement was focused on developing objective indicators of well-being with a notable lack of child-centred or child-specific data (Savahl, Malcolm, et al., 2015). However, the advancements in legislation catalysed an epistemological shift in the conceptualisation of children and childhood, encapsulated in Prout and James' (1997) '*New Sociology of Childhood*'. It is from this epistemological framework that childhood is regarded as a valid structural feature of society and children's perspectives acknowledged as valid, their experiences as real, with the capacity to meaningfully reflect on their lives. These advancements also shifted the unit of analysis, with children transitioning from being absent in research, to being objects of research, to being subjects of research (Savahl, Tiliouine, et al., 2017). This served to ignite the interest in researching children's '*subjective*' positions, typically known as subjective well-being (SWB).

Based on Diener's (1984) tripartite model of SWB, children's SWB can be broadly defined as the cognitive and affective evaluations that children have about their life. The cognitive component refers to how children think and make sense of their *satisfaction with life* at both context-free and domain-based levels; while the affective component refers to the ratio of positive and negative emotions. Early emergence of the concept of SWB is evident in Wilson's (1967) *Correlates of avowed happiness*, and Bradburn's (1969) *The structure of psychological well-being*, and later found traction in the social indicator movement of the 1970's (see Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976). Within the child indicator movement, the interest in researching SWB was less pronounced, with the discipline focused on developing objective indicators of well-being. However, it is increasingly being argued (see e.g. Casas, Belo, González-Carrasco, & Aligué, 2013) that objective indicators only provide a partial understanding of children's well-being and how children feel about, and evaluate various aspects of their lives provides a more comprehensive picture of their overall well-being.

Subjective well-being is often categorised into two broad conceptual traditions, eudaimonic or hedonic well-being. Hedonic perspectives of well-being focus on SWB, life satisfaction, or happiness and are frequently denoted in relation to the pursuit of happiness and attaining pleasure (Ryan & Deci, 2001). Eudaimonic perspectives focus on psychological well-being which is more broadly denoted as encompassing dynamic processes and the extent to which an individual is fully functioning in society and refers to concepts such as meaning in life, life goals, and self-actualisation (Casas, 2011).

Recent empirical evidence using qualitative and quantitative methods, have differentiated the concept of SWB into a number of domains (see e.g. Fattore, Mason, & Watson, 2007; Land, Lamb, Meadows, & Taylor, 2007; Pollard & Davidson, 2001; Pollard & Lee, 2003; Savahl, Adams, Isaacs, Hendricks, & Noordien, 2015; September & Savahl, 2009; Thornton, 2001; Zaff et al., 2003). Taken together, seven broad domains can be identified from the literature. These include the following:

- Economic and material well-being,
- Health and physical well-being,
- Safety,
- Productive activity,
- Place in community,
- Social relationships, and
- Psychological well-being



In South Africa, a study conducted by September and Savahl (2009) in two provinces among 200 children between the ages of 9 and 16 identified protection and safety, basic needs, community resources, and psychosocial well-being as relevant domains of well-being. More recently, a study by Savahl, Malcolm, et al. (2015) conducted with a sample of 56 children between the ages of 13 and 15 years from rural and urban geographical locations in the Western Cape, found three broad thematic domains of SWB namely: personal safety, infrastructure and environmental context, and socio-psychological well-being.

2. Theories of Children's Subjective Well-Being

The multifaceted concept of child-specific SWB is delineated by a number of well-being and SWB theories aimed at accommodating the dearth in theoretical understandings of

children's SWB. The following well-being theories will be discussed: Cummins' *Homeostasis Theory of Subjective Well-being*; Duryappah's *3P Model*; Bronfenbrenner's *Ecological Systems Theory*; Minkkinen's *Structural Model of Child Well-being*; and Brîndușă-Antonia's *Ecological Theories of Child Development and the Social Capital Theory*.

Cummins's *Homeostasis Theory of Subjective Well-being* (see Cummins, 1995; 2010; 2014; Cummins, Gullone, & Lau, 2002; Cummins, Ekkersly, Pallant, Van Vugt, & Misajon, 2003) equates SWB to the homeostatic maintenance of body temperature and proposes that SWB is maintained by neurological and psychological processes. The theory advances SWB as inherent in each individual, with a genetically predetermined 'set-point range' (Cummins & Lau, 2002; Cummins et al., 2003). Cummins and Lau (2002) noted that an individual's set-point typically coincides with their observed well-being and can be assessed by asking the question, "How satisfied are you with your life as a whole?", which in turn informs the affective characteristic of SWB. Empirical evidence suggests that each person's set-point exists within a positive range of 60-90 points ($\bar{x} = 75$) when transformed into a 100-point scale. Homeostasis theory of SWB conceptualises a 'threshold' located at the boundaries of a predetermined set-point range (Savahl, Casas, & Adams, 2017). It is proposed that when SWB moves toward the margins of the homeostatic system it opposes additional change. If it happens that the threshold is surpassed, the system then functions to revert these SWB levels back with the normal range (Cummins et al., 2003). Homeostasis theory also predicts that if an individual experiences something which inhibits their SWB below the threshold, in due course, this will result in enhanced levels of SWB.

Durayappah (2010) presents his *3P Model* as a general theory of SWB and draws on existing theories and contemporary research and takes into account temporal effects on SWB. The model accommodates the manner in which three temporal states, namely: past, present, and future (or prospect of) is distinct, yet inter-related, and considers time as crucial to evaluating SWB. The theory proposes that in order to sustain and increase well-being, a network of well-being must grow within and through temporal states (Durayapah, 2010). It conceptualises the evaluation of SWB in terms of the three temporal states and functions to maximise and manage the fluid state of happiness across time. Durayappah (2010) suggests that individuals evaluate their SWB based on the maximisation of perceived or experienced happiness during each temporal state. In essence, this framework aims to illuminate how

evaluations of the present influence past evaluations, which in-effect impact future evaluations.

Bronfenbrenner's (1979; 1986; 1995; 2005) *Ecological Systems Theory* focuses on the influence of biological and environmental factors on the individual, with a specific emphasis on the various inter and intrapersonal factors affecting them. The theory emphasises four different levels, that is the microsystem, mesosystem, exosystem, and the macrosystem influences the child. The microsystem refers to the individual's context and immediate experiences, i.e. a child's interpersonal experiences with his/her family/friends/peers. The mesosystem is considered a culmination of linkages between immediate experiences, i.e. values and morals taught between home and school life (Bronfenbrenner, 1979). The exosystem incorporates the interaction between the microsystem and mesosystem, including aspects that the child has no direct contact with but can still influence their experience (e.g. medical resources). The wider system of ideology and the structure of social institutions are encapsulated as the macrosystem. Additionally, Bronfenbrenner (2005) introduced the chronosystem which focuses on the time component of the systems theory. The essence of this model is the influence of the various mutually influencing systems on the individual child, in direct and indirect ways.

Minkkinen's (2013) *Structural Model of Child Well-being* argues that a multidisciplinary approach is necessary to generate a comprehensive understanding of well-being. The model employs the socio-cultural approach to human development (Vygotsky, 1963), as well as Bronfenbrenner's (1979) *Bioecological Theory of Child Development*. Children are portrayed as social actors and are assessed on their interactions with the socio-cultural environment on several levels. Child well-being is considered to comprise a number of domains, namely, physical, mental, social, and material well-being (Minkkinen, 2013). It is proposed that culture is the most extensive of the circles of SMCW as it encompasses all human and societal activity, as well as other circles in the model. In conclusion, Minkkinen (2013) posits that children are affected by their own culture, but in turn contribute to and reproduce culture which echoes the concept of interpretive reproduction as posited by Corsaro (1992; 2011; 2014).

Brîndușa-Antonia's (2013) *Ecological Theories of Child Development* and the *Social Capital Theory* suggest that the new '*Sociology of Childhood*' offers a framework from

which new understandings can be derived in addressing issues pertinent to children. This framework values children as active decision-makers and not merely passive recipients of adult decisions. It acknowledges children as socially active participants in society with distinct identities and a sense of belonging, culminating in the ability of children to develop and account for their own potential.

3. Age Variations in Children's Subjective Well-Being

The phenomenon of SWB decreasing-with-age in children has been identified in research over the last decade (Petito & Cummins, 2000; Ullman & Tatar, 2001; Casas, Tiliouine, & Figuer, 2014). The decreasing-with-age tendency of SWB shows that it consistently decreases with age during adolescence (Casas, Figuer, González, & Malo, 2007; Chui & Wong, 2016; Currie et al., 2012; Liu, Mei, Tian, & Huebner, 2015). However, levels of SWB have been found to increase slightly from age 20 onwards in some contexts (Diener & Suh, 1997; Xing & Huang, 2013). Petito and Cummins (2000) provide the earliest finding of children's well-being to decrease with age. Using the Multi-item Comprehensive Quality of Life Scale (ComQol-S5) with Australian adolescents, it was found that the SWB of younger adolescents was significantly higher in comparison to older adolescents (substantially below normative adult levels). They maintain that the use of an 11-point scale with the increased number of response options is a more accurate and sensitive measure (Cummins & Gullone, 2000). Petito and Cummins (2000) further suggest that the SWB decreasing-with-age trend might be due to a demanding environment, and independence from parental control, among other factors.

An important consideration in the measurement of SWB in children and adolescents is sensitivity to the type of scale used. The use of 4, 5, or 6 multi-item scales have produced inconsistent results across different contexts and studies (Ullman & Tatar, 2001; Bradford, Rutherford, & John, 2002; Chang, McBride-Chang, Stewart, & Au, 2003). For example, Ullman and Tatar (2001) used the 4-point version of the SLSS multi-item scale with a sample of 254 Israeli native and immigrant adolescents aged 12 to 18-years old. They found that younger high school students reported significantly higher satisfaction with their lives than older students. Similarly, Bradford et al. (2003), employing a 5-point multi-item scale with a sample of 899 adolescents aged 12 to 16-years old in England, reported higher SWB scores among adolescents aged 12 and 13-years old in comparison to 14 and 16-year olds. Further,

Chang et al. (2003), utilised the 6-point MSLSS multi-item to assess life satisfaction among grade 2 children (N = 115) and grade 8 learners aged 7 to 14-years old (N = 74). The results showed that adolescents aged 13 to 14-years old had lower life satisfaction in relation to children aged 7 to 8-years old. The SWB decreasing-with-age tendency was demonstrated among a population of German adolescents (N = 1 274, aged 11 to 16-years old), using a multi-item 5-point scale where it was found that the highest dissatisfaction ensued between the ages 15 to 16-year olds (Goldbeck, Schmitz, Nesier, Herschbach, & Henrich, 2007). Results from South Korea among adolescents (N = 736) between the ages of 10 to 17-years, have further demonstrated global and domain-specific life satisfaction to decrease with age.

Analogous findings have also been evinced by Casas et al. (2007); Casas, Sarriera, Abs, et al. (2012); Casas et al. (2014); and Uusitalo-Malmivaara (2014) among Spanish and Algerian adolescents. A number of studies attribute the decrease in SWB with age to school demands, difficulty with peers, stress at school, as well as school dissatisfaction (Uusitalo-Malmivaara, 2014). More recently, González-Carrasco, Casas, Malo, Vinas, and Dinisman (2017) used a longitudinal design with a sample of 940 Spanish adolescent's aged 10 to 15-years old. The key finding from these studies show that SWB levels decreased from ages 11 to 12 onwards. This continued decline in SWB during adolescence has been further noted in findings reported across four SWB scales (PWI-SC; OLS; SLSS; and BMSLSS).

In summary, the SWB decreasing-with-age trend is evident in a number of studies, with the decline typically occurring from the age of 10-years onwards. However, the assessment of SWB is sensitive to the scale utilised and therefore, it is recommended that two or more scales are used when conducting any research on SWB (Casas et al., 2014). Yet, many studies employ only one SWB scale for children and adolescents, with the instrument selected yielding different results in various contexts. In addition, when the SWB decreasing-with-age trend is found, many authors do not interpret it appropriately. Casas (2016) emphasises the importance of explicitly investigating age as opposed to investigating school or grade. In determining the decreasing-with-age tendency, the study sample size is important as a number of studies used small samples sizes. Further, most studies included adolescents between the age of 11 to 12-years old and those aged 16 to 20-years. A gap in the literature is thus evident among children younger than 11-years old, as well as children aged 13 to 15-years old. The literature therefore requires culturally-specific explanations of the SWB

decreasing-with-age trend. Some pertinent questions to consider are: At what age does the decreasing-with-age tendency begin and when does it end (Casas, 2017)?

4. Measurement of Subjective Well-Being

Noting the importance of determining children's SWB, it has become critical to consider the measurement of SWB. Assessing children's SWB has been a point of contestation amongst researchers given the key consideration of the developmental appropriateness. Researchers have used both qualitative and quantitative approaches in the measurement of SWB. The qualitative approach has been used to gain children's advice on improving well-being measures (Casas, Sarriera, & Abs, et al., 2012), to determine children's subjective perceptions of their well-being, the various domains of well-being, and how they make sense of and assign meaning to well-being (Fattore et al., 2007; Fattore, Mason, & Watson, 2012; September & Savahl, 2009; Savahl, Malcolm, et al., 2015). Quantitative approaches have focused on the development of standardised scales, often adapted from adult versions. Here it is important to note the lack of psychometrically sound instruments measuring SWB in children. In particular, there is a lack of brief measures that can be used in large scale national or cross-national surveys (Huebner & Hills, 2007). Historically, the single item 'Cantril Ladder' was extensively used to assess children's SWB (Casas et al., 2013). However, it is now widely accepted that the concept of SWB cannot be captured solely by single-item measures. Recent empirical studies (see e.g. Casas, 2017; Casas & Rees, 2015) have found that the use of multi-item measures of SWB are more stable than single-item measures (Casas et al., 2013), minimises the risk of measurement error, and increases the reliability of the measure (Savahl et al., 2017).

Over the past few years a number of scales have been developed (or adapted from adult versions) to measure SWB in children and youth. These scales are typically multi-item, and designed to measure SWB on three levels: general, global, and domain-specific (Huebner & Hills, 2013). Scales based on the general model assess general SWB or life satisfaction in relation to a set of specific life domains – these scores are collated to present with a single 'general' life satisfaction score, by taking into account the contribution of the various domains. Global life satisfaction, on the other hand, require respondents to evaluate their level of life satisfaction on items that are domain-free or context-free, thus reflecting overall assessment of life as a whole, and generating a single global life satisfaction score. The general and global measures are often categorised as unidimensional scales (Proctor, Linley,

& Maltby, 2009). Multidimensional scales require respondents to evaluate their level of SWB or life satisfaction across a range of items that represent various domains of SWB. These measures typically generate a separate score for each domain.

Of these measures, the Personal Well-Being Index-School Children (PWI-SC) (Cummins & Lau, 2005), the Students' Life Satisfaction Scale (SLSS) (Huebner, 1991), the Multidimensional Students' Life Satisfaction Scale (MSLSS) (Huebner, 1994), and the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) (Seligson, Huebner, & Valois, 2003) are the most widely used and have shown good cross-cultural adaptation with children aged 8 to 18-years old across a range of contexts (see Proctor et al., 2009 for a review of life satisfaction measures developed for use with children and youth; Savahl, Casas, et al., 2017). These scales have also been translated into various languages and adapted across a range of contexts. The scales have, however, predominantly been adapted and validated in developed countries, with a dearth in developing contexts. Historically, this has limited cross-cultural comparisons. In a recent study, Casas and Rees (2015) emphasised the significance of conducting cross-cultural and comparative studies on children's SWB. They specifically mention the importance of ascertaining whether cross-cultural comparisons can be conducted between developed and developing countries. Using data from Wave 1 of the Children's Worlds: International Survey of Children's Well-Being (ISCWeB) study on children's well-being (www.isciweb.org), wherein various SWB measures were used, they found that cross-national comparisons by correlations and regressions were tenable but cautioned against the comparisons of mean scores. Previously, Casas, Sarriera, Abs, et al. (2012, p.1) emphasised the need for further comparative studies using multiple item scales across cultures, languages and countries stating that:

“Although a number of research publications use multiple-item scales, there remains a need for more studies to analyse the reliability and relevance of the various instruments available for collecting children's self-assessments across different cultures, languages and countries in order to use the results as subjective indicators in the international arena.”

Cross-cultural comparative studies between Spanish, Chilean, Brazilian, and Argentinian adolescents (Casas, Sarriera, Abs, et al., 2012; Casas, Sarriera, Alfaro, et al., 2012), Spanish and Romanian adolescents (Casas, Bălătescu, Bertran, González, & Hatos,

2013), and Spanish and Algerian children (Casas et al., 2014) demonstrated appropriate structural validity and cross-cultural comparability of various SWB instruments across diverse groups. These studies suggest that these instruments are valid for use with diverse groups (samples) of children, and that the scores can be compared across children in various contexts. It was found that the instruments are measuring the same construct and the items have the same meaning across diverse groups. More recently, Savahl, Tiliouine, et al. (2017) conducted a cross-cultural study on children's SWB in three African countries (Algerian, Ethiopia and South Africa) amongst a sample of 12-year old children. Using the SLSS and the PWI-SC, they found acceptable structural validity of the instruments and confirmed metric and partial scalar invariance. They concluded that the instruments could be used for cross-cultural comparisons amongst the sampled countries and that the scores on SWB could be compared across correlations, regressions, and means. The current study builds on this trend in validation studies of SWB scales for children, with a specific focus on validating the BMSLSS amongst a sample of children in South Africa.

The BMSLSS is a 5-item self-report life satisfaction measure developed for use with children and adolescents aged 8 to 18-years old (Seligson et al., 2003). Each of the five items represents a life satisfaction domain of the MSLSS, theorised as family, friends, school, self, and living environment. It was developed to address the increasing interest in monitoring, promoting, and assessing positive aspects of children's well-being, as well as the judgments children make regarding their perceived life satisfaction (Huebner, Valois, Paxton, & Drane, 2005; see also Diener & Seligman, 2004). The instrument requires a judgement from the participant regarding his or her life satisfaction in relation to the five particular domains (Huebner, Seligson, Valois, & Suldo, 2006; Proctor et al., 2009; Seligson et al., 2003). Despite following the conceptual model of the MSLSS, the BMSLSS is not considered a shorter version of the MSLSS as the items are unique to the BMSLSS (Huebner, Suldo, Valois, Drane, & Zullig, 2004; Huebner et al., 2006; Proctor et al., 2009). Participants respond to each item selecting one of the following response options: "1 = Terrible, 2 = Unhappy, 3 = Mostly Dissatisfied, 4 = Mixed (about equally satisfied and dissatisfied), 5 = Mostly Satisfied, 6 = Pleased, and 7 = Delighted" (Proctor et al., 2009). The scale is scored by summing the responses across the five domains.

Seligson et al. (2003) investigated the psychometric properties of the BMSLSS across two samples in a south-eastern state in the US. The first sample consisted of 221 grade 7 and

8 students attending a middle school, and the second sample consisted of 46 students attending an urban high school. For the first sample, the BMSLSS total score indicated a reasonable degree of internal consistency reliability ($\alpha = 0.75$), criterion-related validity, as well as construct validity for research purposes (Seligson et al., 2003). Multitrait-multimethod analysis offered evidence of convergent and discriminant validity for the BMSLSS domain scores (Seligson et al., 2003). Furthermore, moderate inter-correlations were found among the BMSLSS domains, which are comparable to the MSLSS, providing further support to the multidimensionality of the instrument. The results for the second sample indicated stronger convergent validity among the high school students as opposed to the middle school students and offered strong support for discriminant validity, as well as an acceptable internal consistency coefficient (Seligson et al., 2003). The authors concluded that the BMSLSS has acceptable reliability and validity, including internal consistency for adolescent students, particularly when utilised to conduct research (Seligson et al., 2003). Huebner, Suldo, Valois, and Drane (2002) (as cited in Huebner et al., 2003) further extended their support to the aforementioned inferences. They used the BMSLSS in a study of 2 502 students ranging from grades 6 to 8 and found that the BMSLSS offers a developmentally appropriate measure for positive SWB in young adolescents and children (Huebner, Suldo, & Valois, 2003).

In another study, Seligson, Huebner, and Valois (2005) explored the BMSLSS psychometric properties with a sample of 518 elementary students in grades 3 to 5 from a metropolitan area in a south-eastern US state ($\alpha = 0.76$, when items that measure overall life satisfaction were included). The findings of this study are aligned to the findings of the authors' previous validation studies (see Seligson et al., 2003), and further advocate the efficacy of the BMSLSS as a brief measure of SWB amongst elementary school-aged children (Huebner et al., 2003; Seligson et al., 2005). The BMSLSS 'total score' revealed a high degree of concurrent, construct, and criterion-related validity with the SLSS 'total score' in relation to the theoretical constructs of positive and negative affect, and social desirability (Seligson et al., 2005).

In their review of the BMSLSS, Huebner et al. (2006) looked at 6 samples of students in South Carolina, USA, four of which utilised the method of convenience sampling: 518 students grade 3 to 5; 221 students grade 6 to 8; and 146 students in grades 9 to 12 (Funk, Huebner, & Valois, 2006), as well as 48 students in grades 9 to 12 (Huebner et al., 2006). The

remaining two samples were randomly selected and participated in a state-wide risk behaviour survey along with the BMSLSS and consisted of 5 545 grades 9 to 12 students (Huebner, Drane, & Valois, 2000) and 2 278 grades 6 to 8 students (Huebner et al., 2005). Cronbach's alpha ranged from 0.68 for elementary school students, to 0.75 for middle and high school students (Huebner et al., 2006). By including the single-item Overall Life Satisfaction (OLS), alpha coefficients increased to 0.76 for elementary school students and 0.85 for older students (Funk et al., 2006; Huebner et al., 2006; see also Seligson et al., 2003). A two-week interval for high school students reported alpha coefficients for test-retest reliability, which were found to be: 0.85 (Family), 0.80 (Living Environment), 0.79 (Self), 0.62 (Friends), and 0.91 (Total), suggesting reasonable stability for reporting adolescent OLS, including domain-specific satisfaction (Huebner et al., 2006). Convergent and discriminant validity coefficients were substantial for high school students, and slightly lower and within the acceptable range for middle school students (Huebner et al., 2006). Concurrent validity of the BMSLSS was explored through associations with additional SWB measures such as the MSLSS ($r = 0.66$ and 0.81) and SLSS ($r = 0.62$). Huebner and colleagues (2006) concluded that the BMSLSS displays acceptable psychometric properties for use with children and youth, specifically in the US. They further indicated that the BMSLSS functions well as a *positive psychology* measure and remains consistent with the positive psychology movement (Diener & Seligman, 2004). Huebner et al. (2006) also argued for further validation studies of the BMSLSS.

Additional cross-cultural comparisons were conducted by Casas and Rees (2015) and Casas (2017) using the samples from Wave 1 and Wave 2 of the Children's Worlds study. A cross-cultural fit structure was obtained for the overall sample of Wave 1 ($\alpha = 0.71$) by Casas and Rees (2015) indicating that metric invariance was tenable for 7 of the 11 countries, stipulating that these countries can be compared by correlations and regressions (Casas & Rees, 2015). Scalar invariance was not tenable, with the authors concluding that comparison by mean scores was not recommended (Casas & Rees, 2015). Further cross-cultural studies conducted by Casas (2017) using data from Wave 2 of the Children's Worlds study confirmed an appropriate fit structure for the overall model for 10 and 12-year old children. Metric invariance was tenable across both age groups for 11 of the 15 countries (different countries were excluded for the different age groups); however mean scores for the BMSLSS were not comparable across countries regardless of age (Casas, 2017).

The BMSLSS has also been used in developing countries in South America (see Casas, Sarriera, Abs, et al., 2012; Casas, Sarriera, Alfaro, et al., 2012). A multigroup confirmatory factor analyses (MGCFA) was used to investigate a pooled sample of 5 316 adolescents, aged 12 to 16-years old. Results showed that the mean scores were cross-nationally comparable across a one-year interval for each of the participating countries (Casas, Sarriera, Alfaro, et al., 2012). Cross-country scalar invariance was not tenable due to possible dissimilar cultural response-styles, however, results indicate that measurement equivalence was tenable cross-nationally (Casas, Sarriera, Alfaro, et al., 2012).

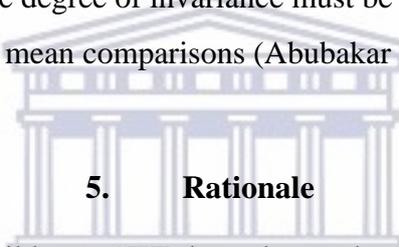
Tian, Zhang, and Huebner (2015) conducted a preliminary validation study of the BMSLSS using a combined sample of 1 904 Chinese elementary school students from grades 4 to 6. Item and factor analyses were applied to investigate the structure of the BMSLSS, while MGCFA was used to investigate the internal consistency, reliability, convergent, and discriminant validity, test-retest reliability, and predictive validity, including measurement invariance across gender (Tian et al., 2015). Findings were comparable to earlier studies that focused on middle and elementary school students in western countries, indicating that the BMSLSS factor structure remains invariant with regards to age and nation (Tian et al., 2015). The reliability coefficient ($\alpha = 0.75$) for the five domains and test-retest reliability coefficients indicated strong correlations (Tian et al., 2015). These findings are in line with a previous BMSLSS validation study with Chinese adolescents aged 12 to 18-years old (see Ye et al., 2013) which found supporting evidence relating to the validity and reliability of the BMSLSS with respect to differences between genders across the five domains.

A cross-sectional study conducted by Abubakar et al. (2016) on 7 739 adolescents and emerging adults from 23 countries, investigated the measurement invariance of the BMSLSS (translated) across different cultural contexts. The findings indicated good psychometric characteristics, with the exception of insufficient evidence for scalar invariance in both the emerging adults and adolescent samples, indicating that mean scores cannot be compared across cultures (Abubakar et al., 2016). Furthermore, through MGCFA, evidence of construct validity was demonstrated, suggesting that the instrument is suitable for use in cross-cultural surveys when assessing emerging adults and adolescents.

A longitudinal study by Ng, Huebner, Maydey-Olivares, and Hills (2017) investigated the fit structure and measurement invariance of the BMSLSS in middle school adolescent

samples across a single-year time interval in the south-eastern US. Time 1 included 1 181 (grade 6 and 7) students, and time 2 included 1 666 (grade 6, 7, and 8) students. The longitudinal sample included 796 students (grades 6 and 7), reporting a retention rate of 67% (Ng et al., 2017). Results indicated acceptable test-retest reliability and high internal consistency over time, as well as supporting evidence for strict invariance, suggesting that the means and variances of the BMSLSS continued to be invariant across a one-year interval (Ng et al., 2017).

In summary, studies on the BMSLSS suggest that the instrument offers excellent psychometric properties when used with children and youth, specifically in the US, South America, and China. High degrees of internal consistency, criterion-related and construct validity, including a reasonable degree of the multidimensionality and metric invariance have been found. However, cross-cultural scalar invariance has not always been tenable, with some authors cautioning that the degree of invariance must be investigated to ensure the suitability of the instrument for mean comparisons (Abubakar et al., 2017).



5. Rationale

The state of the art in children's SWB has advanced substantially over the past decade. Significant progress has been made at the conceptual and theoretical levels, and there is evidence that the consideration of children's SWB has filtered into national discourse and policy debates. Progress has also been made in relation to the measurement of children's SWB. A range of standardised scales have been developed and have shown good psychometric properties with children between the ages of 8 to 18-years. However, most of these empirical studies have been conducted in developed contexts, with a lack of empirical research in developing contexts. The Children's Worlds study has made significant advances in this regard and through two waves of the study, substantial data has been collected on children's SWB from both developed and developing countries, thus creating opportunities for cross-cultural comparisons (see Casas, 2017; Casas & Rees, 2015). While these studies have demonstrated the cross-cultural comparability of SWB instruments, the authors caution against the comparison of mean scores on SWB scales across countries. The authors concluded by recommending further validation studies of SWB instruments, especially in developing contexts, and further studies that advance cross-cultural comparisons. The current study hopes to contribute in this regard, and aims to provide a structural validation of the

BMSLSS; to test its convergent validity; and to test the level of comparability across two age groups (10 and 12-year old).

6. Aims and Objectives of the Current Study

The overall aim of the current study is to provide a structural validation of the BMSLSS amongst a sample of children in the Western Cape Province of South Africa. Within this process, the current study aims to test the overall fit structure of the BMSLSS, to ascertain the comparability across two age groups, and to test the convergent validity of the BMSLSS. The following objectives have been developed to guide the study:

- i. To test the overall fit structure of the BMSLSS across three age groups (8, 10, & 12-year olds)
- ii. To test the comparability of the BMSLSS across the 10 and 12-year old age groups
- iii. To test the convergent validity of the BMSLSS by regressing it onto the single-item Overall Life Satisfaction scale

7. Theory of Model Fit: Goodness of Fit and Fit Indexes

Given that the aim of the current study is rooted in psychological measurement theory, the study is located within the Theory of Model Fit, with a focus on ‘Goodness of Fit’ and ‘Fit Indexes’. This theoretical framework has been used in previous measurement and validation studies on SWB instruments in South Africa by Savahl, Casas, et al. (2017) and Savahl, Tillioune, et al. (2017).

The Theory of Model Fit is aligned to the analysis techniques of Structural Equation Modelling (SEM) and Confirmatory Factor Analysis (CFA). Structural Equation Modelling is a general data modelling technique which can be understood as a combination of factor, path, and regression analyses (Hox & Bechger, 1998). It represents a series of a priori hypotheses about how the observed and latent factors are related (Hu & Bentler, 1999). The focus of SEM is that the designation of specified models needs to be based on theoretical relationships between observed and unobserved variables; the interest is thus in ascertaining the extent to which theoretically hypothesised models fit the observed data (Savahl, Casas, et al., 2017). Structural Equation Modelling consists of two components, namely a measurement model

and a structural model. The measurement model represents the confirmatory factor model and determines the extent to which the observed constructs contribute toward the latent factor (BMSLSS in the current study); while the structural model assesses the interrelationships between two or more latent factors (i.e. OLS onto the BMSLSS in the current study). Confirmatory Factor Analysis is seen as the analytic method of choice for developing and refining measurement instruments and scales, by assessing construct validity and determining measurement invariance across groups. In the current study, CFA is used to determine the structural validity of the BMSLSS. Assessment of model fit of the hypothesised models and the estimation of parameters are the two goals of SEM and CFA (Hu & Bentler, 1999).

Within SEM the most widely used procedures to determine model fit are 'Goodness of Fit' Statistics and Approximate Fit Indexes (Hu & Bentler, 1999; Kline, 2010). 'Goodness of Fit' statistics, of which the chi-square goodness-of-fit statistic is the most popular, determines the degree to which the model covariance matrix significantly differs from the observed covariance matrix. Lower chi-square values resulting in non-significant differences indicate a higher degree of correspondence between the specified models and the data (Kline, 2010) and would represent a good fit of the hypothesised model to the observed data. The chi-square statistic is, however, sensitive to sample size and generally tends to increase with larger samples (Hu & Bentler, 1999). It is for this reason that researchers using SEM and CFA recommend that supplementary fit indexes be applied. Within contemporary research, the two most widely used fit indexes are absolute and incremental fit indexes. Absolute fit indexes assesses how well a hypothesised model fits the sample data in comparison to no baseline model, while incremental fit indexes attempt to fit a hypothesised model to a baseline model wherein the null hypothesis is that the variables in the model are uncorrelated (Savahl et al., 2016). It is widely recommended that more than one fit index be used to overcome the limitations of using a single index (Casas et al., 2013). If designated models present with a good fit (there is no significant difference between the hypothesised model and the observed data) then the estimates of the path parameters can be considered in relation to the extent to which the latent construct loads onto the scale items. Following recommendations by Jackson, Gillaspay, and Purc-Stephenson (2009), and Kline (2010), the absolute fit index of the comparative fit index (CFI) and incremental fit indexes of Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Square Residual (SRMR), will be used to determine model fit of the BMSLSS in the current study. These recommendations have been used in a range of validation studies on child SWB

instruments (see e.g. Adams, Savahl, & Casas, 2016; Casas et al., 2013; Casas, Sarriera, Alfaro, et al., 2012; Savahl, Adams, et al., 2015; Savahl, Casas, et al., 2017) which uses cut-scores of: $>.950$ as acceptable for the CFI; and $<.05$ regarded as a good fit for RMSEA and SRMR. These cut scores will be applied in the current study.

8. Method

8.1 Design

The current validation study forms part of and uses secondary data from Wave 2 of the Children's Worlds study (Ethics clearance number: 13/4/26; see appendix A). The study included children from three age groups, namely 8, 10, and 12-year olds, randomly selected from 29 primary schools in the Western Cape province of South Africa.

8.2 History of the Children's Worlds Study

The Children's Worlds (International Survey of Children's Well-Being [ISCWeB]) study was conceptualised in 2009 when a group of researchers from the International Society for Child Indicators held a meeting hosted by UNICEF Geneva to discuss the need for a study that captured information on children's subjective perceptions of well-being. The group agreed that such a study would address an important gap in the international literature regarding children's lives. One of the outcomes of the meeting was an early version of a survey designed to determine children's subjective perceptions and evaluations of well-being across a range of life domains. This first draft questionnaire was tested and piloted in 2010 in seven countries, namely: Brazil, England, Germany, Honduras, Israel, Palestine, and Spain. In December 2010, the research group met again to review the pilot questionnaire, which led to a second version of the questionnaire. This version was then piloted in the first half of 2011. In October 2011, members of the research group reviewed the outcomes of the second pilot study and developed a third set of the survey questionnaires, with separate versions developed for children aged 8, 10, and 12-year olds. The first wave of data collection (Wave 1: Deep pilot) was conducted in 2012-2013 across 21 countries with a sample of children aged 8 to 12-years old ($N > 30\ 000$). The objectives of this wave were to ascertain baseline data on child well-being, assess the validity of the measuring instruments, and to assess the comparability of SWB across countries and social contexts. Subsequently in 2014, Wave 2 was conducted with a representative sample of children aged 8, 10, and 12-years old across 15 countries ($N > 56\ 000$).

8.3 The Children's Worlds Study in South Africa

Given the overall aim of the Children's Worlds study, it is noteworthy to present the contributions from South Africa. Researchers based at the Department of Psychology (University of the Western Cape) joined the Children's Worlds study in 2011. Wave 1 of the study was conducted in South Africa in 2012-2013 by the research team and included a deep pilot with children aged 12-years old. This wave comprised a total random sample of 1 004 participants (girls: $n = 541$; boys: $n = 463$) selected from 15 schools in the Cape Town Metropole. In Wave 2 (2014 – 2016) of the Children's Worlds study in South Africa, data were collected using a stratified random sample of children aged 8, 10, and 12-years old ($N = 3\ 284$), selected from 29 schools across the Western Cape Province from both urban and rural geographical districts. The current study uses secondary data from Wave 2 of the Children's Worlds study. While the aim of the larger study is to collect substantive data about children's perceptions, understandings, experiences and evaluations of their lives, the current study aims to provide a structural validation of the BMSLSS.

8.4 Research Context

The children of South Africa have a protracted history of exposure to political violence, oppression, abuse, and neglect. Following the advent of democracy in 1994, the new South African government instituted a range of legislations to redress the atrocities that children experienced in the past, and to improve the overall quality of life and developmental trajectories of children. The first of these legal commitments is evident in Section 28 of the Bill of Rights (South African Constitution, p. 1 255) which details children's basic human rights and advances the notion that "A child's best interest are of paramount importance in every matter concerning the child". This was followed by the ratification of the United Nations Convention on the Rights of the Child (UNCRC) on the 16th of June 1995. Further legislative advancement is evident in child-specific legislation, including the Children's Act (No. 38 of 2005), the associated Children's Amendment Act (No. 41 of 2007), as well as the Child Justice Act (2008). Furthermore, through the Social Security Agency Act of 2004, the government has ensured that children are the beneficiaries of social grants to mitigate against vulnerability and poverty. Acceding to these legal contracts has entrenched the rights and needs of children in the development strategies of the government, as well as guaranteeing children's socio-economic rights and protection from abuse, exploitation, and neglect. Co-ordinated by the Office on the Rights of the Child (ORC), the National Programme of Action (NPAC) was put in place to provide "a holistic framework for the integration of all policies

and plans developed by government departments and civil society to promote the well-being of children” (2012, p. 9). With children now being elevated to the legal status of rights holders, with the government ultimately accountable as the principal duty bearer, children’s well-being is ostensibly afforded the highest priority within government. However, after 25 years of democracy, and despite the legislative advancements, the quality of life for South Africa’s children remains compromised (Savahl, Adams, et al., 2015; Savahl, Casas, et al., 2017).

South Africa is divided into nine provinces, namely the Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Mpumalanga, Northern Cape, North West, and the Western Cape. It has a child population of 18.6 million, representing 34% of the total population. Forty-five percent are between the ages of 10 to 17-years old, with a gender split of 49% female, and 51% male. National estimates show that 54.6% of the child population live in urban areas, while 45.4% live in rural areas (Statistics South Africa, 2015 [StatsSA, 2015]). The study was conducted in the Western Cape Province, which is situated at the south-western tip of the country and is the southern-most part of the continent of Africa. The population size of the Western Cape Province is 6 116 300, with a land surface of 129 307km² (StatsSA, 2015). The Western Cape Province is further divided into one metropolitan area (City of Cape Town), and five district municipalities: West Coast; Central Karoo; Overberg; Eden; and the Cape Winelands. The City of Cape Town is situated on a peninsula flanked by the Atlantic Ocean to the east and west, with Table Mountain and Hottentots Holland mountain ranges as aesthetic backdrops. The Cape Town Metropole is a typical urban area with peri-urban areas situated approximately 50 to 100km from the city centre. In the Western Cape, the majority of children (94.6%) live in urban areas, while a small proportion (5.4%) lives in rural areas (Hall, Meintjies, & Sambu, 2014).

Although it has been shown that income poverty rates have steadily decreased since 2003 in all provinces except the Northern Cape (StatsSA, 2015), predominantly as a result of the Child Support Grant, a large majority of children still live in dire conditions and struggle to gain access to quality healthcare and basic services (Mathews et al., 2014). In 2015, 34.8% of children living in the Western Cape found themselves within the upper-bound poverty line (representing an income less than R965 per person per month), 18.5% of children were found to live in a lower-bound poverty line, equating to R621 per person per month, 9.1% of children were found to live within a food poverty line of less than R415 per person per

month; and 4.4% of the children were found to live below the ultra-low international poverty line of R210 per person per month (City of Cape Town, 2016).

8.5 Participants and Sampling

The participants were selected from the eight Education Management District Councils (EMDC's) of the Western Cape Education Department (WCED), comprising four urban and four rural districts. The sample was selected using a two-stage proportionate stratified random sampling technique. In the first stage, schools were chosen based on geographical location (urban or rural), and in the second stage schools were stratified according to SES (low or middle). Schools that were inaccessible by road, farm schools, and private schools were excluded. The sampling protocol employed a 95% confidence level and a 3% margin of error. The sampling frame included 646 primary schools, with the final sample selected from 29 schools. Once schools had been randomly selected, all children aged 8, 10, and 12-years old within the schools were selected to participate in the study. However, children only participated in the study if they provided consent, and if consent was obtained from their parents. The total sample size was 3 284 children (8-year olds: $n = 1\ 032$; 10-year olds: $n = 1\ 109$; 12-year olds: $n = 1\ 143$) (Savahl, Adams, et al., 2015).

8.6 Instrumentation

Although the ISCWeB survey was originally developed in Spanish and English, a concordant requirement was stipulated within the Children's Worlds study protocol to translate and adapt the measures for local contexts in terms of cultural, language, and contextual factors. In the South African Children's Worlds study for Wave 2, questionnaires were translated into Afrikaans and isiXhosa using the back-translation method, including cognitive testing. The translated Afrikaans and isiXhosa versions of the questionnaire were back-translated and compared with the English version to identify any ambiguity or inconstancy across items, and amended as required. The translation and back-translation were conducted by two independent reviewers. The questionnaire was then cognitively tested with 8, 10, and 12-year old children from diverse income backgrounds. The first few questions on the questionnaire were read aloud to participants and response options were explained. This process assisted in further modification of items and clarification of instructions to participants, and the phrasing of the items. The adapted version of the questionnaire was then piloted with 100 children from both low and middle SES communities.

The instrument used in the larger study detailed demographic information of the participants such as age, SES (which was determined by the location of the school), suburb, and country of birth. While the questionnaire for the larger study included several validated scales to ascertain various aspects of children’s well-being and time use, the current study only utilised data from the BMSLSS and the OLS.

8.6.1 Brief Multidimensional Students’ Life Satisfaction Scale

The BMSLSS consists of five items which require respondents to evaluate their level of satisfaction over five domains with the items addressing: ‘People I live with’, ‘Friends’, ‘The school I go to’, ‘Myself’ and, ‘The area I live in’ (Seligson et al., 2003). The BMSLSS has demonstrated acceptable psychometric properties in a number of studies and contexts. The distribution of item mean scores has been shown to be in the positive range ($M = 4.97$, $SD = 1.25$, range: 1-7), with skewness and kurtosis values within acceptable limits (skewness = -0.98; kurtosis = 0.88), and demonstrating a relatively normal distribution (Huebner et al., 2003; Seligson et al., 2003). The reliability coefficient for the study has been shown to be good ($\alpha = 0.75$) and item-total correlations have been reported from middle school samples with coefficients ranging from 0.65 to 0.73 (Huebner et al., 2003; Seligson et al., 2003). In the current study, following the Children’s Worlds study’s protocol (see Casas & Rees, 2015), the BMSLSS was scored on a 5-point scale with the response options represented as emoticons for the 8-year olds with 0 = 😞 (most unhappy face), and 4 = 😄 (most happy face).

How happy you feel with...	😞	😓	😐	😊	😄
Your family life?					
Your friends?					
Your school (life)?					
Your own body?					
The area where you live?					

For the 10 and 12-year old age groups, the BMSLSS was adapted to an 11-point end-labelled response scale (unipolar) as recommended by Casas & Rees (2015), with 0 = “Not at all satisfied” and 10 = “Completely satisfied”.

How satisfied are you with each of the following things in your life?	0 = Not at all satisfied Completely satisfied = 10										
	0	1	2	3	4	5	6	7	8	9	10
Your family life?	0	1	2	3	4	5	6	7	8	9	10
Your friends?	0	1	2	3	4	5	6	7	8	9	10
Your school experiences?	0	1	2	3	4	5	6	7	8	9	10
Your own body?	0	1	2	3	4	5	6	7	8	9	10
The area where you live?	0	1	2	3	4	5	6	7	8	9	10

For both versions of the BMSLSS used in the current study, item 4 of the original BMSLSS ('Satisfied with yourself') was adapted to 'Satisfied with your own body' by the Children's Worlds International group.

8.6.2 Single-item on Overall Life Satisfaction

An item assessing OLS (Cummins & Lau 2005) on an end-labelled 0 – 10-point scale was also included in the ISCWeB using the following wording: "How satisfied are you with your life as a whole?" The importance of including a single-item on life satisfaction was identified by Campbell et al. (1976) and further corroborated by Cummins and Lau (2005) and Casas and Rees (2015) who advance the use of the OLS to ascertain convergent validity of SWB scales.

8.7 Procedure and Ethics

Ethics clearance was obtained from the Senate Research Committee of the University of the Western Cape (Ethics clearance number: 13/4/26, see Appendix A) and the Western Cape Education Department. Schools were contacted telephonically and meetings arranged between the research team, the school principals, and the appropriate grade head of department to discuss the details of the project. Once the schools agreed to participate in the study, an information session was arranged with the prospective participants at the school where the aim, the nature of their involvement, and ethics of the study were discussed. Specific ethics principles of informed consent, confidentiality, and the right to withdraw were explained and highlighted to the children. The children who agreed to participate in the study were required to provide signed consent, as well as signed consent from their parents. Only those children who returned the consent forms participated in the study.

The questionnaires were administered following a researcher-administered protocol. To familiarise the participants with the response options, the items on the questionnaire were read aloud to the participants by a member of the research team while they completed the questionnaire. This approach also assisted participants who may have experienced difficulty in answering some items on the questionnaire, and is generally used with young children and vulnerable groups. The average time of completion of the questionnaire was 30 minutes.

8.8 Data Analysis

The Statistical Package for the Social Sciences (SPSS, version 24) software was used to generate descriptive statistics. The structural validity of the BMSLSS was tested using CFA in AMOS (version 24). Multigroup Confirmatory Factor Analysis was used to test the validity of the measure across the two age groups. The maximum likelihood estimation procedure was used, with kurtosis and departures from normality attended to using the bootstrap method (500 samples) as specified in AMOS. As previously indicated, following recommendations by Jackson et al. (2009) and Kline (2010) the CFI, RMSEA, and SRMR was used as fit indexes. Results higher than .950 were accepted for the CFI and results below .05 were regarded as a good fit for RMSEA and SRMR. Improvement of model fit was achieved by excluding items with excessively low factor loadings ($< .2$) (Kline, 2010), the application of modification indices (error covariance constraints), and the application of partial measurement constraints. Error covariance constraints is often applied in SEM to improve model fit; it demonstrates that two indicators covary in addition to the shared influence of the latent factor (i.e. BMSLSS) (Kenny, 2006). Error covariances are typically identified on the premises of method effects even though additional sources of such relationships are possible.

To compare the results between the age groups, measurement invariance was employed, which refers to the extent to which items in an instrument present the same meaning across groups (Meredith, 1993). The tenability of measurement invariance is therefore a pre-requisite for meaningful interpretations to be made between the age groups. Cheung and Rensvold (2002) and Chen (2007) conceptualise measurement invariance on a hierarchical structure assessed through the application of incrementally restrictive measurement constraints. Measurement invariance is tenable if the model fit does not worsen by more than 0.010 on the CFI (Cheung & Rensvold, 2007) and by 0.015 on the RMSEA, and SRMR (Chen, 2007). Noting these recommendations, the current study tested

measurement invariance of the multigroup models (age groups) in three incremental steps. In the first step, *configural* invariance was tested which assesses an unconstrained multigroup model wherein the parameters are freely estimated. Thereafter, *metric* invariance, was assessed which is a requisite for comparing covariance, correlations or regression coefficients, by constraining the factor loadings of the configural model. In the final step, *scalar* invariance was tested which is a requirement for comparing mean scores between the age groups, by constraining the factor loadings and intercepts of the metric model. Finally, to test convergent validity a structural equation model was tested by including the single-item OLS into the overall model.

9. Results

9.1 Descriptive Statistics

Cronbach's alpha reliability coefficient was an acceptable .90, with skewness of the items ranging from -1.738 to -2.863 for the 8-year olds age group, and from 1.373 to -2.612 for the 10 and 12-year old age groups. Kurtosis ranged from 1.884 to 8.327 for the 8-year old age group and .592 to 6.566 for the 10 and 12-year old age groups. These departures from normality were attended to using the Bootstrap method (500 resamples), as specified in AMOS (Version 24). A means analysis showed high overall mean scores across all ages (8, 10, and 12- years old). The mean item scores across the three age groups are presented in Table 1, while the mean composite scores transformed to a 100-point scale are presented in Table 2. The transformation of scales to a 100-point scale is a common practice in quality of life research with children, as it enhances ease of comparison between the scores.

Table 1

BMSLSS item mean scores by age (8, 10, & 12)

	*8-years old			**10-years old			**12-years old		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Satisfaction with: Your family life	1032	3.55	.920	1061	9.10	2.040	1143	8.96	2.140
Satisfaction with: Your friends	1032	3.56	.903	1061	8.60	2.476	1143	8.21	2.520
Satisfaction with: Your school experience	1032	3.45	1.017	1061	8.59	2.388	1143	8.31	2.477
Satisfaction with: Your own body	1032	3.65	.830	1061	8.97	2.151	1143	8.84	2.191
Satisfaction with: The area you live in general	1032	3.33	1.170	1061	8.07	3.149	1143	7.55	3.237

*Response options for the 8-year old group was scored on a 0 to 4-point scale

**Response options for the 10 and 12-year old groups were scored on a 0 to 10-point scale

Table 1 displays the item mean scores of the BMSLSS for the three age groups. For the 8-year old age group the highest item mean score was demonstrated for item 4 (“Your own body; $\bar{x} = 3.65$, $SD = 0.83$). For the 10 and 12-year old age groups, the highest item mean score was presented for item 1 (“Your family life”; 10-year olds: $\bar{x} = 9.10$, $SD = 2.04$; 12-year olds: $\bar{x} = 8.96$, $SD = 2.14$). The lowest item mean score for all age groups was item 5 (“The area you live in general”; 8-year olds: $\bar{x} = 3.33$, $SD = 1.17$, 10-year olds: $\bar{x} = 8.07$, $SD = 1.15$; 12-year olds: $\bar{x} = 7.55$, $SD = 3.24$).

Table 2

Mean composite scores across age groups for the BMSLSS on a 100-point scale

	8-years old			10-years old			12-years old			*Composite Score		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
BMSLSS	1032	87.66	14.76	1061	86.65	14.25	1143	83.74	15.81	3236	85.14	15.14

*Composite score total for 10 and 12-years old only

9.2 Confirmatory Factor Analysis

Confirmatory Factor Analysis was used to test the validity of the factorial structure of the scales, CFA (AMOS, Version 24, maximum likelihood estimation) was used to determine the factor loadings and fit statistics of the various models. Given that a 5-point emoticon scale was used for the 8-year old age group, with a 0 to 10-point satisfaction scale for the 10 and

12-year old age groups, a separate CFA was conducted for the 8-year old group. The results for the 8-year old age group are presented separately to that of the 10 and 12-year old groups.

For the 8-year old age group, the initial model presented with a perfect fit (Model 1 in Table 5; Figure 1), with factor loadings ranging from .40 for item 2 (*Happy with family*) to .52 for item 3 (*Happy with school*) (presented in Table 3) which are in acceptable range ($> .2$, Byrne, 2010).

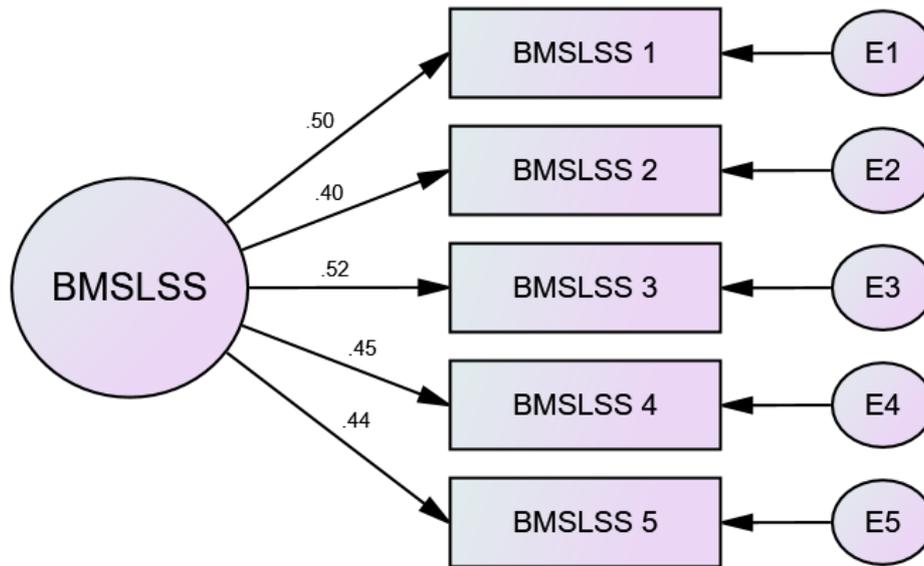


Figure 1. BMSLSS Initial Model (8-Year olds)

Table 3

Standardised Regression Weights (8-year old)

Parameter		Estimate	Lower	Upper	P
Happy Family Life	<--- BMSLSS	.498	.396	.592	0.004
Happy Friends	<--- BMSLSS	.398	.306	.500	0.004
Happy School Experience	<--- BMSLSS	.517	.413	.608	0.004
Happy Body	<--- BMSLSS	.453	.341	.557	0.004
Happy Area General	<--- BMSLSS	.436	.334	.534	0.004

For the 10 and 12-year old combined group, the initial model presented with an adequate fit (Model 2 in Table 5), which improved substantially with the addition of one error covariance (item 2 to item 4) (Model 3 in Table 5, Figure 2). The improved fit after the addition of the error covariance suggests that the two items have similar meanings and are understood in the same way by the participants. Standardised factor loadings ranged from .37 for item 2 (*Happy with family*) to .52 for item 4 (*Happy with own body*) (presented in Table

4). Although item 2 presented relatively low factor loadings, it is still in the acceptable range (> .2, Byrne, 2010).

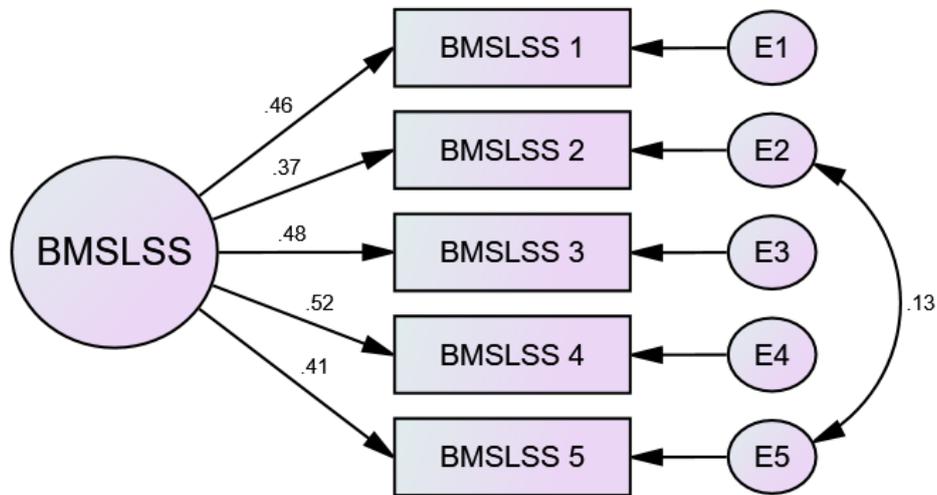


Figure 2. BMSLSS Pooled 10 & 12-year olds (1 error covariance)

Table 4

Standardised Regression Weights (Modified model 10 & 12-year olds with one error covariance)

Parameter		Estimate	Lower	Upper	P
Happy Family Life	<--- BMSLSS	0.456	0.380	0.536	0.004
Happy Friends	<--- BMSLSS	0.367	0.299	0.439	0.004
Happy School Experience	<--- BMSLSS	0.483	0.401	0.559	0.004
Happy Body	<--- BMSLSS	0.517	0.449	0.597	0.004
Happy Area General	<--- BMSLSS	0.407	0.341	0.475	0.004

Table 5

Fit indexes for the overall pooled and multigroup data

Model	ECV	χ^2	Df	p-value	CFI	RMSEA	SRMR
1. BMSLSS 8-year olds initial model		2.497	5	.777	1	.000 (0.000-0.029)	.0099
2. BMSLSS 10 & 12-year olds initial model		31.526	5	.000	.965	.049 (0.034-0.066)	.0247
3. BMSLSS Pooled 10 & 12-year olds modified model	1	8.343	4	.080	.994	.022 (0.000-0.044)	.0127
4. BMSLSS 10 & 12-year olds configural invariance	1	12.417	8	.134	.994	.016 (0.000-0.032)	.0208
5. BMSLSS 10 & 12-year olds metric invariance	1	19.653	12	.074	.990	.017 (0.000-0.030)	.0276
6. BMSLSS 10 & 12-years olds scalar invariance	1	28.866	16	.025	.983	.019 (0.007-0.030)	.0283
7. BMSLSS 8-year olds SEM		26.442	9	.002	.969	.043 (0.025-0.063)	.0264
8. BMSLSS Pooled 10 & 12-year olds SEM Modified Model	1	37.067	8	.000	.977	.041 (0.028-0.054)	.0215
9. BMSLSS 10 & 12-year olds SEM configural invariance	1	44.093	16	.000	.978	.028 (0.018-0.038)	.0226
10. BMSLSS 10 & 12-year olds SEM metric Invariance	1	52.991	20	.000	.978	.027 (0.019-0.036)	.0279
11. BMSLSS 10 & 12-year old SEM scalar invariance	1	63.635	24	.000	.969	.027 (0.019-0.036)	.0285

9.3 Multigroup Confirmatory Factor Analysis

To compare regression coefficients across the 10 and 12-year old age groups, factor invariance was tested using MGCFA. This process generally consists of three steps wherein restrictive constrained are incrementally applied. The first step involves testing a multigroup model with no constraints (*configural* invariance). This model represents the baseline model against which other models are tested. In the second step, *metric* invariance is tested by

constraining the factor loadings. If the fit indexes do not worsen by more than 0.010 on the CFI and by more than 0.015 on the SRMR and RMSEA in relation to the configural model, then metric invariance is tenable (Chen, 2007; Cheung & Rensvold, 2002). This means that the groups can be compared across correlations and regressions. In the final step, *scalar* invariance is tested by constraining the factor loading and intercepts. Similarly, if the fit indexes do not worsen by more than 0.010 for the CFI and 0.015 for the SRMR and RMSEA in relation to the metric model, then scalar invariance is tenable (Chen, 2007; Cheung & Rensvold, 2002). This means that the groups can be compared across correlations, regressions and means.

In the current study, the model testing configural invariance (Model 4, Table 5) was found to be tenable. Similarly, metric (Model 5, Table 5) and scalar (Model 6, Table 5) factor invariance was found to be tenable for the 10 and 12-year old age groups as the fit indexes did not incrementally worsen by more than 0.010 (CFI) and 0.015 (SRMR and RMSEA) (Chen, 2007; Cheung & Rensvold, 2002). The results from the current study indicate that the 10 and 12-year old groups can be compared across correlations, regressions, and means.

9.4 Structural Equation Modeling

The convergent validity of the BMSLSS was tested by including the single-item OLS (*Satisfaction with life as a whole*) in the structural equation models for the 8, and 10 and 12-year old age groups. For the 8-year old age group, appropriate fit indexes were obtained with the standardised regression weight of 0.55 (presented in Table 6) between the OLS and the latent factor BMSLSS (Model 7 in Table 5, Figure 3), confirming evidence of convergent validity. Similarly, for the overall pooled sample of the 10 and 12-year old age groups, appropriate fit indexes were obtained with a standardised regression weight of 0.60 between the OLS and the latent factor BMSLSS (Model 8 in Table 5, Figure 4), confirming evidence of convergence validity. Including the OLS into the model with constrained factor loadings and intercepts showed adequate standardised regression weights of the latent construct (BMSLSS) onto the OLS across the 10 and 12-year old age group. The standardised regression weights were .62 and .61 for the 10 and 12-year old respectively (presented in Table 7).

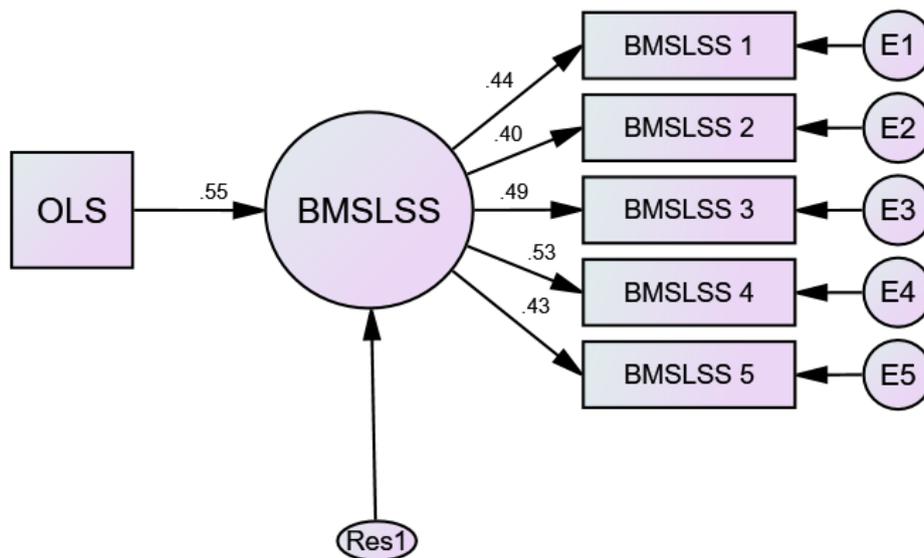


Figure 3. 8-year olds BMSLSS-OLS SEM

Table 6

Standardised Regression Weights (SEM for 8-year old age group)

Parameter		Estimate	Lower	Upper	P
BMSLSS	<--- OLS	.555	.446	.646	.004
Happy Family Life	<--- BMSLSS	.440	.336	.544	.004
Happy Friends	<--- BMSLSS	.399	.317	.489	.004
Happy School Experience	<--- BMSLSS	.492	.380	.576	.004
Happy Body	<--- BMSLSS	.527	.413	.629	.004
Happy Area General	<--- BMSLSS	.432	.341	.513	.004

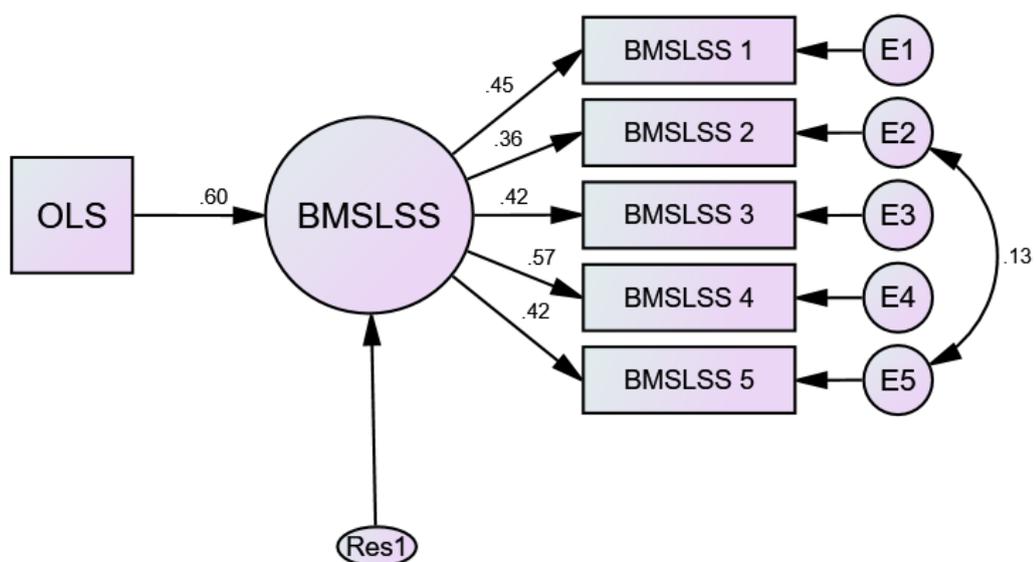


Figure 4. Pooled 10 & 12-year old group BMSLSS-OLS SEM (1 error covariance)

Table 7

Standardised regression weights (SEM): Constrained loadings & intercepts (10 & 12-year olds)

Bootstrap ML, 95% confidence intervals		10-Year Old				12-Year Old			
Resamples = 500		Estimate	Lower	Upper	P	Estimate	Lower	Upper	P
BMSLSS	<OLS	.617	.520	.707	.004	.610	.509	.699	.004
Happy Family	<BMSLSS	.413	.325	.501	.004	.466	.387	.541	.004
Happy Friends	<BMSLSS	.330	.268	.390	.004	.394	.314	.465	.004
Happy School Experience	<BMSLSS	.385	.323	.449	.004	.462	.369	.536	.004
Happy Body	<BMSLSS	.509	.441	.584	.004	.599	.524	.670	.004
Happy Area General	<BMSLSS	.384	.320	.443	.004	.451	.378	.515	.004
*Mean differences between 10 & 12-year old age groups		0	0	0	0	-.214**	-.336	-.107	.004

*The 10-year old age group is used as a point of reference

**Denotes significant mean differences

10. Discussion

The study aimed to provide a structural validation of the BMSLSS amongst a representative sample of children aged 8, 10, and 12-years old in the Western Cape Province of South Africa. Within this process, the study aimed to test the overall fit structure of the BMSLSS, including ascertaining the comparability across the two age groups (10 and 12-years old).

The first key finding of the study was that the descriptive analysis indicated high levels of SWB and is aligned to previous studies findings (see Casas et al., 2008; Cummins, 1997; Cummins, 2014; Marriage & Cummins, 2004; Savahl, Casas, et al., 2017; Tomyne & Cummins, 2011). Direct interpretation of mean scores should be cautiously applied in the field of children's SWB given the lack of normative scores (see Casas & Rees, 2015; Casas et al., 2014). Within the Child Indicator Movement, it is common practice to report on the composite mean scores transformed into 100-point scales. Casas et al. (2013) report mean composite scores of between 70 and 80 on SWB scales for children from western countries. In the current study, transformed composite mean scores of 87.66, 86.65, and 83.74 were found for the 8, 10, and 12-year olds respectively. These relatively high scores advance Cummins's (1995) 'life optimism bias', where individuals evaluate and present a 'generalised positive self-view' (Cummins et al., 2003).

Important findings also emerged with the application of the CFA. For the 8-year old age group, the hypothesised model demonstrated a perfect fit (see Model 1 in Table 5). It is noteworthy that the factor loadings were relatively low, ranging from .40 to .53 for the 8-year

old age group. Furthermore, square multiple correlations (SMC) showed adequate but low contributions of items onto the latent construct (BMSLSS). For the 10 and 12-year old age groups, a good fit was obtained which improved substantially with the addition of one error covariance. Similarly, low factor loadings and subsequent SMC's were found for the 10 and 12-year old group ranging from .37 to .52. Hair, Black, Babin, and Anderson (2010) suggests a general rule of thumb when assessing the practical significance of standardised factor loadings, noting that estimates should be .5 or higher, with .7 or higher being considered ideal. Field (2009) recommends that the factor be considered reliable if four or more factor loadings with a minimum of .6 are observed, irrespective of the sample size. Stevens (1992) suggests using a cut-off score of .4 for interpretative purposes, regardless of sample size; while Tabachnick and Fidell (2007) suggest that more stringent cut-offs should be applied ranging from 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good) or 0.71 (excellent). MacCallum, Browne, and Sugawara (1996), and MacCullum, Wideman, Preacher, and Hong (2001) propose that all items should present communalities of over .60 or an average communality of 0.70 in a factor model in order to justify performing a factor analysis when investigating a small sample.

The factor loadings from the current study are slightly lower than findings from previous studies. For example, Casas (2017) found factor loadings ranging from .55 to .57 for the 10-year old age group and from .51 to .59 for the 12-year old age group, with samples drawn from 15 countries for Wave 2 of the Children's Worlds study (N = 34 000). In addition, Casas and Rees (2015) found factor loadings ranging from .55 to .60 for the pooled sample of 11 countries. Seligson et al. (2005) found factor loadings ranging from .46 to .77 in a south-eastern US state with a sample (N = 518) of elementary students in grade 3 to 5. In a sample (grade 4, n = 74; grade 6, n = 86) of Turkish students, Siyez and Kaya (2008) indicated factor loadings of .30 to .87 for the grade 4 learners and from .33 to .90 for the grade 6 learners. Given the fit indexes of the models, the current study confirms evidence of appropriate structural validity of the BMSLSS amongst a sample of children in three age groups (8, 10, and 12).

Another key finding of the study is the tenability of scalar invariance for the 10 and 12-year old groups, which indicates that the two age groups can be meaningfully compared by correlations, regressions, and mean scores. It is important to note the mean scores decreased from the 10 to the 12-year old age groups, presenting with a significant difference

(-0.214). This is in line with current literature regarding the SWB decreasing-with-age tendency (see Bedin & Sarriera, 2014; Bradford et al., 2002; Casas et al., 2007; Casas et al., 2014; Chang et al., 2003; Cummins, 1998; Goldbeck et al., 2007; González-Carrasco et al., 2016; Goswami, 2013; Llosada-Gistau, Montserrat, & Casas, 2015; Park, 2005; Petito & Cummins, 2000; Tomy, Tyszkiewicz, & Cummins, 2011; Ullman & Tatar, 2001; Uusitalo-Malmivaara, 2014).

The single-item OLS was included in the structural equation model with the BMSLSS to test for convergent validity. In this instance, the OLS is used as the gold standard against which the convergent validity of the BMSLSS was tested. For the 8-year olds, the standardised regression weight was .55, and for the 10 and 12-year olds standardised regression weights were .62 and .61 respectively. This shows adequate loadings of the latent construct (BMSLSS) onto the OLS and confirms evidence of convergent validity.

11. Conclusion and Recommendations

There is a dearth of knowledge about children's SWB and empirical initiatives to address this gap is lacking in developing contexts. The current study aimed to contribute to the field by providing a structural validation of an internationally developed and standardised instrument (BMSLSS) for use among 8, 10, and 12-year olds in the Western Cape Province, South Africa. The study found the BMSLSS to be an appropriate measure for use in the South African context, specifically the Western Cape Province, across 8, 10, and 12-year old age groups. Considering that scalar invariance was found to be tenable, the 10 and 12-year old age groups are comparable across correlations, regressions, and mean scores. This indicates that meaningful comparisons can be made across the age groups and that children understand the items in a similar manner.

As data from the current study was only collected from one province in South Africa, the findings should not be generalised in relation to the rest of South Africa which is a particular limitation of the study. Moreover, South Africa is unique in that it has 11 official languages, and thus further validation studies of the BMSLSS are required across all language groups. It is also recommended that further translation and adaptation of other SWB measures be conducted with children from various social, cultural, and language groups in the South African context.

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Appendix A (Ethical clearance)

OFFICE OF THE DEAN DEPARTMENT OF RESEARCH DEVELOPMENT

07 May 2013

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape has approved the methodology and ethics of the following research project by: Dr S Savahl (Psychology)

Research Project: Children's Worlds: International Survey of Children's Well-Being.

Registration no: 13/4/26

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

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

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

A place of quality,
a place to grow, from hope
to action through knowledge