



UNIVERSITY *of the*  
WESTERN CAPE

**VALIDATION OF THE STUDENTS' LIFE SATISFACTION SCALE AMONG A  
SAMPLE OF CHILDREN IN SOUTH AFRICA: MULTI-GROUP  
ANALYSIS ACROSS THREE LANGUAGE GROUPS**

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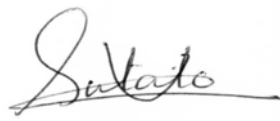
**Keywords:** Children's subjective well-being; adaptation; Students' Life Satisfaction Scale; goodness of fit; confirmatory factor analysis; measurement invariance

## ABSTRACT

While research into children's subjective well-being (SWB) has advanced over the past decade, there is a paucity of cross-cultural research, particularly in South Africa. Moreover, while the adaptation and validation of instruments in English and Afrikaans are evident, other language groups have not received much attention. This study aimed to provide structural validation of the Students' Life Satisfaction Scale across a sample of children in South Africa using multi-group analysis across three language groups (Setswana, Xitsonga, and Tshivenda). Within this process, the study aimed to use multi-group confirmatory factor analysis (MGCFA) to compare the structural validity and measurement invariance of the three language groups. Finally, the study aimed to determine the convergent validity of the three language groups of the SLSS by regressing them onto the single-item Overall Life Satisfaction Scale (OLS). The study uses data from Wave 3 of the South African Children's Worlds Study and included a sample of 625 children across the language groups (Setswana:  $n = 187$ ; Sesotho:  $n = 170$ ; and Tshivenda:  $n = 268$ ). For the overall pooled sample an excellent fit was obtained for a single-factor model, including one error-covariance. Standardised regression weights of the items ranged between .43 and .73. MGCFA revealed an acceptable fit for the configural model (unconstrained loadings); however, metric (constrained loadings) and scalar invariance (constrained loadings and intercepts) was not tenable. However, through the application of partial constraints metric invariance was tenable when Item 5 (I like my life) was freely estimated, while scalar invariance was tenable when Item 1 (I enjoy my life) and Item 5 (I like my life) were freely estimated. The results suggest that the Items: My life is going well; I have a good life; The things in my life are excellent; and I am happy with my life, are comparable by correlations, regression coefficients, and latent mean scores across the three language groups. Convergent validity using the OLS was obtained for the pooled sample and across the language groups. The key contribution of the study is establishing that the Setswana, Sesotho, and Tshivenda translated and adapted versions of the SLSS are valid for use within the South African context to measure children's SWB, and that they can be grouped together in an overall pooled sample.

## **DECLARATION**

I declare that the current study ‘Validation of the Students’ Life Satisfaction Scale among a sample of children in South Africa: Multi-group analysis across three language groups’, is my own work. It has not been submitted for any degree or examination in any university, and that all the sources I have used have been indicated and acknowledged as complete references.



**Mulalo Tshinakaho Mpilo**

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## **1. INTRODUCTION**

### **1.1. Background**

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 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.1255) which details children's basic human rights and advances the notion that "A child's best interest is 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 16 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 vulnerability and poverty (Savahl & Adams et al., 2019).

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 being elevated to the legal status of rights holders, and the government ultimately accountable as the principal duty bearer, children's well-being is ostensibly afforded the highest priority within the government. However, after 25 years of democracy,

and notwithstanding legislative advancements, the quality of life for South Africa's children remains compromised (Savahl et al., 2015; Savahl, Casas, & Adams, 2017).

Over the past two decades, the South African government has made significant progress in developing strategies to measure the state and well-being of children. These initiatives have foregrounded the development and collection of objective indicators. Objective indicators, also referred to as quality of life indicators and key national indicators, are observable measures that assess a range of pre-determined objective standards of living. Romaniuk (2015) argues for the inclusion of both objective and subjective indicators in measuring children's well-being. Within international discourse, researchers have raised concerns regarding the use of objective indicators as the exclusive measure of determining child well-being (Casas, Bello, González-Carrasco, & Aligué, 2013). This has initiated interest in children's subjective perceptions and evaluations of their life, encompassed in the construct of subjective well-being (SWB).

SWB is defined as an overarching concept that includes the cognitive and affective evaluations that individuals make about their lives, the circumstances influencing their lives, and the conditions in which they live (see Diener, 2006). The cognitive component refers to perceptions of global and domain-specific life satisfaction, while the affective component refers to the experience of positive and negative affect. Diener (2009) conceptualises these components as fitting on a hierarchical structure that is conceptually aligned, moderately correlated, and with each making a unique contribution towards SWB. In exploring children's SWB, we are essentially asking them to appraise the extent to which they are satisfied with their life in general, with various aspects of their life, and how they feel about their life (Savahl et al., 2015). Recently, some authors (Savahl, Casas, Adams, González-Carrasco, & Figuer, 2019) have revised Diener's model, instead proposing that the cognitive component,



presents with two separate components – conceptualised as domain-specific and context-free components. They put forward an overall Quadripartite Model of SWB, consisting of domain-specific and context-free cognitive components and positive and negative affect.

The measurement of SWB has emerged as an area of concern in the field (Casas et al., 2013), with the Cantril (1965) ladder single-item scale, still widely used to measure SWB in international databases. Recent literature points to multi-item measures of SWB as more stable and demonstrating reduced measurement error and increased reliability (Casas et al., 2013). Two approaches have been developed to measure an individual's SWB namely, context-free scales and domain-based scales. The Students' Life Satisfaction Scale (SLSS, context-free), and the Personal Well-being Index – School Children (PWI-SC, domain-based) are the most commonly used scales. These scales have been adapted and translated across various cultures and social contexts (Casas & Rees, 2015; Savahl et al., 2017; Tomy & Cummins, 2011). However, further translation and validation of these SWB measures are required to allow for cross-cultural comparisons. This contention is especially relevant in the South African context that encompasses diverse language and cultural groups (Savahl, September, Odendaal and Moos (2008). As Savahl and Adams et al. (2019) postulate:

“Adaptation of research instruments is needed at a different level especially since people who speak the same languages often have different cultural and life experiences that should be taken into account. The translation process itself is not a simple one since most languages have different dialects. Often the big differences, like a different language are taken into consideration in the adaptation process, but the subtleties are ignored. These include differences such as age, gender, educational background, SES and even just familiarity with response formats. If the concept engaged in the item is foreign to the new population, it is necessary to adapt the concept instead of just translating the words. Once a measure is

translated, the developers also have to consider cultural, idiomatic, linguistic and contextual aspects of the items (p. 413).”

Currently, in South Africa, the above-mentioned scales have been adapted to English (based on the South African context), Afrikaans, and isiXhosa, and have shown good structural validity and reliability (see Savahl et al., 2017). The current study hopes to contribute in this regard, with the overarching aim to test the structural validity of the SLSS across three official languages in the country, namely Setswana, Sesotho, and Tshivenda.

## **1.2. Equivalence and instrument adaptation in South Africa**

In cross-cultural research, equivalence is central and is used to ensure the comparability of constructs (Buil, de Chernatory, & Martínez, 2012). The primary aim of equivalence is to establish comparability of the items on measurement instruments. Failure to ensure equivalence may result in bias, thus leading to inaccurate, inconclusive, and meaningless results (Buil et al., 2012). Bias is closely related to the validity of an instrument and is evident when different psychological meanings are found across cultural groups. It is often as a result of administration issues and the characteristics of the instrument. In cross-cultural studies, a greater demand has emerged concerning the quality and suitability of adapted and validated instruments for use in diverse contexts (International Test Commission, ITC, 2010). Various types of validity exist and should be demonstrated by an instrument. Carlson and Herdman (2012) define convergent validity as the extent which a measure captures a construct and produces equivalent results across the different groups. To ensure equivalence, stringent methodological considerations should be upheld in the research process.

Two types of equivalence are important in this regard namely, structural and measurement equivalence. Structural equivalence ensures that the same construct is measured

in each cultural group, and stimuli associated with the construct is the same across the groups (Schaap & Vermeulen, 2008). Structural equivalence is used synonymously with ‘factor equivalence’ and ‘construct equivalence’ (van de Vijver & Leung, 1997; van de Vijver, 1998). Measurement equivalence also referred to as ‘measurement invariance’ or ‘comparability’, denotes whether an instrument measures the same concept/construct across various subgroups of respondents (Chen, 2008). The manner that the equivalence of an instrument is assessed, differs across and within disciplines (Morris, 2018). Measurement equivalence is a ‘basic requirement’ in cross-cultural comparative research and is essential for the standardisation of a measurement instrument. Configural and scalar equivalence are core properties of measurement equivalence (Kim & Eves, 2016). Configural equivalence assesses whether the observed instrument has the same properties as the construct measured across the cultural groups (Kim & Eves, 2016). It is noteworthy that metric equivalence is comprised of two aspects, scalar equivalence and the ‘equivalence of the scale’. Scalar equivalence assesses the comparability of the scale across cultures (van de Vijver, 1998; Kim & Eves, 2016). In essence, scalar equivalence ascertains the extent to which the response options and scores obtained in one context has the same meaning and interpretations in another (Buil et al., 2012); while the ‘equivalence of the scale’ ensures the same scoring procedures are followed across the different groups.

### **1.3. Instrument adaptation**

The adaptation and translation of measurement scales are relevant in the South African context given the diversity of cultural and language groups. The objective of instrument adaptation is to ensure linguistic, conceptual, and structural equivalence. Maintaining the similarity between the translated and original language versions ensures comparability across the languages (van Widenfelt, Treffers, de Beurs, Siebelink, & Koudijs, 2005). Constructs should be assessed by the same instrument across diverse cultures for meaningful results. Sue

and Chang (2003) indicate that the adaptation process should focus on: the quality of the translation; linguistic and psychometric equivalence; length of the items; item wording and content; cultural relevance; and the cross-cultural validity of the adapted instruments.

Within the South African context, a consideration pertinent in the test adaptation process is multiculturalism and the translation process involved. The ITC (2010) note that the translation of an instrument to another language should follow a rigorous procedure. Three main phases of instrument translation have been outlined (van Widenfelt et al., 2005; Steele & Edwards, 2008). The first phase, forward translation, encompasses the translation of the original instrument to a new language by a language expert familiar with the subject matter of the test. It is recommended that the language expert is bilingual, as they will be engaged in the translation process and ensure the accuracy of the translation. The second phase, back-translation, is usually conducted by a panel of experts with the goal of confirming linguistic and conceptual similarity to the original questionnaire (van Widenfelt et al., 2005). Discrepancies between the back-translated and original version are used to identify problems and inaccuracies with the first translation (Steele & Edwards, 2008). Thereafter, any concerns with the translated version are discussed, and revisions proposed by the panel (van Widenfelt et al., 2005). In this phase, conceptual equivalence takes precedence over literal equivalence.

The third phase, cognitive interviewing, concerns the administration of the instrument to a sample of participants who have similar characteristics to the intended target population. The key aim of the cognitive interviews is to ensure that the wording of the instrument items is accurately translated, with the focus on maintaining the meaning of the items across the language versions. Therefore, to effectively measure children's SWB, scales should be adapted across diverse cultures, and the construct defined in a manner common to all groups

to prevent systematic bias (ITC, 2010). The current study will validate the Setswana, Sesotho, and Tshivenda language versions of the Students' Life Satisfaction Scale (SLSS).

#### **1.4. Aims and objectives**

The overarching aim of the study is to provide structural validation of the Setswana, Sesotho, and Tshivenda language versions of the SLSS. Within this process, the study aims to use multi-group confirmatory factor analysis (MGCFA) with metric and scalar invariance to compare the structural validity of the three language versions with the validated English version. Finally, the study aims to determine the convergent validity of the three language versions (Setswana, Sesotho and Tshivenda) of the scale by regressing it onto the single-item Overall Life Satisfaction Scale (OLS). The following objectives have been designed to facilitate the study:

- i. To test the structural validity of the Students' Life Satisfaction Scale
- ii. To test the metric, configural, and scalar invariance of the Students' Life Satisfaction Scale across the three language groups (Setswana, Sesotho, and Tshivenda)
- iii. To test the convergent validity of the translated versions of the Students' Life Satisfaction Scale

## **2. LITERATURE REVIEW**

### **2.1. Measures of children's SWB**

Measures of SWB provide key information about people's subjective quality of life. These measures are typically structured to incorporate three essential components: life satisfaction; positive affect; and negative affect. Life satisfaction measures are divided into two conceptual models namely: unidimensional and multidimensional (Huebner, 2004 cited in Proctor, Linley, & Maltby, 2009). The key difference between these models is that the unidimensional model provides a single total life satisfaction score, whereas the

multidimensional model focuses on adapting the scale across multiple life domains (Proctor et al., 2009). Furthermore, Proctor et al. (2009) identified nine scales that assess children's life satisfaction, categorised as multidimensional or unidimensional models. Multidimensional scales include the Multidimensional Student's Life Satisfaction Scale (MSLSS), the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS), the Extended Satisfaction with Life Scale (ESWLS), the Multidimensional Students' Life Satisfaction Scale-Adolescent (MSLSS-A), and the Comprehensive Quality of Life Scale (ComQoL) (Proctor et al., 2009). Unidimensional scales include the Students' Life Satisfaction Scale (SLSS), the Satisfaction With Life Scale (SWLS), the Perceived Life Satisfaction Scale (PLSS), and the OLS.

## **2.2. Multidimensional scales**

Multidimensional scales compute life satisfaction scores for each item within a specific domain (Huebner, 2004; Proctor et al., 2009). The ESWLS for example measures life satisfaction across nine domains using 50 items, with a seven-point Likert scale (Proctor et al., 2009). The initial development of the EWLS scale included a sample of students from two universities in the United States of America (USA) (Alfonoso et al., 1996), and was developed for use with adults. The psychometric properties of the scale have been demonstrated in empirical studies. However, there is a dearth of literature to affirm the validity and reliability of the instrument among children.

The MSLSS was adapted from the SLSS to assess positive indicators of psychological well-being across five life domains. The instrument includes 40 items using a Likert scale and was developed for use with children between grades six to 12. The MSLSS presents with good reliability and validity estimates (see Proctor et al., 2009). The MSLSS-A was adapted specifically for adolescents in grades nine to 12, with 53 items adapted for school children, with an extra domain included on heterosexual relationships. The preliminary results suggest

that the MSLSS-A has acceptable reliability (see Gilligan & Huebner, 2007; Proctor et al., 2009). The BMSLSS is a five-item life satisfaction instrument developed for use children between the ages of 8 – 18 years. The instrument uses a seven-point Likert scale that assesses different life domains, such as family, friends, school, self, and living. The instrument was developed to address the increasing interest in children’s perceptions and evaluations of their life (see Diener & Seligman, 2004; and Proctor et al., 2009). The instrument presents with acceptable internal consistency and validity and is applicable across various contexts (González-Carrasco, Casas, Ben-Arieh, Savahl, & Tiliouine, 2019).

Lastly, the ComQoL scale measures quality of life across two dimensions and seven domains (Proctor et al., 2009) using a 35-item measure. The measure assesses objective and subjective domains using either a five or seven-point Likert scale. The scale was originally developed for adults and has been adapted for use with children aged 11–18 years.

### **2.3. Unidimensional scales**

The SWLS is a scale, comprising of five items on a seven-point Likert scale, and has demonstrated high internal reliability and moderate temporal stability (Diener, Emmons, Larsen, & Griffin, 1985). Similarly, the PLSS is a 19-item global self-report life satisfaction scale developed to measure the life satisfaction of youth across five domains. The instrument uses a six-point Likert scale, whereby the ratings are converted into three indices of dissatisfaction. However, the measure does not have a defined age group nor a normative age group for administration. A preliminary analysis among 7 – 19-year olds has displayed acceptable internal consistency and test-retest reliability, thus providing evidence for the use of the instrument with children and adolescents (Proctor et al., 2009).

The Personal Well-being Index (PWI) was developed by the International Well-being Group (IWbG) (Cummins et al., 2003) as part of the Australian Unity Well-being Index.

Cummins and Lau (2005) note that the PWI originates from the ComQoL. Moreover, the PWI-SC was developed by Cummins and Lau (2005) specifically to assess children's SWB based on a seven-item, domain-specific scale evaluating various life satisfaction domains.

The OLS is a single-item scale assessing general life satisfaction (Cummins & Lau, 2005) on an end-labelled scale of 0-10. The scale item asks respondents: "How satisfied are you with your life as a whole?" Campbell et al. (1976) identified the importance of using a single-item scale that measures life satisfaction on an abstract level. The OLS is widely used to test the convergent validity of other SWB measures (Casas & Rees, 2015).

The SLSS is a unidimensional scale developed to assess the global, context-free, life satisfaction of children (8 – 18 years) using a self-report seven-item measure (Huebner, 1991; Huebner & Hills, 2013). The original version of the SLSS consisted of 10 items; subsequently, the measure was revised to seven items based on item analysis and reliability estimates, with an alpha value of (.89) (see Huebner, 1991; Marques, Pais-Ribeiro, & Lopez, 2007; Huebner & Hills, 2013). The scale has demonstrated good cross-cultural reliability and validity (Proctor et al., 2009), and has been applied in a variety of contexts. While the original scale used a four-point response format ranging from 1 = Never, 2 = Sometimes, 3 = Often, to 4 = Almost always (Huebner, 1991), other studies have used a six-point format (1 = Strongly disagree, 2 = Moderately disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Moderately agree, to 6 = Strongly agree (Weber, Ruch, & Huebner, 2013; Marques et al., 2007). For South African child populations normative scores have not yet been established, with no empirical guidelines for 'cut-points' that might classify children into optimal, adequate or low levels of life satisfaction. To assist with the comparison between scales, the SLSS is often transformed to a 100-point scale.



Considering that some items on the SLSS are negatively phrased, results from the Children's Worlds multinational study demonstrated that Item 3 (I would like to change things in my life) and Item 4 (I wish I had a different kind of life) loaded lower when the instrument was adapted for cross-cultural comparison (Rees & Main, 2015). Consequently, the instrument was modified to a five-item scale for cross-cultural suitability, and to ensure the validity of the scale (see Rees, Goswami, & Bradshaw, 2010; Rees et al., 2013; Casas et al., 2013, Gross-Manos, Shimoni, & Ben-Arieh, 2015; Casas, 2016). Research evidence demonstrates the validity of both the SLSS-7 and the SLSS-5. However, the reverse-worded items in the SLSS-7 (Items 3 and 4), has been found to compromise the validity of the scale (Jiang & Huebner, 2017). It has thus been recommended that the SLSS-5 is a stronger scale.

#### **2.4. Cross-national comparative research**

It is noteworthy that while cross-cultural comparisons have been explored in developing and developed contexts, there are few international comparative studies exploring the comparability and validity of SWB scales among children. Using data from the Children's Worlds Study, the work of Casas and Rees, (2015) have contributed substantially to international comparative research on children's SWB.

Casas and Rees (2015) reported on a cross-national study with 16704 children across 11 countries aged 12-years old. The study measured the extent to which the SLSS, BMSLSS, PWI-SC5 and PWI-SC are suitable for international comparison. The results indicate that all of the SWB measures demonstrated acceptable fit for use within-country across all countries. However, for the SLSS, three items were problematic: the two negatively phrased items (I would like to change things in my life, and I wish I had a different kind of life), and the item asking children to compare themselves to others (My life is better than most kids). Notably, when these problematic items were removed, the model demonstrated a good fit using CFA,

and an acceptable reliability coefficient ( $\alpha = .82$ ) (Casas & Rees, 2015). The authors caution against the use of means for cross-country comparisons (Casas & Rees, 2015).

The study by Casas (2016) used data from Wave 2 of the Children's Worlds Study to assess the comparability of three multi-item scales (SLSS, the BMSLSS and the PWI-SC) to measure children's SWB across nations, cultures, and language groups. The sample included 34,000 children from 15 countries aged 10 and 12-years old. The results indicate that both the PWI-SC and the SLSS are comparable across the different countries. Furthermore, the SLSS was the only scale that was comparable by correlations, regressions, and means across the 15 countries (Casas, 2016).

A study by Kaye-Tzadok, Kim, and Main (2017) examined life satisfaction across gender, peers, family, and school using the five-item SLSS. The study used data from the Children's Worlds Study with a representative sample of children aged 12-years old across 16 countries. The findings reveal that the structure of SWB is comparable across gender, with the SWB of girls found to be lower than boys. It was also found that the different domains of SWB vary in importance for boys and girls (Kaye-Tzadok et al., 2017). However, Marques et al. (2007) found that the association between the SLSS and demographic variables (age and gender) were not significant (see Marques et al., 2007; Casas et al., 2013; Migliorini, Tassara, & Rania, 2019).

Similarly, Savahl et al. (2017) reported on a comparative study across three African countries (Algeria, Ethiopia and South Africa) to measure children's SWB. The study used data from Wave 1 of the Children's Worlds Study, with a random sample of  $N = 3394$  children between the ages of 11-12-years old from the three countries. The objectives of the study were threefold: to examine the structural validity of the SLSS and PWI-SC; to determine the overall level of SWB across the three African countries, and to assess the

measurement invariance of the instruments across the three groups. The results indicate that the structural validity and reliability coefficients (SLSS,  $\alpha = .872$ ; PWI-SC,  $\alpha = .672$ ) of both scales were acceptable. It was found that the measures are valid for use across the three African countries. Further, it was found that meaningful comparisons can be made across the countries, with Algeria scoring significantly higher than Ethiopia and South Africa on the SWB measures (Savahl et al., 2017).

Jiang, Fang, Stith, and Huebner (2019) reported on a cross-cultural evaluation of the SLSS among a sample of children in the USA and China. The study tested the measurement invariance of the SLSS across the two groups. The study comprised children and adolescents between the ages of 11 and 16. The Chinese sample consisted of  $n = 963$  participants and the USA sample included  $n = 921$  participants. Overall, Jiang et al. (2019) found that configural, full metric, and partial scalar invariance was tenable across the two groups using MGCFAs. An excellent fit was observed for the configural and metric invariance, one error covariance was added between Item 1 (My life is going right) and Item 2 (My life is just right), suggesting an overlap in the understanding of the items across the groups. The scalar invariance model presented with a poor fit. Measurement invariance was thus examined, with larger values found on Item 1 on both cultural groups. When the constraint was removed the model improved, and an association was found between Item 3 (I have a good life) and Item 5 (My life is better than most kids) and resulted in a good fit with partial scalar invariance (Jiang et al., 2019). Although measurement invariance was tenable, Item 4 (I have what I want in life) and Item 5 (My life is better than most kids) were understood differently across the two cultures (Jiang et al., 2019).

The cross-national studies using the SLSS indicate that the instrument presents with excellent psychometric properties when adapted across languages, cultures, and countries. It is evident that the instrument is comparable by means, correlations, and regressions across

and within various countries, and is comparable with other measures of SWB. Notably, certain items on the SLSS were closely related while others were understood differently within various studies. This could be a result of children from individualistic and collectivist countries having different understandings of the items. Importantly, construct and other types of validity were demonstrated in empirical studies using the SLSS. Across different countries, while metric invariance was often tenable, scalar invariance was not always tenable. A key consideration when validating instruments within and across countries is that it should not be assumed that children are a homogenous group.

### **2.5. SLSS validation studies: Developed contexts**

The importance of cross-cultural comparisons between developed and developing contexts has been advanced in contemporary literature. Proctor et al. (2009) indicate that prior to the 1990s, there was a lack of psychometric instruments to measure children's SWB. A preponderance of research has been conducted, particularly in developed countries. Further research is thus required to translate, adapt and validate the scales into languages that have not received much focus in research.

Marques et al. (2007) examined the psychometric properties of the Portuguese version of the seven-item SLSS scale using a 6-point Likert scale. A total sample of 367 children aged 10 – 15 years old participated in the study, selected from seven schools in north Portugal. The scale was adapted following the guidelines of the American Psychological Association (1993), and the translation process involved a two-person English-Portuguese translation team. Discrepancies were discussed to achieve consensus for lexical and cultural equivalence. The results of the study suggest that the scale is a reliable measure, with a Cronbach alpha of  $\alpha = .89$ , affirming internal consistency (Marques et al., 2007). The study contributed to addressing the lack of validation of the SLSS in Portugal. There is thus a need to further assess the psychometric properties of other versions of the scale.

Galindez and Casas (2010) adapted and validated the Spanish version of the SLSS using a sample of 339 secondary school students from the Alto Deba region (Gipuzkoa). The results demonstrate the instrument's reliability, and its construct, convergent, and concurrent validity. These findings substantiate the use of the 7-point scale to assess adolescents' overall life satisfaction. Further, Casas, et al. (2013) examined the translated versions of the OLS, SLSS-5, and PWI -SC in four different languages of the Catalonian region in Spain namely: Castilian Spanish, Catalan, Basque, and Galician. The study included a sample of 5934 children between the ages of 11 and 14-years old. The findings indicate that the PWI-SC, OLS, and SLSS work well with adolescents in this region.

In Germany, Weber, Ruch, and Huebner (2013) conducted a two-fold study where the SLSS-7 was adapted and validated in heterogeneous samples. Study 1 adapted and validated the measure among a sample of 286 German-speaking adolescents aged 12-17-years old. The results show that the adapted German version of the SLSS is multidimensional, valid and reliable. It was also found that Item 7 (My life is better than most of my age) had a low factor loading. In addition, it was found that the instrument was slightly uncorrelated with both age and gender. Study 2 comprised an online survey with a sample of 3407 German-speaking children ranging from 10 – 17-years old. The results further support the factor structure and reliability of the SLSS and demonstrated acceptable convergent validity (Weber et al., 2013).

Gross-Manos et al. (2015) explored a variety of SWB measures among children in less Western and non-Christian contexts (Jewish and Arab children) as well as in different languages (Hebrew and Arabic) in Israel. The study included a sample of 1004 children aged 12-years old from Wave 1 of the Children's Worlds survey. The study examined the OLS, happiness in the last two weeks (HLTW), PWI-SC, BMSLSS, and SLSS-5. The study also examined the effects of demographic variables amongst children. With the exclusion of Item

2 (I have a good life) the SLSS-5 obtained an acceptable Cronbach's alpha ( $\alpha = .71$ ). The measure significantly predicted the contribution of the OLS explaining 34.4% of the variance in SWB, while HLTW accounted for 44.3% of the variance. It was also found that children living in urban areas reported higher SWB on the SLSS measure (Gross-Manos, et al., 2015).

Migliorini et al. (2019) investigated the adapted and translated the Italian version of the SLSS. The study included a sample of  $n = 1145$  children aged 8-years-old and formed part of the Children's Worlds Study. The study measured children's SWB in relation to their nationality of birth, area of living, school type, and gender. It was found that children born abroad showed the lowest level of SWB on the SLSS-5, while children attending rural schools had a significantly higher SWB than those in urban schools.

Leto, Petrenko, and Slobodskaya (2018) investigated children's life satisfaction and the influence on family environment and children's personality in Russia. The SLSS-7, LifeStyle Questionnaire, and the Inventory of Child Individual Differences-Short were used. A total of  $n = 705$  children aged 7 to 10-years old participated in the study. The findings illustrate that the measure is valid and reliable with Cronbach's alpha of  $\alpha = .74$  (Leto et al., 2018).

## **2.6. SLSS validation studies: Developing contexts**

In a local study, Savahl et al. (2017) ascertained children's SWB in the Western Cape region of South Africa among a sample of 1004 12-year-old children using the SLSS. The study further aimed to ascertain whether the measures could be used across low and middle socio-economic status (SES) groups. The findings demonstrate that the composite scores for the three scales (SLSS, PWI-SC and OLS) show a general trend of high levels of SWB (Savahl et al., 2017). Secondly, the overall model was found to be valid, with tenable scalar factor invariance and good fit structure. However, Item 3 (I would like to change many things

in my life) and Item 4 (I wish I had a different life) had the lowest factor loadings. These discrepancies are similar to findings by Casas and Rees (2015). Finally, a significant difference in mean scores was found between children in low and middle SES communities (Savahl et al., 2017).

Alfaro et al. (2016) analysed the psychometric properties of the SLSS in a sample of 1096 Chilean children between the ages of 10 – 12 years old. The sample comprised children from public, semi-private, and private schools across Santiago, Valparaíso, and the Concepción area of Chile. A reliability analysis, for internal consistency, and exploratory factor analysis were employed in the study. The results demonstrated an acceptable Cronbach's alpha ( $\alpha=.86$ ), and the factor analysis indicates a one-factor structure for SWB (Alfaro et al., 2016).

Recently Jiang and Huebner (2017) tested the one-factor measurement model of the SLSS-English version in a south-eastern city in the USA with 921 children aged 11 to 15-years across gender and ethnic groups. The study also aimed to examine measurement invariance of the one-factor model across gender groups. The results illustrate that the one-factor model can be meaningfully compared by means, correlations and regressions across gender. The findings further demonstrated full scalar invariance across gender (Jiang & Huebner, 2017). The authors assert that the average score for the overall scale can be used to represent overall SWB.

In another study, Jiang, Fang, Stith, Liu, and Huebner (2018) aimed to systemically examine the psychometric properties of the SLSS-7 in China. The study further examined the cross-cultural validity of the scale among students from Eastern cultures. The analysis included two stages: in the first, the validity of the SLSS-7 was examined, and in the second the SLSS-5 was tested by excluding the two negatively phrased items. Stage 1 of the study

included participants between the ages of 11 to 15-years old, while stage 2 included children aged 11 to 16-years old. While evidence supported the validity of both scales, the five-item scale demonstrated a stronger correlation with other SWB measures. It was found that the two negatively phrased items affected the scale's internal consistency, dimensionality, and validity. The five-item scale demonstrated good psychometric properties and was found to have a better fit compared to the seven-item SLSS (Jiang et al., 2018).

In a recent study, Tiliouine, Rees, and Mokaddem (2018) investigated the overall well-being of children in a two-year longitudinal study with 443 children from Algeria aged 12 to 14-years old. The study further explored the stability of children's subjective evaluations of their well-being over time and across gender. A significant decrease in children's overall well-being was found over time, with a mean score decrease from 90.2 to 82.4. There was no evidence of significant gender and age differences at either time point (time 1 or 2) for girls or boys (Tiliouine et al., 2018).

In summary, the issue of instrument adaptation is critical in cross-cultural research. The findings from the literature above highlight the need to adapt and contextualise an instrument for use in a particular research context. Based on the findings from various cross-national comparative studies (see Casas & Rees 2015; Savahl et al., 2017), validation studies in developed (see Marques et al., 2007; Galindez & Casas, 2010) and developing contexts (see Savahl et al., 2017), it is evident that the negatively phrased items from the original version of the SLSS are problematic. For this reason, researchers propose the use of the revised five-item version of the SLSS. Overall the SLSS has been found to demonstrate excellent psychometric properties across a diverse range of contexts globally. In terms of gender and age, no significant differences were observed in most studies, however, children in



urban areas were found to report higher levels of SWB than in some rural areas (dependent on the context).

## **2.7. 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 of SWB instruments in South Africa (see Savahl, Casas, & Adams, 2016; Savahl et al., 2017).

The Theory of Model Fit is aligned with the analysis techniques of Structural Equation Modelling (SEM) and Confirmatory Factor Analysis (CFA). SEM is a general data modelling technique that can be understood as a combination of factor, path, and regression analysis (Hox & Bechger, 1999). It represents a series of appropriate hypotheses about how the observed and latent factors are related (Hu & Bentler, 1998). The focus of SEM is the designation of specified models that is based on theoretical relationships between observed and unobserved variables. The interest is thus in ascertaining the extent to which the theoretically hypothesised models fit the observed data (Savahl et al., 2016). Therefore, SEM 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; while the structural model assesses the interrelationships between two or more latent factors. CFA is regarded as the analytic method of choice for developing and refining measurement instruments and scales, assessing construct validity, and determining measurement invariance across groups. In the current study, CFA is used to determine the structural validity of the SLSS. The 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, 2011). Goodness of Fit statistics, of which the chi-square goodness-of-fit statistic is the most popular, determine the degree to which the model covariance matrix significantly differs from the observed covariance matrix. Lower chi-square values and corresponding non-significant differences indicate a higher degree of correspondence between the specified models and the data (Kline, 2011), and represents 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 are applied. Within contemporary research, the two most widely used fit indexes are absolute and incremental fit indexes. Absolute fit indexes assess indicate how well a hypothesised model fits the sample data without relying on comparison to a baseline model, while incremental fit indexes attempt to fit a hypothesised model to a baseline model based on a null hypothesis that the variables in the model are uncorrelated (Savahl et al., 2016). It is widely recommended that more than one fit index is 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 (2011), the absolute fit index of comparative fit index (CFI) and incremental fit indexes of Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Square Residual (SRMR), were used to determine model fit of the SLSS in the current study. These

recommendations have been used in a range of validation studies on child SWB instruments (see Casas et al., 2013; Savahl et al., 2015; Savahl et al., 2016; Casas, 2016; Savahl et al., 2017) using cut-scores of  $>.950$  accepted for CFI and scores  $<.05$  regarded as a good fit for RMSEA and SRMR. These cut scores will be applied in the current study.

### **3. METHOD**

The current study used data from and forms part of the Children's Worlds: International Survey of Children's Well-Being and follows a cross-sectional survey design. Although the international project includes children between the ages of 8, 10, and 12-years, the South African study only focuses on children between the ages of 10 to 12-years old.

#### **3.1. History of the Children's Worlds Study**

The Children's Worlds Study emerged from a consensus amongst researchers in the field of children's SWB at a meeting hosted by the United Nations Children's Fund (UNICEF) in Geneva in 2009 regarding the need for a multinational study focusing on this niche area. Given the lack of data on children's subjective perceptions of their lives in general, and their well-being in particular, an initial instrument was constructed and piloted in several countries in 2010. A second version of the questionnaire was piloted in 2011. Each in-country study was conceptualised as independent studies that would contribute to the international database for the cross-country comparative study. Based on feedback from the participating countries concerning the second version of the questionnaire, it was decided to develop distinct questionnaires for 8, 10, and 12-year olds. The first round of data collection (Wave 1: Deep Pilot) was conducted in 2013 wherein 15 countries collected data with children ( $N > 30\ 000$ ). The aim of this wave was 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 ( $N > 56\ 000$ ). The Children's Worlds project is currently in its third wave.

### **3.2. The Children's Worlds Study in South Africa**

Noting the overall aim of the Children's Worlds Study, as well as the history of the project, it is significant to highlight the contributions from South Africa. Wave 1 and 2 were conducted in South Africa in 2013 and 2014 respectively. These waves of data collection were conducted by a multidisciplinary team of researchers based at the Department of Psychology (UWC) (Project Registration Number: 13/4/26). Wave 1 (2011 – 2013) of the Children's Worlds Study in South Africa encompassed a deep pilot with children aged 12-years old. The data for the study were collected in 2012-2013 and included a random sample of 1004 participants (girls,  $n = 541$ ; boys,  $n = 463$ ) selected from 15 schools in the Cape Town Metropole. For Wave 2 (2014) 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 ( $N = 3284$ ) selected from 29 schools across the Western Cape Province (urban and rural areas) (see Savahl et al., 2015). In Wave 3, the study collected data on children's SWB using a nationally representative proportionate sample of children in two age groups (10 and 12-years). The South African data feeds into the international project comprising a total of 41 countries. The current study used secondary data from Wave 3 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 structural validation of the SLSS (across three language groups) used in the larger study.

### **3.3. Research context**

South Africa's population is estimated at 57.7 million people (Statistics South Africa, 2018). In mid-2017, South Africa comprised approximately 19.6 million children under 18-years old, representing over 35% of the total population (Statistics South Africa, 2017). Of the 19.6 million children, 11.11 million live in urban areas and 8.46 million live in rural areas (Statistics South Africa, 2017). South Africa has 11 official languages with its inhabitants distributed across nine provinces. The country is recognised as the most unequal country in the world, characterised by highly polarised income rates and a Gini coefficient of 0.63 (World Bank, 2018). Twenty-five years post-apartheid, the lingering effects of inequality and disenfranchisement are still evident (Savahl & Adams et al., 2019).

The current study uses secondary data from three of the nine provinces in South Africa, namely: North West; Free State; and Limpopo. For the larger study, the questionnaire was adapted and translated into eight of the most widely spoken languages across the provinces, including English. The three language groups tested in the current study are: Setswana (North West), Sesotho (Free State), and Tshivenda (Limpopo). These three provinces are discussed in detail below.

The North West is on the gateway to Botswana, Limpopo, Gauteng, and Free-state provinces and has the Northern Cape as the neighbouring province. The province has an estimated population of 3.9 million people (Statistics South Africa, 2018) with Setswana, English, and Afrikaans as the most commonly spoken languages. The urban-rural divide among children indicates that 47% of children live in urban areas and 52% live in rural areas (Statistics South Africa, 2017). The province comprises individuals from a diversity of cultures. The mainstay of the economy is agriculture and mining, that generates more than half of the province's gross domestic product and provides jobs for a quarter of its workforce.

Although the province contributes approximately 6.1% towards South Africa's economy, it is poverty-stricken with a low economic base, and very high levels of unemployment (27.4%) (National Development Program, 2014).

The Free State is a landlocked province situated between the Vaal River in the north and the Orange River in the south. It is the third biggest province in terms of size and includes a population of 2.9 million people (Statistics South Africa, 2018), with Sesotho and Afrikaans as the main languages spoken. The urban-rural divide among children is exceptionally high, with 84% of children living in urban areas and 16% living in rural areas (Statistics South Africa, 2017).

The Limpopo province is in the northernmost area of the country, bordering Mozambique, Zimbabwe, and Botswana. According to the mid-year population estimates, the province has 5.7 million people (Statistics South Africa, 2017), with Sepedi, Xitsonga, and Tshivenda as the predominant languages. The province has the highest proportion of children living in rural areas in the country (83.9%) and only 15.1% of children living in urban areas (Statistics South Africa, 2017). The province is rich in wildlife, with mining and agriculture as the main source of subsistence for the majority of the population.

### **3.4. The dataset: Sampling and participants**

The sampling frame for the larger study was school-based and included children registered in primary schools across the nine provinces within two age groups, namely 10 and 12-years old. In South Africa, children in these age groups are generally in grades 4 and 6. The target population included 3, 016010 children registered in primary schools in South Africa aged 10 and 12-years. The total number of registered learners per grade are: 1, 043124 (grade 4) and 863 686 (grade 6) (Statistics South Africa, 2013). The final sample was selected using stratified random sampling (proportional allocation), with schools randomly selected

proportionate to the number of learners per province for each age group and stratified further in terms of urban and rural geographical locations. The stratification was therefore at the levels of the provincial region and geographical location (urban/rural). Wave 3 of the South African Children’s Worlds Study commenced in March 2017 and concluded in June 2018. The final sample comprised 7428 children between the ages of 10 to 12-years old. For the current study, the data from the Setswana, Sesotho, and Tshivenda language groups were used. The final sample included 625 participants, presented in Table 1.

Table 1

*Sample size*

	<b>Questionnaire Language</b>			<b>Total</b>
	<b>Setswana</b>	<b>Sesotho</b>	<b>Tshivenda</b>	
North West	187	-	-	187
Free State	-	170	-	170
Limpopo	-	-	268	268
Total	187	170	268	625

The depuration of the final dataset was conducted by the South African Children’s Worlds Study principal investigators and research team and verified by the Children’s Worlds international core group committee and statistician. This process included the identification and exclusion of cases with a high proportion of missing data and the exclusion of cases with systematic response patterns. Casas and Rees (2015) have highlighted the importance of a central committee in international comparative studies in ensuring the overall quality and integrity of the data. For the current study, a missing data analysis was conducted, and missing data substituted by regression imputation, as per the recommendation of Casas (2016).

### **3.5. Instrumentation**

In the South African Children's Worlds Study, the questionnaire was previously translated into Afrikaans and isiXhosa in Wave 2. In Wave 3, the questionnaire was translated into seven of the most commonly spoken languages across the provinces. The current study makes use of secondary data from the translated Setswana, Sesotho, and Tshivenda language versions. For the adaptation process backward-translation of the questionnaire, cognitive testing, and piloting were conducted for each of the languages.

The instruments were translated using the backward-translation method by the researcher and another Setswana, Sesotho, and Tshivenda first-language speaker. Within this process, inconsistencies were identified, discussed, and resolved between the two translators. Thereafter, a third first-language speaker validated the translation against the original English version for accuracy, and to ensure that the meaning of each item was retained. Once this was completed, the cognitive testing of the translated versions of the questionnaire was undertaken by conducting focus group discussions with 10 and 12-year-old children to evaluate their understanding of the questionnaire. Children's input from the focus group discussions assisted in the refining of items in terms of phrasing and modifying the measure for contextual appropriateness. The process of cognitive testing ensured the validity of the instruments through the conceptual review of each item of the questionnaire in terms of construct appropriateness, scale format, and wording of the items. The questionnaire consists of a number of standardised and validated scales, including the SLSS (Huebner, 1991) and the OLS.

### **3.6. Students' Life Satisfaction Scale**

The SLSS is a self-report seven-item measure developed by Huebner (1991) to assess the global life satisfaction of children between the ages of 8 and 18-years old (Huebner &



Hills, 2013). The original version of the SLSS consisted of 10 items and was reduced to seven items based on internal consistency analysis (Huebner, 1991; Huebner & Hills, 2013). The scale is context-free with a coefficient alpha ranging from .70 – .80 (Huebner & Hills, 2013). Moreover, the level of convergent, criterion, discriminant, and predictive validity are acceptable. The findings from Wave 1 (Casas & Rees, 2015; Savahl et al., 2017) and Wave 2 (Casas, 2016) suggest that the two negatively phrased items are removed from the scale as it demonstrated low standardised regression weights towards the overall latent construct of SWB. The current study, therefore, used an adapted five-point response option scale of the SLSS. Normative scores for the South African populations have not yet been established (Savahl et al., 2015). The SLSS has been transformed into a 100-point scale to assist with comparisons between other scales and across groups.

### **3.7. Overall Life Satisfaction Scale**

The single-item scale measuring OLS (Cummins & Lau, 2005) was employed in the current study. Participants were asked to respond to the question: “How satisfied are you with your life as a whole?” on a 0-10 end-labelled scale. The importance of including a single item on life satisfaction was identified by Campbell et al. (1976) and further corroborated (see Cummins & Lau, 2005; Casas et al., 2013; Casas & Rees, 2015) as means to ascertain convergent validity of SWB scales. For this reason, the OLS was used to determine convergent validity with the SLSS.

### **3.8. Data analysis**

Data were analysed using the Statistical Package for the Social Sciences (version 25) software to generate descriptive statistics. The structural validity of the two measures (SLSS and the OLS) was tested using CFA in Analysis of Moment Structures (AMOS) (version 25); while MGCFA was used to test the validity of the measures across the three language groups.

Maximum likelihood estimation was used, with kurtosis and departures from normality attended to using the bootstrap method (500 samples). As previously stated, given recommendations by Jackson et al. (2009) and Kline (2011), the CFI, RMSEA, and SRMR were used as fit indexes in the current study. Results higher than .950 were accepted for the CFI and results below .05 were regarded as a good fit for RMSEA and SRMR. The improvement of model fit was achieved through the consideration of items with excessively low factor loadings ( $< .2$ ) (Kline, 2011), the consideration of modification indices (error covariance constraints), the expected parameter change (Whittaker, 2012), standardized residual covariances (Maydeu-Olivares & Shi, 2017), and the application of partial measurement constraints (see Savahl et al., 2017).

To compare the results between the three language groups, measurement invariance, which refers to the extent to which items in the scale have the same meaning between groups, was applied (Meredith, 1993). If measurement invariance is not met, then group comparisons on the measured variables would have ambiguous and unreliable interpretations (Millsap & Olivera-Aguilar, 2012). 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 .010 on the CFI (Cheung & Rensvold, 2002) and by .015 on the RMSEA, and SRMR (Chen, 2007). Following these recommendations, the current study tested the measurement invariance of the multi-group models (languages) in three steps. In the first step, configural invariance, which assesses an unconstrained multi-group model wherein the parameters are freely estimated, was tested. Thereafter, metric invariance, which is a requisite for comparing covariance, correlations or regression coefficients, was tested by constraining the factor loadings of the configural model. Finally, scalar invariance, which is a requisite for comparing means between groups, was tested by constraining the factor loadings

and intercepts. To test convergent validity, a SEM was tested by including the OLS in the overall model.

### **3.9. Procedure and ethics**

The larger project received ethics clearance from the Humanities and Social Sciences Research Ethics Committee (HS17/2/1) (Appendix 1) at the University of the Western Cape, and provincial education departments. Permission to use the data for secondary research was provided by the Principal Investigator of the Children's Worlds Study South Africa, Professor Shazly Savahl. For the larger study, schools were contacted telephonically, and meetings were arranged between the research team and the school principal to discuss the details of the study. Once consent was obtained from the school principal to participate in the study, an information session was arranged with the 10 and 12-year old participants at the school upon receiving their signed consent form. During the information session, the purpose of the study, the nature of their involvement, and ethics of the study were discussed. The ethics principles of informed consent, confidentiality, and the right to withdraw were explained to the participants. Furthermore, the participants who agreed to participate in the study were required to provide signed consent and obtain signed consent from their parents. Only the participants who returned the consent forms participated in the study. Finally, the dissemination protocol and future use of the data were explained to the participants. They were requested to provide consent for the use of the data for reports, scientific publications, academic qualifications, and seminar and conference presentations. The comprehensive Ethics Statement guiding the larger project is presented in Appendix 2 and 3.

The questionnaires were administered following a researcher-administered protocol which was read aloud by a member of the research team while they answered the questionnaire. This approach was followed as it allowed the participants to familiarise

themselves with the response options, and to ensure the participants understood the questions. It also assisted participants who may have experienced difficulty in answering some items and is generally used with young children and vulnerable groups. Between two to three members of the research team were present during the administration of the questionnaire per class. The average time of completion of the questionnaire was 30 minutes.

## 4. RESULTS

### 4.1. Descriptive statistics

Following recommendations by Casas et al. (2012), all cases on the two measures (the SLSS and OLS) with more than two missing values were deleted, while cases with two or fewer missing values were substituted by regression imputation. The skewness of the items ranged from -4.118 to -1.863; while kurtosis ranged from 2.120 to 17.404. These departures from normality were attended to by using the bootstrap method (500 samples) as specified in AMOS (version 25). The Cronbach's alpha was acceptable for the SLSS across the three language groups, see Table 2 below.

Table 2

*SLSS Cronbach's alpha by language (Setswana, Sesotho, & Tshivenda)*

	N	Cronbach alpha
SLSS	625	.75
Setswana	187	.77
Sesotho	170	.74
Tshivenda	268	.72

Table 3 displays the mean scores for the SLSS items. The narrative of the SLSS mean scores presented below are merely for descriptive purposes and cannot be meaningfully compared without the establishment of measurement invariance. The Setswana language group had the highest mean score for Item 5 'I like my life' ( $\bar{x} = 9.40$ ;  $SD = 1.91$ ) and the lowest for Item 4 'The things that happen in my life are excellent' ( $\bar{x} = 8.26$ ;  $SD = 3.21$ ). For the Sesotho language group, the highest mean score was for Item 5 'I like my life' ( $\bar{x} = 9.43$ ;  $SD = 1.79$ ) and the lowest for Item 4 'The things that happen in my life are excellent' ( $\bar{x} = 7.61$ ;  $SD = 3.26$ ). For the Tshivenda language group, the highest mean score was for Item 1 'I enjoy my life' ( $\bar{x} = 9.63$ ;  $SD = 1.31$ ) and lowest on Item 4 'The things that happen in my life are excellent' ( $\bar{x} = 8.56$ ;  $SD = 2.84$ ). Taken together, the overall mean scores for the SLSS across the three languages groups were as follows: Setswana language group ( $\bar{x} = 9.06$ ;  $SD = 1.60$ ); Sesotho language group ( $\bar{x} = 8.67$ ;  $SD = 1.66$ ); and for the Tshivenda language group ( $\bar{x} = 9.37$ ;  $SD = 1.21$ ). The means and standard deviation of the single-item OLS across the three language groups had the Tshivenda language group scoring highest ( $\bar{x} = 9.50$ ;  $SD = 1.65$ ), followed by the Setswana language group ( $\bar{x} = 9.19$ ;  $SD = 2.39$ ). The Sesotho language group ( $\bar{x} = 8.03$ ;  $SD = 3.02$ ) presented with the lowest mean score.

Table 3

*Students' Life Satisfaction and Overall Life Satisfaction Item mean by language (Setswana, Sesotho and Tshivenda)*

SLSS ITEMS	LANGUAGES								
	Setswana			Sesotho			Tshivenda		
	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD
I enjoy my life	187	8.90	2.64	170	9.33	2.01	268	9.63	1.31
My life is going well	187	9.08	2.27	170	8.20	2.94	268	9.43	1.81
I have a good life	187	9.33	1.91	170	8.25	2.96	268	9.55	1.50
The things that happen in my life are excellent	187	8.26	3.21	170	7.61	3.26	268	8.56	2.84
I like my life	187	9.40	1.91	170	9.43	1.79	268	9.53	1.53
I am happy with my life	187	9.24	1.76	170	9.19	2.11	268	9.54	1.59
SLSS overall mean score	187	9.06	1.60	170	8.67	1.66	268	9.37	1.21
OLS Scale mean score	187	9.19	2.39	170	8.03	3.02	268	9.50	1.65

Casas (2016) recommends that the scores on SWB instruments are transformed into a 100-point scale for ease of comparison. Table 4 illustrates the means and standard deviations of the SLSS composite scores and the single-item OLS composite across the three language groups. The SLSS composite score for the three language groups varied and was highest for the Tshivenda (93.73) and Setswana language groups (90.65), and lowest for the Sesotho language group (86.69). The SLSS composite scores for the pooled sample was 90.89. The OLS composite score varied across the three language groups and was highest again for the Tshivenda language group (94.93), followed by the Setswana language group (91.87), and lowest for the Sesotho language group (80.29). The composite score for the pooled sample of the OLS was 90.03.

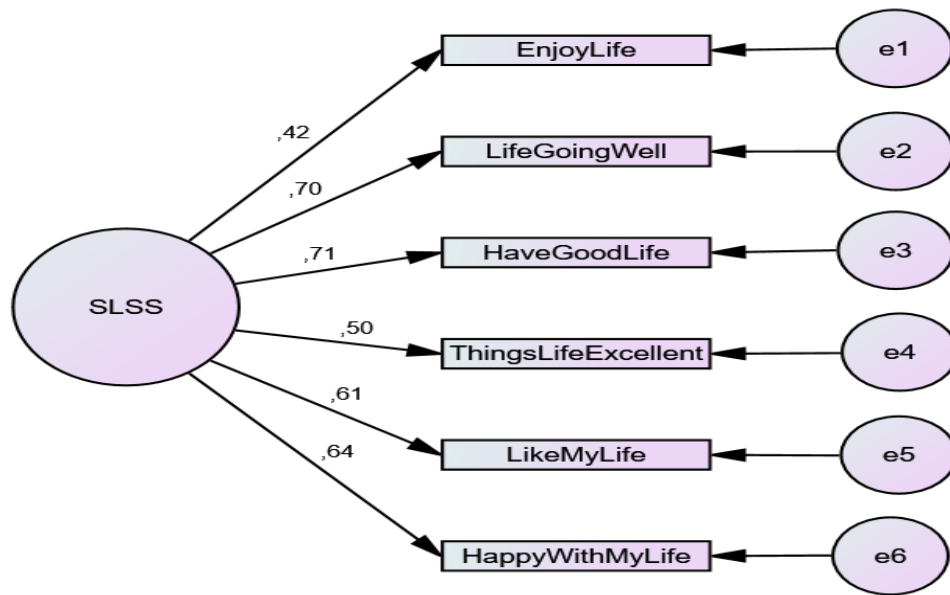
Table 4

*SLSS and OLS composite score (on a 100-point scale)*

	Setswana	Sesotho	Tshivenda	Total
SLSS_Composite	90.65	86.69	93.73	90.89
OLS_Composite	91.87	80.29	94.93	90.03

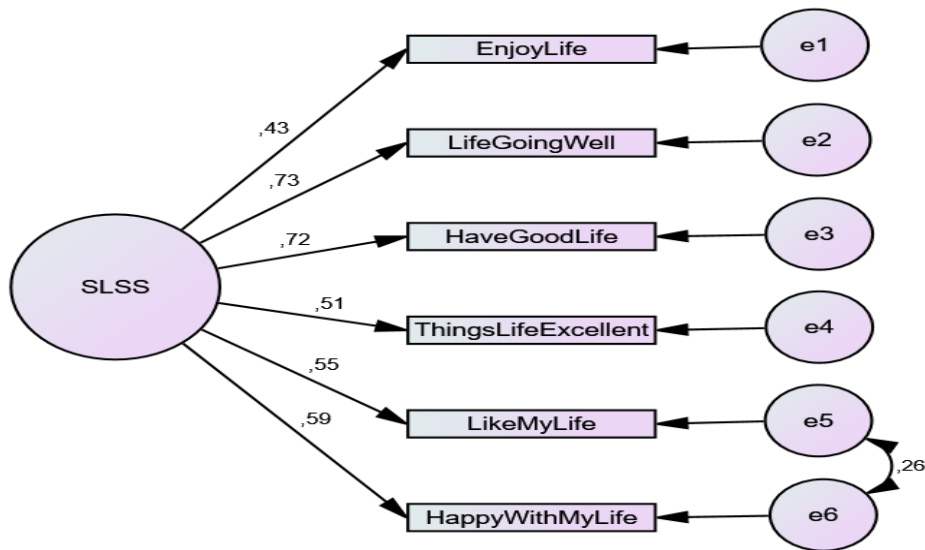
#### **4.2. Confirmatory factor analysis**

CFA (maximum likelihood estimation) was used to test the validity of the factorial structure and model fit of the SLSS (AMOS, Version 25). The initial model (Model 1 in Table 5; Figure 1) did not present with an appropriate fit. However, through a consideration of modification indices and the expected parameter change, the addition of one error covariance between Item 5 ‘I like my life’, and Item 6 ‘Happy with my life’ was effected, which resulted in an excellent fit (Model 2 in Table 5; Figure 2). After inspection of the content of the items, it is speculated that the residual covariance is due to the semantic overlap in the content of the two items.



CHI=47,028;CFI=,954;RMSEA=,082;

Figure 1. The initial model



CHI=16,686;CFI=,990;RMSEA=,042;

Figure 2. The modified model with one error covariance.



Table 5

*Fit indexes for the overall pooled data (Models 1 – 2) multi-group data (Models 3 – 6) and Structural equation modelling (Model 7).*

Model	$\chi^2$	df	p-value	CFI	RMSEA	SRMR
Bootstrap, ML, 95% Confidence Intervals, Resamples = 500						
1. Initial Model: SLSS	47.028	9	.00	.954	.082	.036
					(.060 – .106)	
2. Modified Model: SLSS (1 error covariance)	16.686	8	.00	.990	.042	.021
					(.011 – .070)	
3. CFA: Configural (1 error-covariance)	54.046	24	.00	.969	.045	.031
					(.029 – .061)	
4. *CFA: Metric invariance (1 error covariance)	83.724	34	.00	.949	.048	.038
					(.035 – .06)	
5. CFA: Metric invariance Partial (Item 5 freely estimated)	66.853	32	.00	.964	.042	.038
					(.028 – .058)	
6. CFA: Scalar Partial (Items 1 and 5 freely estimated)	80.465	38	.00	.956	.042	.037
					(.029 – .055)	
7. SEM: SLSS – OLS	18.318	13	.146	.994	.026	.019
					(.000 - .051)	

\*Non-tenable

### **4.3. Multi-group confirmatory factor analysis**

MGFA was used to assess measurement invariance across the three language groups. Measurement invariance is used to assess the extent to which different groups can be meaningfully compared with one another. Essentially it measures whether the variables have the same meaning across the various groups. If measurement invariance is not tenable then comparisons across the various groups would lead to ambiguous and unreliable interpretations (Millsap & Olivera-Aguilar, 2012). This process generally consists of three progressive analytic steps wherein restrictive constraints are incrementally applied (Kline, 2015; Xu & Tracey, 2017). In the first step, configural invariance, which assesses the unconstrained multi-group model was assessed, by allowing the parameters to be freely estimated. The configural model represents the baseline model against which the other models are tested. In the second step, metric invariance was assessed by constraining the factor loadings. Metric factor variance is tenable if the constrained model does not show a significantly worse fit (CFI does not worsen by more than .010, and the SRMR and RMSEA do not worsen by .015) than the unconstrained model (Chen, 2007; Cheung & Rensvold, 2002). In the final step, scalar invariance was tested by constraining the factor loadings and intercepts; scalar invariance is tenable if the fit statistics of the model are not significantly worse (decreases by more than .010 on CFI and increases by more than .010 on the SRMR and by .015 on the RMSEA) than the preceding model (Chen, 2007; Cheung & Rensvold, 2002).

The findings from the current study show an appropriate fit for configural invariance (Model 3 in Table 5). However, metric invariance was not tenable as the CFI worsened by more than .010) (Model 5 in Table 5). This means that the groups cannot be meaningfully compared by correlations or regression coefficients. As previously mentioned, to facilitate the group comparison, partial constraints were applied in an exploratory manner, by the trial and error assessment of a range of nested models wherein various combinations of parameters

were relaxed to obtain the best fit (see Savahl et al., 2017). Through this process, metric invariance was obtained by constraining the parameters of the items (I enjoy my life; my life is going well; I have a good life; The things in my life are excellent and, and I am happy with my life), and allowing the item (I like my life) to be freely estimated. Thereafter, scalar invariance was considered by constraining the loadings and intercepts. However, scalar invariance was not tenable as the fit indexes worsened by more than .010. With the further application of partial constraints, scalar invariance was tenable by allowing the parameters of the items (I enjoy my life and I like my life) to be freely estimated. The four remaining items (my life is going well; I have a good life; the things in my life are excellent, and I am happy with my life) are therefore comparable across correlations, regression coefficients, and mean scores.

Table 6

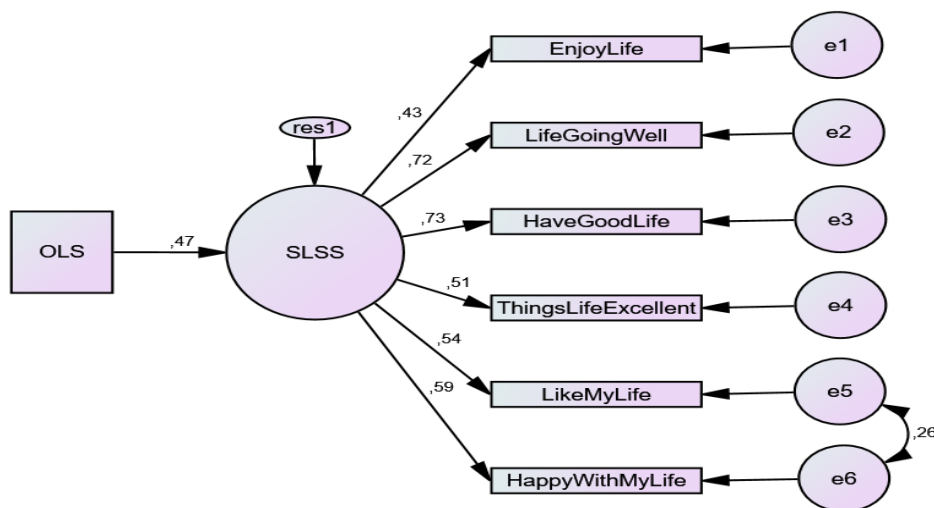
*Standardised Regression Weights for items on the SLSS (measurement intercepts with Items 1 and 5 freely estimated)*

Parameter	Setswana			Sesotho			Tshivenda		
	Estimate	Lower	Upper	Estimate	Lower	Upper	Estimate	Lower	Upper
LifeGoingWell <-- SLSS	.787	.581	.917	.668	.488	.801	.733	.490	.878
HaveGoodLife <-- SLSS	.812	.637	.988	.601	.402	.802	.708	.550	.865
ThingsLifeExcellent <-- SLSS	.501	.333	.655	.555	.375	.704	.415	.243	.546
HappyWithMyLife <-- SLSS	.668	.432	.838	.590	.423	.753	.543	.353	.746

\* All items  $p < .001$

#### 4.4. Structural equation modelling

To test the convergent validity, the observed variable OLS was included in a SEM with the overall pooled data. The OLS represents the most abstract form of SWB, and measures of SWB should show a high level of association with the OLS (Casas, 2016). As demonstrated in Figure 3 below (see Model 7 in Table 5), the SLSS with the pooled sample showed a moderate regression (.47,  $p < .001$ ) with the OLS, thus confirming convergent validity. Similar acceptable coefficients were found when regressed onto Setswana (.20,  $p < .05$ ), Sesotho (.54,  $p < .001$ ) and Tshivenda (.52,  $p < .001$ ) languages.



CHI=18,318;CFI=,994;RMSEA=,026;

**Figure 3.** SEM including OLS for the overall pooled sample

## 5. DISCUSSION

This study aimed to provide structural validation of the SLSS across a sample of children in South Africa using multi-group analysis across three language groups. Within this process, the study aimed to use MGCFA, with metric and scalar invariance, to compare the structural validity of the three language versions. Finally, the study aimed to determine the convergent validity of the three language versions of the SLSS by regressing them onto the single-item OLS.

The mean composite scores for the SLSS using the pooled data showed high values across the three language groups, with Tshivenda presenting with the highest mean. Scores on SWB measures are often transformed into 100-point scales to facilitate comparison. In relation to research on children's SWB Casas et al. (2013) found scores for children in western populations to range between 70 – 80 (on a 100-point scale). In the current study, the overall score for the SLSS using the pooled data (on a 100-point scale) was 90.89. These results align with the scores on SWB measures obtained in previous waves of the Children's Worlds Study (Casas, 2016; Casas & Rees, 2015).

A cross-cultural study conducted by Savahl et al. (2017) showed an SWB score of 81.75 for children in sub-Saharan Africa. Furthermore, the high scores obtained for SWB are also similar to those previously obtained in South Africa, which ranged between 65.60 for the SLSS and 81.90 for the PWI-SC (Savahl et al., 2015). Regardless, these high levels of SWB are unusual given the abject circumstances that children in South Africa are faced with on a daily basis (Adams & Savahl, 2017; Adams, Savahl, & Fattore, 2017), and are incongruent to objective indicators of child well-being that demonstrate a range of childhood adversities (see Hall, Richter, Mokomane, & Lake, 2018). Here it is important to note that SWB measures generally produce data that are negatively skewed. The argument advanced is that individuals

overestimate their levels of life satisfaction, regardless of the circumstances wherein they find themselves. This is referred to as the life-optimism bias (Cummins, 1995) or the satisfaction paradox (Casas, 2016). Early studies associate the phenomenon with socially and culturally acceptable perceptions of happiness. If overt expressions of happiness are held in high regard as part of one's social and cultural behavioural patterns, then it is likely that respondents would respond positively to questions on happiness and life satisfaction (Goldings, 1969 cited in Cummins, 1995). Furthermore, Heady and Wearing (1989) contend that it could be seen as an active attempt to maintain the integrity of the self, while Boucher and Osgood (1969) put forward the concept of the 'Pollyanna Hypothesis' to explain the tendency to select items on a positive spectrum (Savahl et al., 2015).

CFA was used to assess the structural validity of the model. For the overall pooled sample an excellent fit was obtained for a single-factor model, with the addition of one error-covariance. Standardised regression weights of the items ranged between .43 and .73 which are similar to those obtained by Savahl et al. (2017). This means that each item made a relevant contribution to the latent variable for the overall sample. It is, however, important to note the correlation ( $r = .26$ ) between Item 5 (I like my life) and Item 6 (I am happy with my life) could indicate that the items are being understood in a similar way. It is recommended that these items are further interrogated if this version of the SLSS is to be included in more complex models with multiple scales, as model fit could be negatively affected.

MGCFA was conducted to determine the comparability of the SLSS across the three language groups (Setswana, Sesotho, and Tshivenda). The results reveal an acceptable fit for the configural model (unconstrained loadings), however, metric invariance (constrained loadings) was not tenable. Therefore, the items on the SLSS may have different meanings between language groups and are not comparable by correlations and regressions. However,

through the application of partial constraints (Byrne, Shavelson, & Muthén, 1989) metric invariance was tenable when Item 5 (I like my life) was freely estimated. This means that Items 1 (I enjoy my life), 2 (My life is going well), 3 (I have a good life), 4 (The things in my life are excellent), and 6 (I am happy with my life) are comparable by correlations and regression coefficients across the three language groups. Here it is important to point out that the freely estimated item was not part of the original SLSS but included as part of the Children's Worlds Study. The procedure of partial constraints was also applied during the assessment of scalar invariance, given that the fit indices worsened by more than the acceptable range. Scalar invariance was tenable when Item 1 (I enjoy my life) and Item 5 (I like my life) were freely estimated. Item 1 was similarly not in the original version of the SLSS. The results suggest that Items 2 (My life is going well), 3 (I have a good life), 4 (The things in my life are excellent) and 6 (I am happy with my life) are comparable by correlations, regression coefficients, and latent mean scores across the three language groups. It should be noted that partial invariance allows for comparability regardless of some items not being invariant (Jiang & Huebner, 2017), but would require at least half the items of the scale to be invariant (Byrne et al., 1989).

In the current study, four of six items were found to be invariant indicating that the factor structure and loadings of the four invariant items were equivalent across the three language groups. The two non-invariant items require further statistical interrogation and language adaptation across the three languages. In this instance, the concept of adverse and benign measurement invariance may be important to consider (Breslau et al., 2008). Adverse measurement invariance speaks to issues around item adaptation and translation that may lead to item bias as an artefact of measurement error; whilst benign measurement invariance addresses real group differences and underlying traits such as culture, traditions, and the use of language. In the current study, it is important to note the group differences both at the level

of language and culture. Given that the scale was translated across three languages, it is likely that adverse measurement invariance, in so far as the translation process is concerned, is applicable. However, the languages are also an indicator of the three diverse cultural groups; therefore, it is likely that benign measurement invariance is applicable and that the non-invariant items are a result of real group differences based on different cultural understandings. A final important point to note is that the small sample sizes of the subgroups (language versions) of the MGCFA may have contributed to the lack of attainment of full metric and scalar invariance.

Finally, convergent validity was assessed through the inclusion of the single-item OLS in a SEM. The obtained standardised regression weight of .47 for the current study indicates an acceptable level of convergent validity for the overall pooled sample, and for the various language groups (see Casas & Rees, 2015; Casas et al., 2013).

## **6. CONCLUSION AND RECOMMENDATIONS**

The findings of the study presented with important results that make a relevant contribution to the validation literature on SWB instruments for use with children and adolescents. The most significant contribution is establishing that the Setswana, Sesotho, and Tshivenda translated versions of the SLSS are valid for use within the South African context; and that they can be grouped together in an overall pooled sample. Given that partial and metric scalar invariance was achieved, the language groups are comparable across correlation coefficients, regressions, and latent mean scores. However, given the presence of two non-invariant items, a further in-country comparative analysis should be conducted with caution, and the related interpretation of SWB needs to take cognisance of the in-country variations of various cultural and language groups. This point is particularly relevant for future research if the Children's Worlds data are to be used to conduct cross-country analysis. As children in



South Africa are not a homogenous group, it is important to establish measurement invariance as the first step in cross-cultural comparisons. This process is critical as it would allow researchers to determine the extent to which the differences of the items on SWB measures are an artefact of measurement error or represent real differences between the language groups. Further to that, is the need for further interrogation of the non-invariant items. It is recommended that qualitative research is conducted to establish the genesis of the non-invariance.

It is recommended that future research should consider the diversity of South Africa's population especially given that African languages are largely under-researched. It is recommended that further cross-cultural analysis is conducted across the other language groups using the SWB instruments available in the South African Children's World's data. It is acknowledged that the current study only investigated structural and convergent validity, and it is thus recommended that future research investigates evidence of other types of validity across the various language groups. It is further acknowledged that a focus on conducting SWB research with mainstream English instruments could potentially marginalise large cohorts of the population. Confounding the issue is that language and culture are often conflated, obscuring the diversity of culture. This has implications both at the level of the cognitive interpretation of the items on the measure, and the unique response style that may be culturally contingent. The key point is that language is not synonymous with culture, and that African cultures are not homogenous. A final point worth noting is the contestation around South Africa's language policy (see the National Education Policy Act No. 27 of 1996; Department of Basic Education, 2011) of mainstreaming English from Grade 4. Researchers should take cognisance of the impact of this policy on language acquisition, and ultimately on children's capacity to read with meaning and understanding in their mother tongue.

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## APPENDICES

### Appendix 1

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28 March 2017

Prof S Savahl Psychology

**Faculty of Community and Health Sciences Ethics Reference Number:** HS17/2/1

**Project Title:** Children's worlds: International Survey of children well-being (Wave 3).

**Approval Period:** 23 March 2017 – 23 March 2018

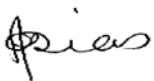
I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval. Please remember to submit a progress report in good time for annual renewal.

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*



**PROVISIONAL REC NUMBER - 130416-049**

## **Appendix 2**

### **Comprehensive Ethics Statement**

The study follows the ethics guidelines as stipulated by UNICEF's Ethical Research Involving Children Report (2013) with particular cognisance of the key principles of harms and benefits, informed consent, privacy and confidentiality and dissemination of findings. These are discussed below:

i. Harms and benefits

Through participation in the study the child participants shall not be discriminated against based on ethnic or social characteristics. The researchers will ensure that children are not harmed through commission or omission of taking part in the study. It is through the promotion of children's well-being, maintaining the view that children are right-bearing citizens and competent decision makers who are authorities of their own lives and honouring children's right to express their beliefs and opinions either by writing, talking or drawing. Furthermore, the researchers will ensure that children have access to advice and support should they experience any trauma or difficulties relating to the topic. The researchers will ensure that children are not exploited in any way and that their health, safety and educational development are not compromised. Finally, the researcher will be aware and reduce the power relationship between the participants and the researcher.

ii. Informed consent

Children will be informed of the rationale of the study, its subsequent aims and objectives and what the nature of their anticipated role within the research study will be. The researchers will be aware of their role in ensuring that children understand their rights as participants in a language that they understand. Children will be informed of the option of non-participation without discrimination, which is applicable at any time or phase of the study. The views, experiences, perspectives, dignity and integrity of each child, as well as their specific contexts shall be respected and valued by the researchers. Researchers will therefore obtain written and voluntary informed consent from both children and their parents/guardians in a language that they understand. Children will also be given sufficient time to consider the information of the study, reflect on their decision to participate and have any questions answered before providing their consent.

iii. Privacy, confidentiality and anonymity

Particular consideration to the privacy of children will be ensured pertaining to the divulging of personal information that may cause them to feel anxious or uncomfortable. This further extends to being cognisant of not divulging any information provided by children to family members, friends or others known to the child. The researchers will ensure that the identity of each child is protected as well as the setting in which data collection will take place. Any sensitive information that is required will be limited to a minimum necessary to achieve the aim of the research study.

Confidentiality in terms of the protection of disclosed information and the protection of children's identity will be strictly enforced. Any personal information that each child provides will not be disclosed. Participation within the study will be kept confidential to ensure that individual identities cannot be linked to the results of the study. The information that each participant provides will be kept private. Children will be advised prior to the commencement of the questionnaire administration that disclosure of any current or potential abuse would need to be engaged with and may need to be referred for professional assistance. Furthermore, no personal identification details will be requested on the questionnaires in order to ensure anonymity of the participants. This will ensure that the information that each participant provides will not be identifiable to a specific participant's identity.

#### iv. Dissemination of findings

Particular ethical consideration will be given to ensure that the privacy of the research participant's identities which will be maintained through dissemination of the findings. To achieve public confidentiality, the researchers will omit or disguise various identifying information without compromising the integrity of the findings. Consent to disseminate the findings through various conference presentations, journal publications, student theses/dissertations and reports will be obtained from the participants. This will be ensured by securely storing, protecting and disposing of information that has been collected that can only be accessed by the research team. The data will be kept in a locked room with controlled access as well as password-protected computer files. Hard data will be destroyed after five years, while electronic data will form part of a larger longitudinal data set, including Wave 1 and 2 data. Consideration will further be extended to the transporting and storage of data. All identifiers will be destroyed or removed throughout the data collection phase.

### **Appendix 3**

**Chairperson**

**Higher Degrees Committee**

**Faculty of Community and Health Sciences**

**Dear Chairperson**

**15/08/2017**

#### **Permission for Mulalo Mpilo**

Ms Mulalo Mpilo is a registered student in the M.A Research Psychology programme. She has submitted her proposal in fulfillment of the mini-thesis component of the degree. Her thesis forms part of a UWC project registered in 2017 (“Children’s Worlds: International Survey of Children’s Well-Being”, *REC NUMBER - 130416-049*).

The above mentioned project forms part of my postdoctoral project supported by the DST Thuthuka Programme in 2017.

I hereby grant her permission to access and use the data collected for the above project as part of her mini-thesis.

Regards



**Senior Lecturer**

**Co-Principal Investigator**

**Children’s Worlds: International Survey on Children’s Well-Being**

**Centre for Higher Education Development**

**University of Cape Town**