

Investigating the performance of South African children from an under-resourced background on selected verbal subtests of the WISC-V and SSAIS-R



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By Tsholofelo Rampai

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Johannesburg, March 2023.

Declaration

Surname: Rampai

Names: Tsholofelo Geneva

Student Number: 1476882

Supervisor: Adri Vorster

Ethics Clearance Number: M220531

Title: *Investigating the performance of South African children from an under-resourced background on selected verbal subtests of the WISC-V and SSAIS-R*

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I would like to express my deepest appreciation and gratitude

First, to God. Through your grace and mercy, I could walk this journey and persevere and accomplish what seemed impossible. You have set a plan for me to find my purpose, and my work will continue to reflect your love and presence in our lives.

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Dedication

To my parents,

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To my parents, this one is for you.

Abstract

Given the South African context and the scarcity of valid and reliable individual intelligence measures to assess the intellectual functioning of a broad spectrum of children from different socioeconomic, cultural, and linguistic backgrounds, continued research must be done on the utility, validity, and reliability of available measures. Taking this into consideration, the present study aimed to investigate and compare the performance of a sample of South African children who predominantly speak English as a Second Language (ESL) and who come from an under-resourced background on selected verbal subtests of the Wechsler Intelligence Scale for Children – Fifth Edition (WISC-V) and the Senior South African Individual Scales – Revised (SSAIS-R). In addition, the study investigated the internal consistency reliability and concurrent validity of these subtests in the present sample. The children's biographical information was obtained from a demographic questionnaire. The sample consisted of 58 participants ($N= 58$) from grades 4 to 7 living and developing in under-resourced contexts. Based on the data spread, parametric statistics in the form of a paired t-test, Pearson's correlation coefficient, and Spearman-Brown split-half formula were used to address the aims of the study and answer the research questions. The findings highlighted the different factors that might influence assessment results in South Africa, particularly for children from under-resourced contexts. The current study can be a stepping stone for further research into the appropriateness of commonly used individual intelligence measures in under-resourced contexts, given that not all South African contexts have been investigated regarding psychological assessments and individual intelligence measures.

Keywords: WISC-V, SSAIS-R, Concurrent Validity, Internal Consistency Reliability, Individual Intelligence Measures, Under-Resourced

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Chapter 1: Introduction

Title

Investigating the performance of South African children from an under-resourced background on selected verbal subtests of the WISC-V and SSAIS-R

Background and Rationale

Individual intelligence measures have existed since the turn of the century and have played an essential role in the evolution of psychology as a scientific discipline (Foxcroft & Roodt, 2013). In the early 1900s, they were primarily developed to identify children disadvantaged by standard public school instruction. They are now frequently used to recognize children who are at risk of underachievement because of special educational needs (Nah & Kwak, 2011). In supporting children with various educational needs to reach their academic potential and progress scholastically, it is critical to assess their intellectual capacity and cognitive strengths and weaknesses quickly and accurately (Aubry & Bourdin, 2018). Individual intelligence measures can assist in this regard as they have been developed to assess a child's development, specifically their intellectual development (McCoy et al., 2018). They can support identifying educational needs by exploring children's intellectual capabilities and the extent to which they would benefit from the mainstream, full-service, or more specialized forms of education (Elliott & Resing, 2015).

In addition, the results of these assessment measures can assist in designing tailored interventions to meet the educational needs of children (Nah & Kwak, 2011), which, if addressed earlier, can foster later life success (McCoy et al., 2018). Because they offer diagnostic and predictive functions, individual intelligence measures can support the development of effective educational programs in schools to address children's special educational needs (Elliott & Resing, 2015). Thus, through these assessment measures, teachers and parents can be alerted to the need for preventive action. Intervention programs can be tailored based on the intellectual strengths and weaknesses identified (Cockcroft & Blackburn, 2008).

The value of individual intelligence measures in identifying cognitive strengths and weaknesses, mapping development, making informed decisions regarding children's development, identifying training and educational needs, and assisting in making confident diagnoses (Foxcroft & Roodt, 2013) has supported the development of individual intelligence measures worldwide. However, although individual intelligence measures are continuously used to assess children's intellectual functioning, this practice has been met with much controversy, especially in the South African context. The South African debate stems partly from a few individual intelligence measures standardized and normed for use with South African children (Foxcroft, 2004; Laher & Cockcroft, 2013). The most popular of these, the Senior South African Individual Scales – Revised (SSAIS-R), has been met with much critique (Abdool Gafoor et al., 2021; Cockcroft, 2013).

Although the SSAIS-R is a South African standardized individual intelligence assessment used to assess South African children since 1992 (Laher & Cockcroft, 2013), it was only for colored, Afrikaans and English-speaking white and Indian pupils that it was standardized and normed (Foxcroft & Roodt, 2013). It was thus never formally standardized or normed for use with black children in South Africa. Also, the revised version was published in 1992 and has not been revised and updated since (Abdool Gafoor et al., 2021). With times constantly changing, the SSAIS-R is subsequently considered outdated, bringing its reliability and validity into question. However, based on professional experience and training, this measure is still used regularly in assessing children from significantly under-resourced contexts. It is considered fairer to use with ESL children from poorer socioeconomic backgrounds than its international counterparts. Nevertheless, there does not appear to be any published research available that compares the SSAIS-R with an international counterpart, such as the Wechsler Intelligence Scale for Children – Fifth Edition (WISC-V), to support this practice.

The adaptation and standardization of well-researched international individual intelligence measures, such as the WISC-V, is often considered more viable in contexts like

South Africa. In South Africa, developing new measures can be costly, time-consuming, and dependent on many human resources (Ambreen & Kamal, 2011). In addition, the complexities involved in developing an individual intelligence measure that can apply to the diverse cultures, languages, and backgrounds of South Africans contribute to the stated difficulties (Foxcroft, 2004; Foxcroft & Roodt, 2013; Laher & Cockcroft, 2013). These factors, coupled with the scarcity of appropriately developed and standardized South African individual intelligence measures that are not outdated, make the WISC, currently in its fifth edition, one of the most extensively utilized international individual intelligence measures in South Africa (Foxcroft, 2004; Shuttleworth-Edwards et al., 2013). This trend not only applies to the WISC-V, as Muleya et al. (2017) state that around a third of the psychological assessment measures utilized in South Africa were generated outside of the country.

Nevertheless, while the WISC-V is a less-dated assessment measure designed with the most recent research on intellectual functioning at its foundation, it was normed on 2201 children from the United States who speak English (Wechsler, 2014). The validity and reliability of this individual intelligence measure for use with South African children, especially predominantly ESL speakers from under-resourced backgrounds, are subsequently questioned. While the SSAIS-R appears to be the preferred assessment measure to use in assessing South African ESL children from under-resourced backgrounds, there is a concern as little published research is available on its suitability for use with these children. Similarly, there is concern about using the WISC-V as this has not been standardized for use with South African children and was standardized on English-speaking children from a Western context. These concerns compelled the researcher to conduct further research with the SSAIS-R and the WISC-V and the suitability of these measures when used with a sample of South African, predominantly ESL children, from an under-resourced background. The study focused on the sample's performance on several verbal subtests from the SSAIS-R and the WISC-V.

Cultural-linguistic elements and performance on individual intelligence measures are intimately intertwined. It has been argued that individual intelligence measures developed and established in one context may not be valid in another (Cockcroft et al., 2016); thus, the focus is on a sample of children from an under-resourced background. The focus is also on verbal subtests as they are often impacted by cultural-linguistic factors and are language-specific (Archibald, 2013; Oller et al., 2001). Verbal knowledge is also retained from formal education. Low verbal scores may thus suggest a lack of English verbal stimulation, inadequate schooling, and cultural and educational possibilities (Cockcroft et al., 2016). Poor teacher training, malnutrition, overpopulation, overcrowded classrooms, lack of parent education, and environmental influences such as socioeconomic class language and culture can negatively affect South African children from under-resourced backgrounds (Guo & Harris, 2000). ESL children are significantly affected by these factors when assessed on the verbal subtests of individual intelligence measures that have not been standardized for use in the contexts in which they grow and develop (Cockcroft et al., 2016; Foxcroft, 2004; Hernández et al., 2017; Laher & Cockcroft, 2013; Santiago et al., 2013). While most South Africans face these problems, not enough studies have been conducted on the applicability of individual intelligence measures in under-resourced settings.

There is a rising global dedication to establishing childhood interventions that improve the development of many children, particularly those in low- and middle-income countries who have difficulty reaching their maximum potential due to predominantly socioeconomic and environmental factors. Even so, the progress is hampered by a scarcity of reliable individual intelligence measures that can be used broadly to assess their needs and put appropriate interventions in place (Rubio-Codina & Grantham-McGregor, 2020). More research on available individual intelligence measures should thus be done to establish more comprehensive norms and investigate the psychometric properties of available measures when administered to South African children from various contexts.

These investigations are critical to research and practice because they guarantee that we measure what we intend to measure for all groups similarly (Smith & Graves, 2021).

Research Aims

The primary aim of the study was to investigate and compare the performance of a sample of South Africa children, predominantly ESL, from an under-resourced background on selected verbal subtests of the WISC-V and the SSAIS-R. The study also intended to investigate the psychometric properties of these verbal subtests from the WISC-V and SSAIS-R when administered to a sample of South African, predominantly ESL children from an under-resourced background. Included in these investigations was an exploration of the internal consistency reliability and concurrent validity of these verbal subtests.

Research Questions

1. Are there statistically significant differences in the participants' scores on the selected verbal subtests of the WISC-V and the SSAIS-R?
2. Are the selected WISC-V and SSAIS-R verbal subtests valid in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?
3. Are the selected WISC-V and SSAIS-R verbal subtests reliable in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?

Concept Clarification

Intelligence measures

Since the 19th century, psychology highlighted the need to study human intelligence (Gottfredson & Saklofske, 2009). This led to the development of intelligence measures worldwide. Intelligence measures are thus used to evaluate individual human intelligence (Elliott & Resing, 2015). The abbreviation "IQ" is derived from a German intelligence quotient and refers to a score obtained from standardized tests designed to assess intelligence (Oommen, 2014). Intelligence measures are used to assess an individual's cognitive

functioning in respect of both strengths and weaknesses. They also provide an indication of how an individual will function scholastically and in professional settings (Elliott & Resing, 2015). Archibald (2013) explained intelligence measures as being indicators of an individual's ability to solve problems and analyze information using nonverbal reasoning (performance IQ) and using language-based reasoning (verbal reasoning).

Under-resourced contexts

Although regarded as an upper-middle-income country, South Africa is characterized by many inequities. The discrepancy is between wealth and poverty (Cockcroft et al., 2016). South Africa's population is skewed toward rural black areas and has high rates of poverty and poor literacy (Baijnath, 2018). Under-resourced context refers to these communities and contexts characterized by poor living conditions, lack of access to amenities, poor parenting, community violence, school violence, a lack of delivery systems such as water and sanitation, and substance abuse (Baijnath, 2018; Setlhare, 2016; Van der Westhuizen & Swart, 2016). In addition, there is poor quality education. In these contexts students attend government-funded schools where classrooms are overcrowded, educators are overworked, there is a shortage of resources in the schools, and there is a lack of parental support (Cockcroft et al., 2016; McKeever, 2017; Van der Westhuizen & Swart, 2016). Learners living in under-resourced contexts are faced with psychosocial challenges as these contexts are often faced with inequitable access to resources and poverty (Setlhare, 2016).

Validity

Validity explains how well assessments measure what they are supposed to measure and are classified into four types: criterion validity, face validity, construct validity and content validity (Cook & Cook, 2008; Drost, 2011; Taherdoost, 2016). This study will focus on criterion validity, i.e., the extent to which a measure relates to an outcome. More specifically, the study focused on concurrent validity, a type of criterion validity that refers to how one test's results correspond to the results previously established by measurement for the same construct (Taherdoost, 2016).

Reliability

Reliability refers to the extent that a particular measure provides stable and consistent results and the extent to which the measure is repeatable (Cook & Cook, 2008; Drost, 2011; Taherdoost, 2016). In the present study, internal consistency reliability was investigated. It refers to the consistency within the assessment measure and how well its items measure the behavior or characteristics it intends to within the measure (Drost, 2011).

Outline of the Report

Chapter 1 introduces the background and rationale of the research topic, the research aims, and the research questions.

In Chapter 2, the development of individual intelligence measures worldwide and in South Africa will be discussed while also looking at some challenges with the measures in a diverse South African context. More specifically, some of the challenges faced by under-resourced backgrounds will be discussed. The chapter also discusses the theoretical models that underlie the development and interpretation of the WISC-V and SSAIS-R. These individual intelligence measures will also be discussed, and vital factors such as validity and reliability will be factored into the research study discussion. Lastly, the chapter will conclude by looking into individual intelligence measures research.

Chapter 3 includes the methodology and ethical considerations of the study. More specifically, it describes the research design, the sample and sampling technique, the instruments (WISC-V and SSAIS-R), the procedure of data collection, the data analysis, and the ethical considerations.

Chapter 4 will reveal the results of the descriptive statistics, as well as the results of the inferential statistics that were used to investigate reliability and validity. The results from a Pearson's correlation test, paired sample t-test, and Spearman-Brown split-half formula are presented.

The results presented in Chapter 4 will be discussed in more depth in Chapter 5, while Chapter 6 will conclude the report and highlight the findings, the strengths of the study, and the limitations. In addition, possible recommendations for future studies will be offered.

Chapter 2: Literature Review

In South Africa, there is a vacuum in the advancement of psychological assessment; thus, practitioners are using internationally developed assessments. However, these assessments are often hindered by various factors that impact their reliability and validity in South Africa. The literature review in this section will lay the foundation for and contextualize the study by expanding on the background information provided in the first chapter and reviewing important literature related to the key concepts and theoretical underpinnings of the assessment measures used. It will start with a brief history of individual intelligence measures, followed by an overview of the history of individual intelligence measures in South Africa. Thereafter, the context of South Africa will be discussed in more depth, with a specific focus on under-resourced contexts and the challenges facing these. Related to this will then be an overview of the South African education system and the multicultural and multilingual nature of the country. Following this will be a discussion on unbiased and fair testing concerning individual intelligence measures. The literature review will end with exploring the SSAIS-R and the WISC-V, specifically verbal intelligence, and verbal subtests.

History of Individual Intelligence Measures

Humans have been looking for ways to define and quantify intellect since the dawn of humanity (Boake, 2002). Since the development of psychological assessment methods, including individual intelligence measures, psychology has flourished and thrived as a science. It is important to note that psychological assessment measures involve standardized procedures that must be followed in assessing individual constructs such as memory, sensitivity, aptitudes, intelligence, cognitive abilities, and personality (Mülberger, 2017). Of course, not all psychological assessment measures are individual by nature. Some can be administered in group settings; however, this study focuses on two intelligence measures administered individually in one-on-one assessment situations.

One of the first measures of intellectual functioning was developed in 1905 when Alfred Binet and Theodore Simon published a “measuring scale of intelligence” for assessing

French children, which they later revised in 1906 (Boake, 2002). As it came to be known, the Binet-Simon Intelligence Scale was soon widely used across Europe and North America. The necessity for psychological assessment and intelligence measures was exacerbated by World War I, when measures of intelligence, achievement, aptitude, interest, and personality were included in the assessment and screening of military recruits, predominantly in groups (Foxcroft & Roodt, 2013).

In the United States of America, the Binet-Simon Scale was used shortly before World War I when American psychologists produced two significant revisions of the measure (Mülberger, 2017). These versions were produced because the Binet-Simon Scale was critiqued for being ineffective where language barriers were concerned, and thus, there was a need for more non-verbal measures. Therefore, revised versions of the Simon-Binet Scale, such as the Stanford-Binet Scale, were published and used to assess immigrants and army recruits during the first World War (Boake, 2002). Intelligence measures further developed in the 1920s/1930s post World War I, when Wechsler developed measures such as the Wechsler-Bellevue Scale, later revised and published as the Wechsler Intelligence Scale for Children in 1949 (Gottfredson & Saklofske, 2009). The WISC-R was published in 1974, the WISC-III in 1991, the WISC-IV in 2003, and WISC-V in 2014 (Schneider et al., 2017).

The widespread optimism about the usefulness of individual intelligence measures emerged from the successes of the Binet-Simon and Wechsler Scales (Gottfredson & Saklofske, 2009). However, critics pointed to the weaknesses and limitations of such measures stating that they are often overly reliant on linguistic and verbal skills, reducing their suitability for many people. When Wechsler published the initial edition of the Wechsler Intelligence Scales in 1939, he addressed this by developing a performance test that did not require verbal responses (Foxcroft & Roodt, 2013). Individual intelligence measurements became the twentieth century's dominant benchmark for differentiated psychology (Vyshedskiy et al., 2017). However, to date, psychology and individual assessment

measures are curarized as Eurocentric, rooted in Western culture, and thus unresponsive to many socio-political contexts (Laher, 2019).

The field of psychological assessments, including individual intelligence measures, appears to be divided in that it caters to the parts of the population that are more advantaged and can afford these assessments. In addition, it caters to those parts of the population with the level of education necessary. It is demographically similar to Western populations, where the measures are often developed and normed (Laher, 2019). Laher and Cockcroft (2014) add that psychological assessments contribute to the gap by catering to the population's Western, educated, and developed parts, excluding a majority. Issues in psychological assessments and individual intelligence measures also include the appropriateness of assessment in low-resource settings, acculturation and language assessment, assessment of people with various barriers to learning and development, multicultural assessments, and assessment settings (Laher, 2019).

Over the past 15 years, research has been done to try and understand and establish valid, reliable, and fair psychological assessments and individual intelligence measures for all community sectors (Laher & Cockcroft, 2014). Efforts are underway to construct global, impartial, adaptable, valid, practical, and freely accessible population-based instruments (Rubio-Codina & Grantham-McGregor, 2020). Moreover, there is awareness of the need for low-income countries to prioritize mental health. Resources must be redistributed to ensure accessibility to mental health services and assessments for all its members (Petersen, 2004).

Despite the many uncertainties, limitations, and critiques of intelligence measures, they are still widely used and valuable in modern society. Research developments in psychological assessments have led to psychological assessments being viewed as a valuable practice and accepted (Laher & Cockcroft, 2014). However, it remains essential to understand the past psychological assessments and individual intelligence measures in

South Africa to grasp better the current context and the ongoing debate about their usefulness in this country.

History of Psychological Assessment in South Africa

In our country's history, psychological assessments and individual intelligence measures have been some of the most debated areas (Laher & Cockcroft, 2014). Before apartheid, researchers in the field of intelligence testing during the years 1915 to 1952 administered tests developed and normed for white children on black children. The lower results attained by black children functioned as proof of the inadequacy of native intellect and used to justify separate development based on race. Utilized and praised, tests such as the Wechsler-Bellevue Intelligence Scale had an underlying racist agenda (Laher & Cockcroft, 2014).

In the beginning years, psychological testing was brought to South Africa from Britain and often used without consideration for test bias due to contextual factors. During apartheid, the development of new and adaptation of existing psychological assessments and individual intelligence measures grew. However, these measures were unfortunately also used to reinforce the ideology of the apartheid (Laher, 2019) as these were used to justify black labor exploitation and to restrict black people from getting access to adequate education and economic resources. (Laher & Cockcroft, 2013). In addition, the first individual intelligence measures used in the country were standardized for white children only. The results were regularly used to place white children with special educational requirements in special educational settings. Again, these practices were motivated by political ideals to demonstrate one group's superiority over another (Foxcroft & Roodt, 2013).

Since 1994, the use, regulation, and development of psychological assessment and individual intelligence measures have been contentious, with psychological assessment being viewed as exclusionary and maintaining past discriminatory policies (Foxcroft & Roodt, 2013). However, this was also a period of research and development in the field. The Health Professions Council of South Africa (HPCSA) and employment equity laws introduced new

rules indicating that the assessment of individuals would only be allowed if the measures are valid, reliable, unbiased, and can be applied fairly to all individuals in the South African context (Laher & Cockcroft, 2014). In addition, the adaptation and standardization of international assessment measures such as the Wechsler Adult Intelligence Scale (WIAS-III) and the development of Differential Aptitude Tests were growing. Psychological assessments were subsequently viewed in a more positive light (Laher & Cockcroft, 2014). These attempts to make psychological testing more appropriate and unbiased have seen advancements and changes in the field of assessments.

Despite the milestones noted, caution is still taken as far as psychological assessments and intelligence testing is concerned. There is a severe scarcity of psychological assessment and test development capacity. Following the end of apartheid, few psychological assessment measures have been produced that may be administered to a wide range of ethnic and linguistic groups in South Africa (Foxcroft, 2004). Moreover, given the scarcity of personnel and resource allocation in South Africa, developing new and adapting current psychological assessment measures may be unrealistic. With HIV/AIDS, poverty, crime, and corruption; funds may be limited, and psychological assessment initiatives may not be funded (Laher & Cockcroft, 2013). Van der Merwe et al. (2022) added that post-apartheid, the challenge is in assessing individuals residing in low-resourced contexts, addressing cultural biases in assessments employed, the impact of language on assessments, and outdated assessments.

COVID-19 also highlighted some of the challenges in psychological assessments in South Africa. The concern is on the availability of funding and budget cuts to education. Because the adaptation of assessments is contingent on funding available (Wigdorowitz et al., 2021), it causes a further delay in the development of psychological assessments and individual intelligence measures in South Africa. COVID-19 also highlighted the inequality in South Africa as psychological assessments and individual intelligence measures during the

pandemic were accessible to those with social and economic privilege (Wigdorowitz et al., 2021), making it less likely for people in under-resourced backgrounds to get access.

South Africa has come a long way in psychological assessments (Laher & Cockcroft, 2014). Despite their apparent inadequacies, these assessments contribute to decision-making (Foxcroft & Roodt, 2013). However, the focus, according to proponents, should be on accurate and reliable assessment measures for usage in multicultural and multilingual societies (Laher & Cockcroft, 2013). There is still a dire need to develop local assessments for a multicultural context (Arendse, 2020). Adaptation of assessment measures is critical in a heterogeneous culture like South Africa, where many factors hinder test development. Making a measurement more suitable to a particular context is called adaptation (Foxcroft & Roodt, 2013). However, adapting and validating individual intelligence measures for every linguistic and ethnic minority may be too resource-consuming to be a realistic goal (Ng et al., 2018). The use of internationally developed intelligence measures is nevertheless expected.

With the establishment of a new democratic political regime in South Africa over the last 20 years, the discipline of intelligence testing has also developed in many ways (Laher & Cockcroft, 2013). A new trend in the twenty-first century is approaching the production of internationally utilized tests, such as the Wechsler Intelligence Scales, from a multicultural standpoint (Foxcroft & Roodt, 2013), where westernized measures are adapted for different contexts. As stated in Foxcroft and Roodt (2013), some of the most important reasons for adapting assessment measures include: enhancing fairness in order to reduce bias; reducing cost and saving time; facilitating comparison research between different languages and ethnic communities on a local and global scale, as well as contrasting newly produced measures to existing norms, interpretations, and other accessible information regarding well-established and recognized measures.

Tools that accurately measure intellectual functioning and potential difficulties with minimal impact on cultural, linguistic, educational, and demographic differences are the goal of developing and validating assessment measures (Ng et al., 2018). Much needs to be

done regarding research in the field and the impact of language, education quality, biases, and socioeconomic status on performance and intellect (Laher & Cockcroft, 2014).

Background and context should therefore be considered when interpreting assessment results (Byrne, 2013). Whether or not it is necessary to use approaches specific to the South African context in interpreting intelligence measures is relevant and may address and prevent potential test bias (Blumenau & Broom, 2011).

Under-resourced Contexts in South Africa

Twenty years after apartheid, South Africa is still not without divisions. These divisions are no longer solely based on race but on social class and socioeconomic income (Laher & Cockcroft, 2014; Leibbrandt et al., 2007). South Africa is characterized by unequal access to resources and different socioeconomic living conditions (Byrne, 2013). Many communities are marked by poverty, inequality, minimal access to quality education, low literacy levels, unemployment, and high crime rates (Laher, 2019). In addition, they are rooted in trauma (Williams et al., 2007). The challenges noted above pose unique challenges for psychological assessments and intelligence testing in South Africa.

Language challenges, a lack of proper assessment materials, and cultural diversity are existing barriers in South Africa (August & Mashegoane, 2021). Psychological assessment discipline in South Africa is complicated further by limited practitioner fluency in languages other than English, unsatisfactory assessment settings, scarce availability of test materials, and a lack of qualified experts to develop new assessment measures for the particular context (Laher & Cockcroft, 2017). Moreover, there are a few suitable testing environments; test material is frequently outdated, missing, or unavailable; and there is a restricted or non-existent budget for purchasing and upgrading test materials (Laher & Cockcroft, 2013).

There is also a concerning lack of psychological facilities in black communities (Petersen, 2004). Because people of color have not always been involved in formulating policies in South Africa, this likely delayed the development of psychological service delivery

systems in their contexts (Laher, 2019). Most South Africans rely on public health care, so funding for psychological evaluations (and other psychological services) may be limited. Psychosocial factors, learning disorders, and neurodevelopmental disorders may affect learners' academic performance in South Africa (Abdool Gafoor et al., 2021). However, these are often undiagnosed due to a lack of access to psychological interventions, including psychological assessments. This is supported by Santiago et al. (2013), who discovered that poverty is inextricably related to mental health issues and impoverished children and adults do not obtain the psychological services they require. Structural issues are associated with poor mental health (Pillay, 2019). In under-resourced contexts, various factors come into play. Environmental factors interact with genetics and influence psychological assessment results. These factors include family rearing, crime, socioeconomic status, language, access to appropriate medical care, diet and nutrition, and schooling, all of which can significantly impact the malleability of a person's intellectual abilities (Hernández-Pérez et al., 2021).

The results of individual intelligence measures are impacted by the person's intellectual capabilities and cognitive functions, which are impacted by external factors. Oommen (2014) stated that people develop their intellectual capabilities and cognitive functions based on environmental factors. He added that when children grow in stimulating and nutritious environments, the brain structure is modified, and the brain is enriched. In addition, genes affect the development of the brain. Biological parents and prenatal and early childhood nutrition are linked to brain structure, behavior, and intelligence (Dumitriu, 2010; Oommen, 2014; Rushton, 2008).

As noted above, in most under-resourced contexts, children are exposed to various kinds of traumas and adverse childhood events such as abuse, neglect, crime, and violence in the community, all of which have an impact on the development of the brain and its malleability (Kidman et al., 2019). These factors adversely impact children's development, including their physical health, behavior, socio-emotional well-being, and intellect (Williams et al., 2007). As noted, socioeconomic status should be considered when interpreting

results, particularly in under-resourced contexts, as such factors can impact intellectual development and an individual's overall functioning (Byrne, 2013). In many African countries, poverty is common and impacts the provision of quality education (du Plessis & Mestry, 2019). In disadvantaged areas, teachers face challenges that prevent learners from receiving a quality education (Melikhaya, 2020). Learners are underperforming due to resource challenges (Melikhaya, 2020). Du Plessis and Mestry (2019), as well as Chetty (2019), added that some of the challenges faced by the education system in under-resourced contexts include insufficient funds from the government, lack of support and parental interest in children's education, overcrowded classrooms, underqualified teachers and multi-grade teaching. Parents in these contexts often do not encourage children to attend school (Chetty, 2019; du Plessis & Mestry, 2019).

Under-resourced contexts and living in poverty specifically affect children's emotional functioning, social functioning, and academic achievement in multiple ways. First, a lack of income affects mediating factors such as access to resources, impacting their achievement and other aspects of their life. Second, poverty affects how parents monitor, nurture and respond to their children's needs. That is, economic hardship and poverty-generated stress negatively impact how parents respond to their children and how parents respond in ways that foster children's overall well-being and development (Guo & Harris, 2000).

In addition, there is a correlation between maternal education level and a child's intellectual functioning (Byrne, 2013). When parents have a higher education level, they are more likely to enter occupations with higher income and thus have access to financial resources, medical services, and quality educational services (Byrne, 2013). These children thus come from more stimulating environments that foster intellectual development and can positively impact the scores obtained on individual intelligence measures. In addition, under-resourced schools often enroll children from low-income households where the primary language is not English and cultural practices are diverse (Ganchorre & Tomanek, 2012). As such, when individual intelligence measures are applied in these contexts, there is concern

about their validity and reliability. Based on the above, the availability of resources and socioeconomic status can negatively impact children's results on individual intelligence measures (Arendse, 2020).

Education Systems in South Africa

Educational systems are another important and challenging element to consider in South Africa, as the quality of education significantly impacts children's performance on individual intelligence measures (Blumenau & Broom, 2011; Laher & Cockcroft, 2013). Schools significantly affect a child's relationships, intellectual development, social skills, emotional and behavioral well-being, and academic attainment (Platt et al., 2021). Like many other African countries, South Africa is dissimilar to Western contexts, where there is better access to quality education and lower unemployment rates (Laher, 2019). The results of psychometric testing, including individual intelligence measures, should help identify learning needs and create educational intervention programs in schools (Foxcroft & Roodt, 2013), so why is this still a concern in South Africa?

The issue of educational systems, especially in South Africa, is that they differ vastly in the quality of education that they offer (Cockcroft et al., 2016). Even though rights and opportunities have been made equal for all South African citizens, the legacy of apartheid is still seen in South African classrooms. Apartheid resulted in unequal outcomes in the quality of education that different schools offer (McKeever, 2017).

The legacy of apartheid created two education systems – well-resourced, now often private, and some former Model C schools, and under-resourced, predominantly government schools in disadvantaged areas (Chetty, 2019). There are discrepancies between independent (privately supported) schools, former Model C government schools, and schools in townships and rural areas (even though they are now racially desegregated) (Laher & Cockcroft, 2013). As a result, the first two types of schools have significantly more resources than the latter (Laher & Cockcroft, 2013). Poorly prepared teachers, high teacher-learner ratios, and a lack of educational resources are some issues under-resourced schools

face (Laher & Cockcroft, 2013). Cockcroft et al. (2016) support this and add that South African children from low socioeconomic backgrounds generally attend government-funded schools with insufficient curricular activities, unprofessional teachers, and absenteeism. Children from more affluent socioeconomic backgrounds are likelier to attend 'old Model C' schools (reserved for white students during apartheid) or private schools. They are likelier to have stimulating home and school environments (Cockcroft et al., 2016).

Even though the government is concerned with the issues schools face, they focus more on urban schools, resulting in many under-resourced schools being neglected (du Plessis & Mestry, 2019). With the birth of a democratic republic in 1994, the government has also attempted to bridge the discrepancy in educational quality between races and provinces by categorizing public schools into quintiles and financing accordingly. The schools are classified depending on the socioeconomic condition of the area in which they are located (van Dyk & White, 2019). Despite implementing the quintile categorization of schools and the associated financing in education, one questions if the vast disparity in the academic success of learners from diverse socioeconomic backgrounds is genuinely being overcome (Ogbonnaya & Awuah, 2019).

Based on the inequalities in education systems, as noted above, there is a literacy crisis in South Africa, especially in under-resourced contexts, due to foundations of literacy and reading that are not in place (Arendse, 2020). The ability to read, write, and deal with numbers, as well as higher-order intellectual skills, are all influenced by nurturing schooling experiences (Foxcroft, 2004). Furthermore, they impact people's thinking, reasoning processes, approach to problems, problem-solving abilities, and capacity to work effectively and rapidly (Foxcroft, 2004). Poverty and low socioeconomic status impact the accessibility to quality schooling (Guo & Harris, 2000).

Because schooling experiences and environmental factors shape intellectual development (Dumitriu, 2010; Oommen, 2014), low-quality schooling experiences, such as those experienced in most South African quantile 1 schools, place children from these

contexts at a disadvantage in terms of their performance in individual intelligence measures. It is essential to keep this disadvantage in mind, given that the contexts in which these intelligence measures were standardized and normed are Western, educated, and developed. These contexts differ vastly from those experienced by many South African children (Ambreen & Kamal, 2011; Foxcroft & Roodt, 2013; Laher, 2019, 2021; Muleya et al., 2017; Smith & Graves, 2021). The importance of school and educational experiences is emphasized when considering factors that impact performance on individual intelligence measures.

Bowles et al. (2016) argued that understanding and approaching psychological assessments, including individual intelligence measures, in schools requires a broader view in the 21st century. Assessments in contexts where unequal education and community-related difficulties are prominent require a more dynamic approach. This approach can include qualitative rather than static ones that reflect a more Western Eurocentric, middle-class understanding of intellectual functioning and the values and attitudes thereof (Laher & Cockcroft, 2014). As mentioned previously, psychological assessments and, specifically, individual intelligence measures can assist in identifying the learning needs of learners, the impact of the curriculum and teaching offered on their functioning and progress, and interventions that might be required to support learners (Bowles et al., 2016). Particularly in Educational Psychology, psycho-educational assessments not only encompass administering and interpreting those measures of a learner's intellectual ability, academic ability, and traits related to educational achievement and psychological well-being, but they also provide informed recommendations and treatment interventions concerning the individual's educational and psychosocial functioning and attainment (Bowles et al., 2016).

However, proper testing of children from various backgrounds is still one of the most difficult challenges facing psycho-educational assessments in South Africa (Cockcroft et al., 2016). Due to economic concerns, poor-quality education, and high levels of illiteracy, and given that their contexts impact their development and cognitive functioning, the majority of

South African children have limited to no access to the stated benefits of psychological assessments (Blumenau & Broom, 2011; Laher & Cockcroft, 2013).

Language and Multiculturalism

The relationship between cognitive development and language has long been investigated; however, there has been no understanding (Blumenau & Broom, 2011). The multilingualistic and multicultural nature of the South African context impacts the appropriateness of psychological assessments and individual intelligence measures in the country (Blumenau & Broom, 2011). Administering test material in English to those with limited English abilities is another barrier to intelligence testing in the country. South Africa's 11 official languages, as well as the fact that several indigenous South African languages lack matching terminology or idiomatic phrases to those used in English, offer a multitude of obstacles for test translation (Laher & Cockcroft, 2013).

Individuals who speak other languages, apart from English, as their first language, may experience difficulties completing assessment measures developed, standardized, and administered in English (Arendse, 2020). With most individual intelligence measures only available in English, this remains a barrier to many South African children who are not fluent or rather exposed to English regularly (Zulu, 2019). It is often difficult to discern whether poor test performance is attributable to language or communication challenges or whether test takers have a low level of the measured construct when they are not English proficient (Foxcroft, 2004). Zulu (2019) emphasized that the mother tongue is the best choice in assessing a child's cognitive functioning; however, cognizance must be taken that most individual intelligence measures are published in English only.

Exposing children to English and parental support may merit administering 'English-medium' assessments (Zulu, 2019). However, in most South African households in under-resourced contexts, English is rarely spoken as a first or even an additional language. The teachers in such contexts also use English as an additional language, and educators' competence in English has been found to contribute to low English literacy levels in the

country (Arendse, 2020). Language shapes our intellectual capabilities and children's performance on English-medium assessment measures (Plebe & De La Cruz, 2015). When applied to cross-cultural and multinational studies, language and cultural diversity can thus influence children's performance and the information that can be obtained from assessment results (Ng et al., 2018). Zulu (2019) found that some challenges with individual intelligence measures are the influence of the test taker's culture and language versus the test's language. Tests are mainly in English and are normed for Western cultures.

Literacy is a cultural practice as children learn to read and write at home (Chetty, 2019). Culture and language are inseparable because a child acquires language within a particular culture, and language conveys a culture (Plebe & De La Cruz, 2015; Zulu, 2019). Culture-specific memory skills are based on the premise that culturally relevant content is more readily remembered than non-relevant content (Plebe & De La Cruz, 2015). The 'frequency effect' concept assumes that an individual is familiar with perceived, recognized, and recalled words more quickly than unfamiliar words (Blumenau & Broom, 2011).

Proficiency on these westernized IQ tests is dependent on mastery of a specific dialect of English as well as familiarity towards the Western culture (Archibald, 2013). Most children in South Africa from under-resourced backgrounds cannot access English as a first language (Laher, 2019). Most children are bilingual and or exposed to languages other than English. Bilingualism refers to using two or more languages where communication can be met in any language (Blumenau & Broom, 2011; Sibanda, 2019). Available South African individual intelligence measures, such as the SSAIS-R, are outdated and have not been standardized for all cultural and language groups (Abdool Gafoor et al., 2021). This further highlights the need for assessment measures that can be used fairly and equitably across diverse cultural and language groups. Fair testing occurs when a test is standardized across all cultural and language groups (Blumenau & Broom, 2011), as language and culture can cause bias in individual intelligence measures.

Adapting an intelligence measure for multicultural and multilingual contexts could entail devising improved versions of the measure that eliminate cultural and language bias through the translation of the inclusion of concepts and items familiar to the target group. Alternatively, the originals may be used; however, among diversified cultural populations, performance levels for distinct groups should be defined (Blumenau & Broom, 2011).

Biases and Fairness in Testing

Prejudice, fairness, and bias are closely related constructs. Muleya et al. (2017) stated that a systematic inaccuracy in measurement or research that impacts one group (e.g., race, age, and gender) more than another is defined as bias in psychological measurement. Prejudice refers to the same phenomenon but in a broader framework of human judgment (Muleya et al., 2017). Prejudice is a significant factor in unequal treatment, negative consequences, and discrimination in assessment use (Muleya et al., 2017). These lead to favoritism, unfairness, and injustice.

Prejudice, bias, and unfairness in the use of assessments can be caused by various factors, including the assessor's attitudes, values, and judgments; scoring procedures; measure features; contextual realities embedded in the socio-political reality; and cultural preferences (Muleya et al., 2017). Low socioeconomic factors, poverty, quality of education, cultural differences, and language differences negatively impact cognitive ability and malleability (Oommen, 2014). These factors often impact children from under-resourced backgrounds and ultimately impact their performance on intelligence measures. These factors lead to unfairness in intelligence testing and raise concerns about the reliability and validity of the intelligence measures currently used in South Africa.

Professionals involved in psychological assessments agree that they must ensure that current assessment measures are fair and bias-free (Muleya et al., 2017). Construct, method, and item bias are the three forms of bias that might affect the validity and reliability of commonly used individual intelligence measures in South Africa. According to Meiring et al. (2005), construct bias occurs when an assessment measure does not yield similar results

across all cultures regarding a measured construct. Item bias occurs when the meaning of one or more concepts is not identical across cultures, for example, when differences in meaning occur due to poor translation or the inapplicability of an item to a particular culture (Meiring et al., 2005). Item bias is also linked to differential item functioning, which occurs when one group does not have the same chance to obtain correct scores compared to another group with comparable abilities (Drost, 2011). Method bias can be introduced due to linguistic and cultural variations within assessment tools (Ng et al., 2018). Method bias occurs when inequality problems arise in an assessment's results due to how the assessment was administered and the language in which it was administered (Ng et al., 2018).

Most practitioners find it challenging to ensure that individual intelligence measures are appropriate and fair for clients from various cultures, mainly when the challenge occurs in a low-resource setting against a backdrop of social injustice, such as in South Africa (Laher & Cockcroft, 2017). According to the authors, testing and assessment are Western-world activities imported to Africa during the colonial era and are not inherently part of African culture (Muleya et al., 2017). As such, the validity and reliability of international intelligence measures should be investigated.

Construct bias can be addressed by ensuring the criterion validity of an individual intelligence measure, which is often done through the calculation of correlation coefficients (Foxcroft & Roodt, 2013). Criterion validity can be divided into two categories: concurrent and predictive. Concurrent validity investigates the extent to which two measures designed to measure the same construct can do so. It thus looks at the extent to which a child's performance across two measures administered in succession correlates (Foxcroft & Roodt, 2013). Concurrent validity, in other words, refers to the extent to which the results of one test correspond to the results of another previously established and validated test by measurement for the same construct (Taherdoost, 2016). For this investigation and to establish concurrent validity, participants' performance on SSAIS-R and WISC-V subtests

that measure similar intellectual abilities, referred to as constructs within individual intelligence testing, correlated.

Predictive validity is established when one compares a child's performance on an individual intelligence measure designed to measure a specific construct to some external variable. Thus, the precision with which a measure may predict an individual's future behavior or category status is called predictive validity (Foxcroft & Roodt, 2013). For instance, a child's performance on verbal subtests measures aspects of English language proficiency. As their performance on these tests correlates with their performance in English as a subject, predictive validity can be determined by correlating their scores on these verbal subtests with their English language marks. Although the researcher aimed to do this in the current study, she could not obtain and gain access to the children's English marks; thus, only concurrent validity was investigated.

While validity investigates the extent to which an individual intelligence measure can measure the constructs it has been designed to measure, the measure's reliability refers to how consistently it measures that which it has been designed to measure (Foxcroft & Roodt, 2013). Bias, prejudice, and unfairness may lead to increased inaccuracy, lower consistency in results, and thus, lower reliability (Muleya et al., 2017). In the current study, the internal consistency reliability was investigated. Within a measurement, internal consistency reliability investigates how well the items measure the construct they intend to measure (Drost, 2011).

As mentioned in Chapter 1, about one-third of assessments used in South Africa are developed outside the country and then imported for use, such as the WISC-V, posing a significant ethical problem because cultural and language factors may impact the outcome. In addition, there is not enough research to support their appropriateness across all racial, cultural, and linguistic backgrounds, as they have not been normed or standardized for use with black children. This lack of research emphasizes the importance of ongoing research to validate specific assessments for usage in the context intended (Muleya et al., 2017).

Validation studies are needed to derive the appropriateness of assessments (Ng et al., 2018). For reliability and validity to be established, context must be considered (Van der Merwe et al., 2022).

The Senior South African Individual Scales – Revised (SSAIS-R)

The SSAIS-R was last standardized in 1992 and was developed with Wechsler's original views of intelligence as its foundation. (Cockcroft, 2013). It was based on the premise that intelligence comprises related mental abilities that together form general intelligence (*g*) and can be divided into a verbal and non-verbal dichotomy (Laher & Cockcroft, 2013). Despite its outdated standards, it is nevertheless commonly utilized due to a lack of locally normed assessment alternatives (Cockcroft, 2013).

The SSAIS-R, however, remains one test that has been standardized and normed for the South African setting. The SSAIS-R was developed to acquire a differential profile of intelligence-related cognitive abilities in English and Afrikaans-speaking South African children aged 7 to 16 years 11 months (Cockcroft & Blackburn, 2008). The test was normed on a group of white, colored, and Indian children who met these requirements (Cockcroft & Blackburn, 2008) and can be classified into two broad abilities according to Wechsler: verbal and non-verbal (Van Eeden, 1997). There are 11 subtests in all. Vocabulary, Comprehension, Similarities, Story Memory, Number Problems, and another optional subtest, Memory for Digits, are among the verbal scale subtests. Pattern Completion, Block Designs, Missing Parts, Form Board, and another optional subtest, Coding, are among the non-verbal scale subtests (Cockcroft & Blackburn, 2008; Laher & Cockcroft, 2013). Cockcroft and Blackburn (2008) discovered that the SSAIS verbal scale is slightly more linked to academic success than the non-verbal scale.

In the development and standardization of the SSAIS-R, quality control measures were employed, and the reliabilities were investigated. First, the internal consistency reliability coefficient of the SSAIS-R ranged from .59 to .91, and the reliability coefficient ranged from .86 (non-verbal) to .95 (full scale) (Van Eeden, 1997). However, the ability of

tests like the SSAIS-R to predict academic success and failure has long been a contentious issue (Cockcroft & Blackburn, 2008). The fact that only colored, Indian, and white children were included in the standardization sample is a significant limitation of this test (Cockcroft, 2013). The SSAIS-R material is based on Western cultural knowledge; hence environmentally deprived children would be disadvantaged regarding the test's cultural content understanding and familiarity (Cockcroft, 2013). The SSAIS-R has also been shown to be reliable only on children who had some proficiency in English or Afrikaans (Van Eeden, 1997).

In addition to investigations into the reliability of the SSAIS-R, the developers also investigated various forms of validity. The SSAIS-R had good content validity in their 1992 calculation within a non-environmentally disadvantaged group (middle-to-high socioeconomic group). Regarding construct validity, the verbal subtests were correlated significantly at $p < .01$ or $.05$, as well as the non-verbal subtests (Van Eeden, 1997). Subtests share variance and measure the same constructs according to the factor analysis. The SSAIS-R was also found to measure the same construct as other tests. For both environmentally disadvantaged and non-environmentally disadvantaged children, the SSAIS-R verbal, non-verbal, and full-scale scores were found to correlate significantly ($p < .01$) with other assessment measures available at the time, such as the then New South African Group Test (NSAGT) and the Group Test for Indian South Africans (GTISA) (Cockcroft, 2013). Concurrent validity correlations ($p < .01$) indicated that the SSAIS-R could differentiate between children based on their intellectual abilities (Van Eeden, 1997). Finally, depending on grades and subjects, the SSAIS-R predictive validity correlation for school accomplishment ranged from 0.24 to 0.51 (non-verbal scale) and 0.20 to 0.63 (verbal scale) (Laher & Cockcroft, 2013).

The reliability and validity of individual intelligence measures used in South Africa, such as the SSAIS-R, remain concerns (Abdool Gafoor et al., 2021). However, as one of the

few standardized South African measures, it would be essential to continue research into its validity and reliability when used with children from different parts of the population.

Wechsler Intelligence Scale for Children- Fifth Edition (WISC-V)

David Wechsler developed the Wechsler Intelligence Scale for Children (WISC) for children between the ages of 6 and 16 (Canivez et al., 2020; Freeman & Chen, 2019; Vyshedskiy et al., 2017). When developing his intelligence scales, Wechsler focused on practical utility (Gordon et al., 2010). The WISC has been re-normed several times and has undergone several adjustments and refinements since its first release in 1949 (McGill et al., 2020). Its conceptualizations and developments were also primarily based on Wechsler's idea of intelligence, which some authors believe is closely related to Cattell, Horn, and Carroll's theoretical ideas - the Cattell-Horn-Carroll model (Aubry & Bourdin, 2018; Pauls & Daseking, 2021). The WISC, now in its fifth version, is widely considered one of the most popular and commercially successful intelligence tests ever. It is the most widely used individual intelligence measure for children in the United States (McGill et al., 2020).

The WISC-V has five primary indices: Working Memory Index [WMI], Verbal Comprehension Index [VCI], Processing Speed Index [PSI], Visual Spatial Index [VSI], Fluid Reasoning Index [FRI] and five ancillary indices in addition to the Full Scale Index (FSIQ) - General Ability Index [GAI], Auditory Working Memory Index [AWMI], Cognitive Proficiency Index [CPI], Non-verbal Index [NVI], and Quantitative Reasoning Index [QRI], (Becker et al., 2021; Canivez et al., 2020; McGill et al., 2020; Pauls & Daseking, 2021). The measure consists of 16 subtests, namely, Similarities, Vocabulary, Information and Comprehension for the VCI, Block Design and Visual Puzzles for the VSI, Matrix Reasoning, Figure Weights, Picture Concepts, and Arithmetic for the FRI, Digit Span, Picture Span. and Letter-Number Sequencing for the WMI, and finally Cancellation, Coding, and Symbol Search for the PSI (Wechsler, 2014).

Children's cognitive profiles in several domains (e.g., verbal comprehension, visual-spatial, fluid reasoning, working memory, processing speed) can be depicted in a single test

whose standard values are based on the same standardization sample (Becker et al., 2021). The WISC-V intellectual profiles can be extremely useful in determining an individual child's intellectual strengths and weaknesses and generating a tailored intervention approach. Furthermore, the WISC primary subtests are used more commonly in clinical practice (Pauls & Daseking, 2021) as they give a more in-depth understanding of a child's cognitive abilities and intellectual functioning. Results can also be used to identify intellectually gifted children (Aubry & Bourdin, 2018).

The WISC-V has been the topic of heated discussion (Pauls & Daseking, 2021). Individual intelligence measures developed by Wechsler are among the most widely used. They are also reliable and valid when utilized with people who have normal intelligence levels. Yet, there is considerable uncertainty regarding how well these measures reflect intellectual performance at the extremities (Gordon et al., 2010). It has been translated and adopted in many countries, such as Spain, Germany, the United Kingdom, and Canada. Despite its popularity, several techniques used to produce and evaluate translated and adapted versions of the assessment measure worldwide have generated concerns regarding the procedures used to validate and develop adapted versions where language and cultural contexts are concerned (McGill et al., 2020).

In the development and standardization of the WISC-V, reliabilities were investigated. As cited in Flanagan and Alfonso (2017), the WISC-V has been found to have high internal consistency reliability estimates (.88 PSI to .93 FRI), and subtest reliabilities are medium to high (.81 to .94) on a normative sample. Internal consistency reliability was also obtained from children in particular groups, e.g., intellectually gifted children, children with ADHD, children with intellectual challenges, children that do not speak English as a first language, and children with autism. The coefficients ranged from .86 to .97 (Wechsler, 2014). Test-retest reliability was also found to support the stability of the WISC-V performance. The reliability coefficients ranged between .82 to .94 (Wechsler, 2014). Various forms of validity were also investigated in the development and standardization of the WISC-V. The subtests

correlate more with tests that measure the same constructs. The intercorrelations between the VCI and PSI ranged between .39 and .91 (Weschler, 2014). Accordingly, the construct validity of the primary indexes was supported by Confirmatory Factor Analysis (CFA). Validity evidence was provided by global and primary index scores that correlated (Flanagan & Alfonso, 2017). The Vocabulary subtest stability correlation was found to be .90. The Primary Index Scales had the highest stability coefficient .94 (Flanagan & Alfonso, 2017).

As noted, it is vital to research the reliability and validity of any assessment measure before it is widely used. In particular, a focus is needed on tools used with black children who do not speak English as a first language and come from under-resourced contexts, especially given the history of psychology and intelligence testing in South Africa (Smith & Graves, 2021). Accordingly, the WISC-V has never been standardized for a South African population, nor have any previous versions of the test been standardized in South Africa (Canivez et al., 2020; Laher & Cockcroft, 2013). Although the WISC-V has not been standardized for South Africa, the standardization data obtained from a sample of 2201 children across the United States indicated reliability and validity. According to Flanagan and Alfonso (2017), the WISC-V allows for generalizability, as it represents a large demographically normative sample. However, cognizance must be taken that this is an American sample of English-speaking children.

Understanding Intelligence: CHC-Theory

Over the years, various researchers in the area have put forth different conceptualizations of intelligence. One such theory, which has gained widespread acceptance and is often used in interpreting data obtained from the WISC-V, is the Cattell-Horn-Carroll (CHC) Theory of cognitive abilities (Canivez et al., 2017; Freeman & Chen, 2019). Based on factor analysis, this theory understands intelligence and intellectual functioning as an amalgamation of cognitive abilities divided across three levels or strata.

The third stratum represents a person's general underlying cognitive ability, also known as the *g*-factor. This *g*-factor is then divided into 16 broad abilities divided into more

than 80 limited abilities (Flanagan & Dixon, 2014). These strata and the division of a person's cognitive abilities better explain the individual differences revealed by individual intelligence measures than the *g*-factor can (Jewsbury et al., 2017).

Among the 16 broad abilities are a person's visuospatial ability (*Gv*), working memory (*Gsm*), long-term memory encoding and retrieval (*Gl*), processing speed (*Gs*), fluid reasoning (*Gf*), auditory processing (*Ga*), reading and writing (*Grw*), and tactile ability (Jewsbury et al., 2017). As mentioned, these 16 broad abilities are further divided into narrow abilities. For instance, *Grw* includes limited reading comprehension ability (Mestre et al., 2016). This study is significant for the broad ability, crystallized intelligence (*Gc*), which incorporates narrower abilities such as general information or knowledge, language development, lexical or word knowledge, and verbal receptive and expressive skills (Flanagan & Dixon, 2014). The verbal subtests of individual intelligence measures, such as the WISC-V and SSAIS-R, regularly assess these cognitive skills.

Most contemporary intelligence measures have been influenced by the CHC theory (Jewsbury et al., 2017), such as the WISC, which makes it an essential theoretical framework for this research study. Jewsbury et al. (2017) found that the CHC theory could be a helpful, practical guide to test construction and interpretation and a general diagnostic assessment model. The CHC theory is particularly well-suited to South Africa since it is repeatable and consistent over various assessment measures and populations (Jewsbury et al., 2017). As mentioned above and in the preceding chapter, the focus of this study fell on selected verbal subtests of the WISC-V and SSAIS-R, which measures broad ability and crystallized intelligence. Specifically, the Vocabulary, Similarities, and Comprehension subtests from both individual intelligence measures were included. These measure specific *Gc* limited abilities, which will be discussed in more depth below.

Verbal Subtests

The earliest intelligence measures were mostly based on verbal questions. During World War I, when the United States army had to evaluate recruits who were illiterate or had

inadequate English competency, nonverbal tests were incorporated and created to measure general cognition without the complex factor of language (Vyshedskiy et al., 2017). For the study, however, selected verbal subtests were administered as they were found to be the most culturally loaded (Ambreen & Kamal, 2014).

The WISC-V VCI is a commonly used measure of verbal and crystallized intelligence (Kuehnel et al., 2019). For this study, only selected subtests from the WISC-V VCI were included as they correspond to the first three verbal subtests of the SSAIS-R, including Vocabulary, Similarities, and Comprehension. These subtests are loaded with verbal content which measures crystallized intelligence that is culturally specific and is thus susceptible to the presence of culturally or linguistically inappropriate items (Ambreen & Kamal, 2014; Archibald, 2013; Gayland, 2005; Ng et al., 2018; Plebe & De La Cruz, 2015; Zulu, 2019).

The WISC-V and SSAIS-R Similarities subtests primarily measure word knowledge, verbal concept formation, and verbal abstract reasoning skills. The Vocabulary subtests measure word knowledge and verbal concept formation. However, while the SSAIS-R Vocabulary subtest focuses more on receptive language or one's understanding of specific words (Van Eeden, 1997), the WISC-V Vocabulary subtest also involves one's ability to express that understanding (Wechsler, 2014) verbally. The Comprehension subtests measure verbal reasoning and conceptualization, verbal comprehension, oral expression, general knowledge, and the ability to use experience and demonstrate practical knowledge and judgment (Kuehnel et al., 2019).

In broad, verbal subtests assess children's ability to listen to a question, call on information gained in both formal and informal education, reason through an answer, and verbalize their views through linguistic conceptualization, retained knowledge access, and verbal communication (Ambreen & Kamal, 2014). Accordingly, as cited by Ambreen and Kamal (2014), verbal subtests are thought to be influenced by background, education, and cultural possibilities. However, they are effective predictors of school preparation and achievement orientation. Crystallized intelligence and verbal subtests depend on cultural

differences and the quality of education. Most cognitive assessments rely on language comprehension, so the verbal nature raises questions about how appropriate and valid these assessments are in South African populations (Blumenau & Broom, 2011). While non-verbal subtests are more regularly administered since they are not loaded with verbal and language content, in educational research, assessing a child's verbal intellectual capacity is considered equally important (Ambreen & Kamal, 2011) as it is thought to play a significant role in education.

Conclusion

The literature review provided the history of assessments worldwide and within the context of South Africa, as well as the current status of assessments. As previously stated, many children needing psycho-educational evaluation services do not obtain them, with attentional or learning challenges going undiagnosed and untreated (Wright, 2020). Limited access to convenient services owing to structural inequalities is one of the challenges to children obtaining mental health and learning needs evaluation and treatment (Wright, 2020). Current gaps were indicated. There is a void in the country's development and improvement of psychological assessments. As a result, practitioners have no alternatives but to use the assessments available despite all the concerns mentioned (Abdool Gafoor et al., 2021). As a result, research on cognitive assessment tools, such as the WISC-V and the SSAIS-R, is needed in South Africa's under-resourced communities.

These findings will be helpful as they look for equitable cognitive assessments for children from under-resourced backgrounds. Equity is significant in places like South Africa, where inequitable social conditions impact children's cognitive aptitude and give those raised in privileged environments an unfair advantage, eventually cementing disparities (Cockcroft et al., 2016). The overarching values of reliability, validity, and fairness are implicit throughout (Muleya et al., 2017). Contextual factors could influence test applicability; learners test taking skills/familiarity, prior learning (crystalized intelligence), and cognitive abilities (constructs of intelligence, i.e., fluid intelligence) (van der Merwe et al., 2022).

Practitioners need to consider these factors, besides learners' ethnicity, quality of education, and socioeconomic status, when developing or interpreting results to make accurate diagnoses and develop suitable interventions (van der Merwe et al., 2022). In the next chapter, the administrative process, methods employed, and the instruments used in this study will be focused on in more depth.

Chapter 3: Methods

This study aimed to contribute to South African research investigating how the WISC-V and SSAIS-R can be considered valid and reliable for use in South Africa. As such, it aimed to investigate the psychometric properties of these measures in a sample of South African children from an under-resourced background.

Given that this is a study of limited scope, the focus fell on selected verbal subtests and an investigation into their internal consistency reliability and concurrent validity. In addition, the study also aimed to determine whether there are any statistically significant differences between participants' performance on these selected subtests to establish which subtests were more suitable for use with this sample of children.

Research Design and Methods

Given the aims of the study and the research questions, it was situated in a non-experimental, within-group, correlational research design with quantitative methods employed to collect and analyze numerical data. Non-experimental research is often used in the Social Sciences and refers to research that is not experimental and does not allow for the manipulation of variables (Reio, 2016).

The current research focused on the statistical relationship between the participants' assessment results, as reflected in their scores on the selected verbal subtests, and was thus non-experimental as it did not involve the manipulation of the scores that they obtained (Price, 2012). Instead, in the context of this study, these scores were compared and correlated to determine which individual intelligence measure is more suitable and whether they yield similar results as they claim to measure the same constructs. Additional attribute variables that could not be manipulated included the participants' socioeconomic status, race, gender, English language proficiency, and personal characteristics, as these are attribute variables (Cook & Cook, 2008), and it is unethical to manipulate them (Reio, 2016).

The strengths of non-experimental research are that it is easy and cheaper to perform, and the results can be used for recommendations and to foster future experimental

research. However, some limitations include that internal validity threats cannot be eliminated. The research design is not considered 'a true research design' as it does not support testing for cause-and-effect relationships (Reio, 2016).

As mentioned, the study was a within-group study. Each participant was assessed on both individual intelligence measures (Charness et al., 2012; Lambdin & Shaffer, 2008). Thus, only one group of participants completed the selected subtests from both assessment measures. There are no comparisons between different groups; only the variables under investigation were compared and correlated. The main advantage of a within-group study is that it uses the same participants in all different conditions. Therefore there is no risk that the participants in one group receive substantially different treatment or interventions from the participants in another group (Gravetter et al., 2018). In addition, it allowed control over extraneous variables such as race, gender, age, and English language status. Some limitations of a within-group study are potential changes in participants' behavior, changes in their attitude from the first assessment to the second, and boredom and tiredness.

A wide range of participant characteristics influenced the validity and reliability of individual intelligence measures and could not be controlled for in this study. Characteristics include the ability to concentrate, mood swings, physical health, emotional distress, family problems, fatigue, competitiveness, unfamiliarity with the context, lack of test-wiseness or test sophistication, and motivation (Muleya et al., 2017).

A correlational approach assesses whether two variables have a link (Gravetter et al., 2018). The researcher's goal was not to demonstrate a cause-and-effect relationship between the variables (Gravetter et al., 2018) but to investigate the extent to which the variables are related or associated (Cook & Cook, 2008). Moreover, the researcher aimed to establish concurrent and internal consistency reliability of the WISC-V and SSAIS-R verbal subtests. The researcher measured the two variables and assessed their relationship without attempting to control extraneous variables (Jan, 2020).

Fifty-eight (N=58) learners were assessed once on the selected WISC-V subtests and once on the SSAIS-R verbal subtests. Statistical analyses then compared the participants' results on these subtests, allowing the researcher to compare their assessment results and investigate potential correlations and statistically significant differences. As such, the study followed a quantitative approach, and data was collected by administering the subtests and scoring them to obtain numerical data (Gravetter et al., 2018). A quantitative approach allowed for an objective and replicable process. The test scores in numerical data were then statistically computed and analyzed.

Sampling

This research study conducted a within-group analysis of the results obtained by learners on the WISC-V and SSAIS-R, which investigated the applicability of the selected verbal subtests from these two measures in a sample of children from an under-resourced South African context. The participants were therefore selected and recruited for participation. A purposive, non-probability sampling approach was used. Non-probability sampling refers to selecting participants based on subjective judgment and not by random selection. In contrast, purposive sampling means that the researcher chose only participants who met specific inclusion criteria related to the study's aims (Roberts, 2016). Although more cost and time effective, this method is based on the researcher's preconceived notions and is not a scientific method of data collection (Jan, 2020).

Nonetheless, a purposive, non-probability sampling approach was utilized to sample 58 (N=58) participants. Forty (n=40) participants were from two under-resourced mainstream schools in Gauteng. Twenty-five (n=25) learners were sampled from one school, and fifteen (n=15) were sampled from the other. The participants were also selected because they were in the intermediate phases of their schooling. For the study, 'under-resourced schools' refer to schools that fall in the first quantile.

Public schools in South Africa are divided into five quantiles based on unemployment rates and the literacy rate in the community where the school is located (van Dyk & White,

2019). Quantile 1 schools are non-fee-paying and represent the poorest of schools in the country that receive more funding from the government (Ogbonnaya & Awuah, 2019). The schools were selected according to this specific inclusion criteria- quantile 1 primary schools and schools that fell under other quantiles were not considered. Due to time constraints and a lack of participants from the schools that were approached, additional participants from two children's homes in Gauteng were also sampled using non-probability sampling. Eight (n=8) participants were sampled from one children's home, and 10 (n=10) were sampled from another. As highlighted, the focus of the study was on under-resourced South African backgrounds, and the participants who were selected and participated from these homes came from under-resourced backgrounds where they faced difficulties like poverty, illnesses, and lack of nutrition (Perumal & Kasiram, 2014), making the sample suitable for the study. In addition, the children from the children's homes, who participated in the study, were in mainstream schools and were in the intermediate phase.

The participants were also selected to participate based on the notation that they were in grades 4 to 7 (intermediate phase) and attended mainstream schools. Children in these grades have had some formal exposure to English as their language of learning and teaching, which should have assisted them in following the instructions while administering the selected verbal subtests. Both the WISC-V and SSAIS-R are available in English and were administered in English. Mainstream schools were also chosen in the study as the children in mainstream schools do not present with significant learning difficulties that warrant placement in remedial and special education. However, given the inclusive nature of the South African education system, the presence of learning difficulties could not be eliminated from the sample.

The sample may not be representative of the entire population of South Africa as only two under-resourced schools in Gauteng and two children's homes formed part of the study. However, the sample was chosen as they came from an under-resourced background, which was necessary given the aims of the study. The majority of the

participants also spoke English as a second language. The sample will be discussed in more depth in Chapter 5 under the descriptive statistics section.

Settings

1. School 1

The first public school is based in a township in Gauteng. The township is characterized by overpopulation, sewage, poor service delivery, poor environmental conditions, and high crime rates. The school is a section 21 school, where the government allocates funds to cater to those children in need of resources. Things like stationery, clothes, and textbooks are thus provided to children. The school has over 1300 pupils and just over 30 teachers (the ratio of pupil to teacher is 43:1). The school is a quintile 1 (non-fee paying) school, which was required for the study.

2. School 2

The second school is also a quantile 1 and section 21 school. The second school is a farm school located in a rural area in Gauteng. The area is characterized by poor roads and infrastructure, lack of resources, poverty, limited availability of bilingual providers, and lack of activities. The school has over 300 learners and only eight teachers (the pupil-to-teacher ratio is 38:1).

3. Children's Home 1

The first children's home in Gauteng is home to about 65 children. The children are multi-racial and multicultural and come from diverse backgrounds. It provides care to children from unfortunate circumstances who have suffered trauma in severe neglect, physical abuse, emotional abuse, or sexual abuse. It has over 50 staff members who provide care to the children in their different roles. The children that participated attend mainstream schools in the area and are in grades 4 to 7.

4. Children's Home 2

The second children's home, also located in Gauteng, was home to over 120 children with about 22 mothers/caregivers at the time of the study. It cares for orphans and

chronically ill children, primarily due to HIV. Most children are black, and the home is thus not as racially and culturally diverse as those mentioned earlier. However, most children also come from extreme poverty and unfortunate circumstances. As highlighted, only children that met the sampling criteria stipulated above were invited to participate

Instruments

The study focused on selected verbal subtests from the WISC-V and SSAIS-R, including Similarities, Vocabulary, and Comprehension. The study compiled the data through a self-designed biographical questionnaire and the participants' test scores. Once administered, the participant's test responses were marked and scored. The scores were then converted from raw scores to scaled scores per the norms provided in each intelligence measure.

The administration of the subtests took approximately 25 minutes to complete. When the tests were presented, they were switched around to account for any possible learning effects caused by the presentation order and minimize the practice effect (Cockcroft & Blackburn, 2008). Thus, for some participants, the selected WISC-V verbal subtests were administered first, followed by the selected SSAIS-R subtests, while for others, the SSAIS-R subtests were administered first.

1. Biographical Questionnaire (Appendix F)

A biographical questionnaire (see Appendix F) was formulated for the study to collect information about the participants and potential extraneous variables that could impact the results. Variables are participants' grades, gender, first, second, and additional languages, exposure to English, parents'/caregivers' level of education, and any disorders or difficulties (learning, language, emotional, physical, and behavioral) that could potentially impact their learning. All these variables could impact a child's assessment results and, thus, were essential to note in the sample discussion.

2. *WISC-V*

The WISC-V is a test battery designed to assess the intellectual abilities of children and adolescents aged 6 to 16 years and 11 months old (Pauls & Daseking, 2021). This test battery allows practitioners to depict children's intellectual functioning in different domains (i.e., verbal comprehension, visual-spatial, fluid reasoning, working memory, and processing speed) (Becker et al., 2021).

As mentioned, selected VCI subtests—Vocabulary, Comprehension, and Similarities were administered to the participants. In the WISC-V, Wechsler (2014) states that the Vocabulary subtest requires the child to define a word and measures a child's verbal intelligence, verbal concept formation, word knowledge, crystallized intelligence, receptive language, verbal expression, and long-term memory. The Comprehension subtest requires a child to answer questions verbally based on their social interactions and general knowledge. The subtest measures a child's ability to use experience in answering novel questions and their ability to demonstrate practical judgment and knowledge, verbal reasoning, verbal expression, and verbal comprehension. It measures a child's social reasoning skills, practical judgment in social circumstances, verbal reasoning and conceptualization, crystallized intelligence and general knowledge, and long-term memory (Wechsler, 2014). Lastly, the Similarities subtest requires a child to describe how two words with commonalities are similar. The subtest measures a child's verbal abstract reasoning, verbal concept formation, logical thinking and reasoning, long-term memory, associative thinking, and word knowledge (Wechsler, 2014).

3. *SSAIS-R*

The SSAIS-R was created to create a differentiated profile of intelligence-related cognitive abilities. It was developed for South African children aged 7 to 16 years 11 months who spoke English and Afrikaans as a first language. The test's norms were derived from a group of children who were white, colored, and Indian (Van Eeden, 1997).

The literature states that the verbal, non-verbal, and full-scale scores are calculated using nine subtests of the SSAIS-R (Van Eeden, 1997). Two additional subtests can be administered to obtain further information on children's intellectual functioning and cognitive abilities. Three verbal scale subtests were administered- Vocabulary, Comprehension, and Similarities. The Vocabulary subtest measures a child's verbal intelligence, receptive language, and verbal learning ability by having them choose one picture from a series that matches a spoken word (Van Eeden, 1997). The Similarities subtest assesses a child's capacity to build associations and develop concepts, grasp the resemblance concept, and generalize, categorize, and summarize (Van Eeden, 1997). This subtest is done by asking test-takers to verbalize the similarities between two spoken things (Cockcroft & Blackburn, 2008). Laher & Cockcroft (2013) added that the Similarities subtest measures a child's verbal abstract reasoning, verbal concept formation, long-term memory, logic and associative thinking, word knowledge, logic reasoning, and long-term memory. The Comprehension subtest requires the child to answer questions about everyday social situations (Van Eeden, 1997). The latter test measures a child's social reasoning skills, general knowledge, long-term memory, logical reasoning, practical judgment in social circumstances, verbal reasoning, and crystallized intelligence (van Eeden, 1997). Potential disorganized responses on the Comprehension subtests, such as confusion, loss of focus, irrationality, irrelevant answers, or abnormal language use, are all valuable indicators of disordered thinking's presence, severity, and circumstances (Bram, 2017). According to Aubry & Bourdin (2018), a child's comprehension-knowledge (Gc) ability is assessed using Similarities, Vocabulary, and Comprehension subtests.

Table 3. 1*WISC-V and SSAIS-R Verbal Subtests and the constructs they measure*

WISC-V	SSAIS-R
<i>Similarities</i>	<i>Similarities</i>
Verbal abstract reasoning, verbal concept formation, logic thinking and reasoning, long-term memory, associative thinking, word knowledge, verbal expression	Verbal abstract reasoning, verbal concept formation, long-term memory, logic and associative thinking, word knowledge, logic reasoning, long-term memory
<i>Vocabulary</i>	<i>Vocabulary</i>
Verbal intelligence, verbal concept formation, word knowledge, crystallized intelligence, receptive language, verbal expression, and long-term memory.	Verbal intelligence, word knowledge, receptive language, verbal learning ability, crystallized intelligence, and long-term memory
<i>Comprehension</i>	<i>Comprehension</i>
Social reasoning skills, practical judgment in social circumstances, verbal reasoning and conceptualization, verbal expression, crystallized intelligence, general knowledge, long-term memory	Social reasoning skills, general knowledge, long-term memory, logical reasoning, practical judgment in social circumstances, Verbal reasoning, crystallized intelligence

The aim of comparing the subtests was to compare the participants' performance on the selected subtests and investigate their suitability for a sample of South African children, predominantly ESL, from an under-resourced background. Also, concurrent validity could be investigated by correlating the participants' performance on the selected subtests

(Taherdoost, 2016). In investigating reliability, the researcher looked at whether there was consistency within the measures to measure what they intended to (Drost, 2011). Thus, a non-experimental within-group, the correlational research design was used.

Procedure

Data collection only commenced upon receiving ethical clearance from the Human Research Ethics Committee (HREC) - Medical at the University of the Witwatersrand (Protocol Number M220531) (See Appendix G, H, and I). Consent was obtained from the Department of Education in Gauteng (see Appendix B) to collect data in quantile 1 schools in Gauteng. Written consent was also obtained from the schools' principals (see Appendix C), parents/legal guardians of the participants (see Appendix D), and then assent from the participants (see Appendix J). Concerning the children's homes, consent was obtained from the legal guardians (see Appendix E), and assent was obtained from the participants.

After receiving consent and assent from all parties, the subtests were administered to the participants. School psychologists and relevant parties (i.e., educational administrators and policymakers) are starting to address major issues concerning how to best administer educational and psychological treatments and assessments to children in the context of the COVID-19 pandemic, which occurred at the time of this research study and data collection (Farmer et al., 2020). Given the national COVID-19 constraints during data collection, the subtests were administered face-to-face and on paper. COVID-19 regulations and protocols were adhered to, including the participants and the researcher wearing masks during data collection and the sanitization of the testing environment. The participants did not touch any test material directly to avoid possible infections. The assessment results were statistically analyzed, and the research questions posed by the study were answered.

Data Analysis

The data obtained from the test results were analyzed statistically using the IBM SPSS Statistics package, version 27. Descriptive and inferential statistics were run.

Descriptive statistics refers to the summarizing and describing of quantitative information in a meaningful way (Cook & Cook, 2008). Descriptive statistics were first employed in the description of the sample and were used to summarize, organize and simplify the data (Gravetter et al., 2018) by describing the sample and looking at the mean, standard deviation, maximum and minimum values as well as, the range for all the scores obtained from both tests. Standard deviation was used to calculate variability and how to spread up the scores in distribution (Gravetter et al., 2018). Standard deviation describes variability by measuring the distance from the mean, and the mean is the value that represents the average (Patel, 2009).

A Levene's Test for the Equality of Variance was conducted to investigate skewness and kurtosis. Based on these, the distribution of the data could be checked for normality. Inferential statistics are used to test hypotheses and make conclusions about the data collected using statistical tests (Cook & Cook, 2008). Inferential statistics were thus used to investigate statistically significant differences in the participant's performance on the selected subtests and the latter's internal consistency reliability and concurrent validity. Parametric statistics were run for this data set.

First, a paired t-test was used to compare the scores from the WISC-V and the SSAIS-R from the same group of individuals. This is often called the t-test for two related samples (Gravetter et al., 2018) and was used to investigate the significance of the differences in the participants' mean scores. Second, Pearson's correlation method investigated correlations between the participants' scores, and it "measures the degree and the direction of the linear relationship between the two variables" (Gravetter et al., 2018, p. 425).

Correlations are used to predict if two variables are known to be related in some way (Gravetter et al., 2018). Accordingly, a correlation shows how often variables are related and how strong the relationship is between the variables (Patel, 2009). Last, the internal

consistency reliability of the selected sample's subtests was investigated through a Spearman-Brown split-half formula/ split-half method.

Ethical Considerations

Ethical clearance was obtained from the University of the Witwatersrand's Human Research Ethics Committee – Medical, given that the children were below the age of 18 years- Protocol Number M220531 (see Appendixes G, H, I). The ethical principles that were adhered to include: informed and written consent, written assent, protection from harm, anonymity and confidentiality, consideration of risk and benefits, voluntary participation, the right to withdraw, and access to the results.

An information letter relating to the research study was issued to the Gauteng Department of Education. Written consent was obtained from them to access public, quantile 1 schools in the Gauteng province (see Appendix A). The information included details of the project, such as the aims of the project, duration, schools targeted, time frames, and researcher expectations.

Upon receiving permission from the Gauteng Department of Education (see Appendix B), a booklet with information about the research study and the aims thereof was issued to the school principals (see Appendix C). Subsequently, written consent was obtained from the principals of the two schools involved. The practice of getting written approval from an individual, a parent or legal guardian of a child, and a representative of any person incapable of providing consent to engage in psychological assessment, is known as informed consent (Laher & Cockcroft, 2013).

The information letters were also issued for the parents (see Appendix D) or legal guardians, as in the case of children's homes (see Appendix E). Written consent was also obtained from each participant's parents/legal guardians, as children are considered vulnerable. Lastly, the participants were required to give assent (see Appendix J) in written form after a participant information letter had been read and explained to them.

There were no foreseeable risks or benefits for partaking in this research study. The participants and their parents/legal guardians were notified that participation is entirely voluntary and that they can withdraw at any time.

Anonymity and confidentiality were ensured as no identifying details were requested. A challenge, however, was that data collection was face-to-face, and the researcher and supervisor also had knowledge of the schools and children's homes involved. However, these details have not been disclosed in this research report, where schools are referred to as School 1 and School 2, and the children's homes are similar to Children's Home 1 and Children's Home 2 and will be kept confidential at all times.

Further, once the participants' results were analyzed and converted to standard scores, only scores were captured on an Excel spreadsheet. All identifying information from the participants was removed to protect the anonymity and confidentiality of the schools, children's homes, and the participants. Being sensitive to the information gathered during evaluation procedures is crucial to avoiding injury (Laher & Cockcroft, 2013).

The raw data is kept in a locked cabinet, while the digital data is on a password-protected computer. The findings are published and discussed in this research report, which will be stored in the University of the Witwatersrand's main library and made available online on the WITS institutional repository environment on WIREDSpace, which stores all electronic copies of research reports, theses, and dissertations.

Schools, principals, children's homes, and parents/legal guardians were informed and advised that the data would be stored and used indefinitely for research. In addition to the research report, the findings may be used for other research activities, including publishing a chapter in a book, a peer-reviewed article, or a conference.

A summary of the results will be made available to the parents/legal guardians and the schools/children's homes upon request. However, parents/legal guardians were informed that only three subtests of the individual intelligence measures were conducted. Thus,

limited information on their children's cognitive and intellectual functioning is available, which cannot be used for diagnostic purposes.

Conclusion

The methodology section focused on the methods employed during the research, including the data collection and analysis used to answer the research questions. It also details the sampling methods, the context of the schools and children's homes, and the instruments administered. The chapter concludes with the ethical protocols to ensure ethical practices were used in the research process. In Chapter 4, the statistical results produced by IBM SPSS Statistics will be presented.

Chapter 4: Results

The statistical results of this study are presented in this chapter. First, the sample is described through descriptive statistics regarding age, gender, language, and the number of years the participants had been exposed to English. After that, parametric assumptions are discussed based on the data distribution, allowing the researcher to determine the most appropriate type of analysis to answer the study's research questions and support the data analysis through parametric statistics.

The inferential statistics that were run to answer the research questions are then discussed, starting with comparisons between the participants' results on the selected verbal subtests of the WISC-V and the SSAIS-R. First, a paired t-test was used to compare the scores from the WISC-V and the SSAIS-R from the same group of individuals. This was used to investigate statistically significant differences in the participants' mean scores on the selected verbal subtests. Second, Pearson's correlation method was used to investigate the degree of the linear relationship between the participants' scores and to investigate the concurrent validity. Lastly, the internal consistency reliability of the selected verbal subtests of the SSAIS-R and WISC-V was investigated through the Spearman-Brown split-half method.

Descriptive statistics

Descriptive statistics first allowed the researcher to describe the sample based on the data obtained from the biographical questionnaire. These descriptive statistics included the following: the age (in months) and the gender of the participants; the participants' first languages, second languages, and additional languages; and how long the participants had been exposed to English.

The ages of the participants ranged from 112 months (9 years and four months) to 182 months (15 years and two months). The average age was 150 months (12 years and six months). The age groups of the participants are appropriate for grades 4 to 7 according to South African standards. Table 4.1 reflects the descriptive statistics of the participants' ages.

Table 4. 1*Descriptive Statistics of the Participant's Age*

Age (Months)	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
	150.9	14.03	112	182

The next table (Table 4.2) reflects the descriptive statistics of the gender of the participants. As can be seen from Table 4.2. below, the majority of the participants, 65.5%, identified as female ($n = 38$), while 31% ($n = 18$) identified as male. Two participants (3.4%) preferred not to answer this question. In 2021, the female population in South Africa amounted to 30.5 million (51%), while the male population amounted to 29 million (49%) (Africa, 2022).

Table 4. 2*Descriptive Statistics of the Participants' Gender*

Gender	Frequency (n)	Percentage (%)
Female	38	65.5
Male	18	31.0
Prefer not to say	2	3.4
Total	58	100

A significant number of participants were in Grade 7 (58%), as indicated in Table 4.3, which reflects the descriptive statistics of the participants' grades.

Table 4. 3*Descriptive Statistics of the Participants' Grades*

Grade	Frequency (n)	Percentage (%)
4	8	13.8
5	6	10.3
6	10	17.2
7	34	58.6
Total	58	100

The language diversity of South Africa was reflected in the language profile of the participants. The 'first language' profile, as seen in Table 4.4 below, indicated that over 90% of the participants spoke an African language as a first language. According to Africa (2022), the languages most often spoken by people in South African homes were isiZulu (approximately 23 %), isiXhosa (approximately 16 %), and Afrikaans (approximately 13%). English is the sixth most common language in South Africa (approximately 10%). Other languages include Tswana and Sesotho (approximately 8%), Tshivenda and Siswati (approximately 3% and Ndebele (approximately 2%).

*first language***Table 4. 4***Descriptive Statistics of the Participants' First Language*

Language	Frequency (n)	Percentage (%)
English	3	5.2
isiZulu	23	39.7
Afrikaans	2	3.4
Setswana	19	32.8
Xhosa	5	8.6
Sesotho	3	5.2
Sepedi	2	3.4
Venda	1	1.7
Other	0	0
Total	58	100

Table 4.5 indicates that most participants (75%) spoke English as a second language, which could be attributed to the fact that English as a subject is a requirement for South African schools (Heugh, 2013).

Table 4. 5

Descriptive Statistics of the Participants' Second Language

Language	Frequency (n)	Percentage (%)
English	44	75.9
isiZulu	5	8.6
Afrikaans	1	1.7
Setswana	4	6.9
Xhosa	0	0
Sesotho	2	3.4
Sepedi	1	1.7
Venda	0	0
Other	0	0
Missing	1	1.7
Total	58	100

Table 4.6 depicts other languages that the participants are exposed to. Although both English and Zulu were frequent (13.8%), a significant percentage (34.5%) indicated they were not frequently exposed to any other language.

Table 4. 6*Descriptive Statistics of the Participants' Other Languages*

Language	Frequency	Percentage (%)
English	8	13.8
isiZulu	8	13.8
Afrikaans	0	0
Setswana	4	6.9
Xhosa	1	1.7
Sesotho	7	12.1
Sepedi	7	12.1
Venda	2	3.4
Other	1	1.7
None	20	34.5
Total	58	100

The number of years the participants have been exposed to English is reflected in the following tables (Table 4.7); however, 29.3% of the parents/caregivers could not recall how long the participants had been exposed to English or possibly preferred not to answer this question.

Table 4. 7*Descriptive Statistics of the Number Of Years the Participants have been exposed to English*

Years	Frequency	Percentage (%)
3	1	1.7
4	6	10.3
5	6	10.3
6	8	13.8
7	10	17.2
8	4	6.9
9	2	3.4
10	1	1.7
11	1	1.7
12	1	1.7
13	1	1.7
14	1	1.7
None	17	29.3
Total	58	100

The following section will look at the descriptive statistics run to understand better the participants' scores on the WISC-V and SSAIS-R verbal subtests selected for inclusion in this study.

Table 4. 8*Descriptive Statistics and Normality of the variables under investigation*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	Skewness	Kurtosis
SSAIS-R							
Vocabulary	58	5.60	2.094	1	9	-.305	-.372
SSAIS-R							
Similarities	58	7.16	2.315	0	11	-.494	.524
SSAIS-R							
Comprehension	58	2.69	1.808	0	9	.809	1.675
WISC-V							
Vocabulary	58	2.74	1.897	1	8	.929	-.083
WISC-V							
Similarities	58	4.55	2.097	1	9	.543	-.439
WISC-V							
Comprehension	58	2.64	1.907	1	7	.778	-.672

Several common assumptions were met in order to run parametric statistical analyses. The data for the current study was subtest scores and thus numerical, meeting the assumption of a Pearson's correlation and paired sample t-test (Gravetter et al., 2018).

No outliers were noted in the data. For the skewness of the data to indicate normal distribution, coefficients should fall between the ranges -1 and 1. As noted in Table 4.8, the coefficients fall within these ranges, and thus the data were distributed normally (Kim, 2013). The kurtosis of the data was also calculated. It refers to a measurement of the peak of the data and whether the data is heavily or lightly tailed (Kim, 2013).

The kurtosis values of the data set (see Table 4.8) indicated that these fell within the ranges -2 and 2., further indicating that the data was not heavily skewed. The central limit theorem suggests that the larger a sample is, the more normally distributed it will be

(Fischer, 2011). This sample size is over 30 ($N = 58$) and can be considered an appropriate sample size, making it more likely that the data will be normally distributed. Thus, the data's sample size, kurtosis, skewness, and numerical nature supported parametric, as opposed to non-parametric statistics.

Inferential statistics

Inferential statistics allowed the researcher to investigate and compare the participants' performance on the selected WISC-V and SSAIS-R verbal subtests, as well as these subtests' internal consistency reliability and concurrent validity in this sample of South African children from an under-resourced background.

As mentioned above, the data successfully met the assumptions for parametric statistics to be utilized. As such, paired t-tests were run to compare the participants' results on the selected verbal subtests and investigate whether or not there were statistically significant differences in their results. In addition, it also supported the utilization of Pearson's correlation coefficient to investigate the subtests' concurrent validity in this sample. Finally, the Spearman-Brown split-half formula was used to investigate the internal consistency reliability of the subtests.

Research Question 1: *Are there statistically significant differences in the participants' scores on the selected verbal subtests of the WISC-V and the SSAIS-R?*

The paired t-test was used to investigate whether the subtests yielded significantly different results statistically. The test was appropriate for this study as it compared the means of the participants' subtests scores. More specifically, it was used to determine whether the results of the subtests that measure similar constructs are equal in the same population. The results of the paired t-test test for the Vocabulary subtests are presented in Table 4.9 below.

Table 4. 9*Paired Statistics and Paired t-test results of the SSAIS-R and WISC-V Vocabulary Subtests*

SSAIS-R Vocabulary			WISC-V Vocabulary			95% Confidence Interval of the Difference		<i>t</i>	<i>df</i>	Significance	
<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	Lower	Upper			One-Sided <i>p</i>	Two-Sided <i>p</i>
5.60	2.094	58	2.74	1.897	58	2.328	3.396	10.737	57	<.001	<.001

Table 4. 10*Paired Sample Effect Sizes- Vocabulary subtests*

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
SSAIS-Vocab	Cohen's d	2.030	1.410	1.042	1.771
- WISC-Vocab	Hedges' correction	2.057	1.391	1.028	1.748

The paired sample t-test results indicated a statistically significant difference between the participants' mean scores on the SSAIS-R and WISC-V Vocabulary subtest. The participants' mean SSAIS-R scores were significantly higher than their mean WISC-V scores ($t_{57} = 10.737$; $p < .001$). These results indicate that the Vocabulary subtests did not produce comparable results in a sample of South African, predominantly ESL, children from an under-resourced background, even though the subtests are said to measure similar constructs from a theoretical framework. The results of the paired sample t-test for the Comprehension subtests are presented in the following table:

Table 4. 11

Paired Statistics and Paired t-test results of the SSAIS-R and WISC-V Comprehension subtests

SSAIS-R Comprehension			WISC-V Comprehension			95% Confidence Interval of the Difference		<i>t</i>	<i>df</i>	Significance	
<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	Lower	Upper			One-Sided <i>p</i>	Two-Sided <i>p</i>
2.69	1.808	58	2.64	1.907	58	-.468	.572	.199	57	.421	.843

Table 4. 12

Paired Sample Effect Sizes- Comprehension Subtests

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
SSAIS-Comp -	Cohen's <i>d</i>	1.977	.026	-.231	.283
WISC-V-Comp	Hedges' correction	2.004	.026	-.228	.280

The paired t-test results showed no significant difference between the participants' mean scores on the SSAIS-R Comprehension subtest and the WISC-V Comprehension subtest. Thus, the results indicate that these subtests did not render statistically meaningful differences in the participants' performance but yielded similar results ($t_{57} = .199$; $p = .843$). Thus, there does not appear to be a significant difference in the participants' performance on the Comprehension subtests, which measure similar constructs from a theoretical point of view, even though the individual assessment measures were initially developed and normed for children from different contexts. The results of the paired t-test for the Similarities subtests are presented in the next table.

Table 4. 13*Paired Statistics and Paired t-test results of the SSAIS-R and WISC-V Similarities Subtests*

SSAIS-R Similarities		WISC-V Similarities		95% Confidence Interval of the Difference				<i>t</i>	<i>df</i>	Significance	
<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	Lower	Upper			One-Sided <i>p</i>	Two-Sided <i>p</i>
7.16	2.315	58	4.55	2.079	58	2.089	3.118	10.141	57	<.001	<.001

Table 4. 14*Paired Effect Sample sizes- Similarities Subtests*

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
SSAIS-Sim - WISC-Sim	Cohen's d	1.955	1.332	.974	1.683
	Hedges' correction	1.981	1.314	.961	1.661

The paired sample t-test results above indicate a significant statistical difference in the participants' mean scores on the SSAIS-R Similarities subtest compared to the WISC-V Similarities subtest ($t_{57} = 10.141$; $p < .001$). These results, therefore, indicate that even though these subtests measure similar constructs from a theoretical viewpoint, the participants' mean scores are not comparable, with the participants obtaining a significantly higher mean score on the SSAIS-R Similarities subtest. The above results noted significant differences between participants' performance on the SSAIS-R and WISC-V Vocabulary and Similarities subtests. This sample of participants was from an under-resourced background, who speak English primarily as their second language, performing significantly lower on these WISC-V subtests.

Research Question 2: *Are the selected WISC-V and SSAIS-R verbal subtests valid in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?*

Pearson's correlation coefficients were used to investigate the degree of the linear relationship between the verbal subtest scores of the WISC-V and SSAIS-R. Coefficients r -values (Pearson's correlation in Table 4.15) and p -values (Sig. 2 tailed in Table 4.15) were used to analyze the results. The r -values fall between -1 and 1, with values closer to 1 indicating a positive relationship and values closer to -1 indicating a negative relationship. Also, the closer the values are to -1 and 1, the stronger the relationship, with values closer to 0 indicating a weaker relationship.

Table 4. 15*Correlations between the SSAIS-R and WISC-V Selected Subtests*

		SSAIS- Vocab	SSAIS- Comp	SSAIS- Sim	WISC- Vocab	WISC- Sim	WISC- V- Comp
SSAIS- Vocab	Pearson	1	.453**	.498**	.486**	.470**	.324*
	Correlation						
	Sig. (2- tailed)		<.001	<.001	<.001	<.001	.013
	<i>N</i>	58	58	58	58	58	58
SSAIS- Comp	Pearson		1	.514**	.447**	.522**	.435**
	Correlation						
	Sig. (2- tailed)			<.001	<.001	<.001	<.001
	<i>N</i>		58	58	58	58	58
SSAIS- Sim	Pearson			1	.421**	.609**	.406**
	Correlation						
	Sig. (2- tailed)				.001	<.001	.002
	<i>N</i>			58	58	58	58
WISC- Vocab	Pearson				1	.633**	.536**
	Correlation						
	Sig. (2- tailed)					<.001	<.001
	<i>N</i>				58	58	58
WISC-Sim	Pearson					1	.520**
	Correlation						
	Sig. (2- tailed)						<.001
	<i>N</i>					58	58
WISC-V- Comp	Pearson						1
	Correlation						
	Sig. (2- tailed)						
	<i>N</i>						58

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

As can be seen from Table 4.15, the SSAIS-R and WISC-V Vocabulary subtests showed a moderately positive relationship ($r = .486$, $p < .001$). In addition, the SSAIS-R Vocabulary subtest also showed a moderately positive relationship to the WISC-V

Similarities subtest ($r = .470, p < .001$) but a slightly weaker relationship to the WISC-V Comprehension subtest ($r = .324, p = .013$). The SSAIS-R Comprehension subtest showed moderately positive relationships to the WISC-V Vocabulary ($r = .447, p < .001$), WISC-V Comprehension ($r = .522, p < .001$), and WISC-V Similarities ($r = .435, p < .001$) subtests. Finally, the SSAIS-R Similarities subtest showed a strong positive relationship to the WISC-V Similarities subtest ($r = .609, p < .001$) and moderately positive relationships to the WISC-V Comprehension ($r = .406, p = .002$) and WISC-V Vocabulary ($r = .421, p = .001$) subtests.

Table 4.15 also indicates moderately positive relationships among the selected verbal subtests of the SSAIS-R; Vocabulary and Comprehension ($r = .453, p < .001$), Vocabulary and Similarities ($r = .498, p < .001$), and Similarities and Comprehension ($r = .514, p < .001$). While moderately positive relationships were also indicated among the WISC-V selected verbal subtests; Vocabulary and Comprehension ($r = .530, p < .001$), Vocabulary and Similarities ($r = .663, p < .001$), and Similarities and Comprehension ($r = .520, p < .001$).

The p -values in Table 4.15 represent the statistical significance and refer to whether the relationships between the subtests' results are due to underlying factors or by chance (Dahiru, 2011). A p -value of less than 0.05 is statistically significant. The p -values of the data set, as seen in Table 4.15 and the descriptions above, are all below 0.05, indicating significant correlations.

These results confirm the concurrent validity of the selected subtests that measure similar underlying abilities in this sample of predominantly ESL participants from an under-resourced background. In addition, the correlations shown among the subtests confirm the measurement of a single, underlying construct, which in this instance would be the participants' verbal skills.

Research Question 3: *Are the selected WISC-V and SSAIS-R verbal subtests reliable in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?*

The reliability of the WISC-V and SSAIS-R verbal subtests was investigated through the Spearman-Brown split-half formula. As seen in the table below, the results indicated a coefficient of over .90 for the WISC verbal subtests and thus indicated a high internal consistency reliability in these subtests. A value closer to 1 has a higher internal consistency reliability (Gravetter et al., 2018).

Table 4. 16

Internal Consistency Reliability between the Selected Verbal Subtests of the WISC-V

Subtest	<i>N</i>	Nr of Items	Spearman-Brown Split-Half Reliability
Vocabulary	58	29	.941
Similarities	58	23	.906
Comprehension	58	19	.903

Table 4.17 below presents the results of the Spearman-Brown split-half reliability scores for the SSAIS-R verbal subtests. In contrast to the WISC-V subtests, the SSAIS-R Vocabulary and Similarities subtests showed a moderate internal consistency reliability (Vocabulary = .792 and Similarities = .721), while the SSAIS-R Comprehension subtest (.645) showed a weak internal consistency reliability in this sample (Sattler, 2014).

Table 4. 17

Internal Consistency Reliability between the Selected Verbal Subtests of the SSAIS-R

Subtest	<i>N</i>	Nr of Items	Spearman-Brown Split-Half Reliability
Vocabulary	58	50	.792
Similarities	58	15	.721
Comprehension	58	15	.645

Conclusion

Based on the above, although the SSAIS-R and WISC-V subtests measure the constructs it intends to measure in this sample of South African, predominantly ESL, children from an under-resourced background, the SSAIS-R would not do so as consistently as the WISC-V subtests would. However, cognizance must be taken that the participants in this sample did significantly better on the SSAIS-R Vocabulary and Similarities subtests when compared to their WISC-V counterparts. In contrast, their performance on the two Comprehension subtests was more similar and not statistically significantly different. These findings will be discussed within the relevant literature in Chapter 5.

Chapter 5: Discussion

For children in low or middle-income countries, attaining their full potential is often impacted by socioeconomic issues and the scarcity of valid and reliable individual intelligence measures to assess their intellectual functioning and abilities and identify difficulties that can be addressed and supported (Rubio-Codina & Grantham-McGregor, 2020). From professional experience, I have noted that practitioners use the SSAIS-R rather than the WISC-V in assessing the intellectual abilities of children from more under-resourced backgrounds who predominantly speak English as their second language. This is based on the assumption that the SSAIS-R is a South African normed individual intelligence measure and will thus provide more reliable and valid results, even though we do not have sufficient research to support this.

As noted, the primary aim of this study was to investigate and compare the performance of a sample of South African children, predominantly ESL, from an under-resourced background on selected verbal subtests of the WISC-V and the SSAIS-R. The study also intended to investigate the psychometric properties of these verbal subtests from the WISC-V and SSAIS-R when administered to a sample of South African, predominantly ESL children from an under-resourced background. In doing so, the study investigated the concurrent validity of selected WISC-V and SSAIS-R verbal subtests. In addition, the study also aimed to investigate the internal consistency reliability of these verbal subtests in a sample of South African children from an under-resourced background. The findings of the research study will now be discussed based on the research questions.

Discussion of the results

Research Question 1: *Are there statistically significant differences in the participants' scores on the selected verbal subtests of the WISC-V and the SSAIS-R?*

The first research question, posed at the study's outset, aimed to investigate and compare the performance of a sample of South African, predominantly ESL children from an under-resourced background on selected verbal subtests from the WISC-V and SSAIS-R.

The differences in mean scores of the selected verbal subtests will be used to explain the differences. In addition, the results of the paired sample t-tests will be used in order to determine whether the subtests yielded similar results.

The results presented in Chapter 4 indicated that the participants obtained a mean score of 5.60 ($SD = 2.09$) on the SSAIS-R Vocabulary subtest. Using criteria as set out by Pearson Assessment support (2010) in the interpretation of these scores, this score would be considered a weakness. The mean WISC-V Vocabulary score would be considered an unusual weakness as the participants obtained a mean score of 2.72 ($SD = 1.90$). For the Comprehension subtest of the SSAIS-R, the participants obtained a mean score of 2.70 ($SD = 1.81$). The participants obtained a mean score of 2.64 ($SD = 1.91$) for the WISC-V Comprehension subtest. The Comprehension subtests' scores fell below average and would be considered exceptional weaknesses. For Comprehension subtests, the mean scores for the SSAIS-R and WISC-V yielded similar scores. However, the SSAIS-R scores were slightly higher.

Lastly, for the SSAIS-R Similarities subtest, the participants obtained a mean score of 7.16 ($SD = 2.32$) and a mean score of 4.80 ($SD = 2.08$) for the WISC-V Similarities subtest. These scores fell in the below-average ranges and would be considered weaknesses. Based on these results, there is concern about the participants' verbal skills, as the results indicate that the participants experienced difficulty in completing the selected verbal subtests of both the WISC-V and SSAIS-R. The participants indicated weakness as the scores fell in the below-average ranges; however, the results also indicated significant differences in the mean scores of the WISC-V and SSAIS-R Vocabulary and Similarities subtests the participants of this study obtained.

While the participants generally obtained higher mean scores on the SSAIS-R verbal subtests when compared to the WISC-V verbal subtests, significant differences were noted in their performance on the Similarities and Vocabulary subtests. In this regard, Lervåg et al. (2019) stated that even if an assessment measure taps the same cognitive capacities, the

degree to which the tasks performed in a given assessment measure are experientially novel to the child may vary by culture. Even though the SSAIS-R was not standardized for all South African children, it has still been standardized and normed in the South African context (Cockcroft & Blackburn, 2008), which can explain the higher scores obtained by the children on the SSAIS-R verbal subtests. Being standardized in South Africa, these subtests are more likely to include concepts and items familiar to South African children than the WISC-V verbal subtests. Thus, even though the SSAIS-R has not been standardized for black South African children, the content in the assessment measure may be more relevant than the content from other internationally standardized assessment measures, i.e., WISC-V.

As noted, non-relevant material is more easily forgotten than culturally significant content. Based on the word frequency effect, individuals recall, recognize, and perceive words they are familiar with more easily than unfamiliar ones (Blumenau & Broom, 2011). Some words and content in the SSAIS-R may be more relevant than in the WISC-V, which remains a Westernized assessment measure. Higher scores would thus depend on proficiency in a certain dialect of English as well as exposure to Western culture (Blumenau & Broom, 2011).

Lower scores on the WISC-V subtests can also be attributed to the challenges faced in under-resourced contexts and the impact these challenges have on children's performance on individual intelligence measures. The subtests of the WISC-V were standardized for an American sample (Flanagan & Alfonso, 2017) and have never been standardized for a South African population, nor have any previous versions of the test been standardized in South Africa (Canivez et al., 2020; Laher & Cockcroft, 2013).

As noted, poor teacher training; low quality of schooling; overpopulation; poor diet; lack of parent education, and environmental influences are some of the problems faced by children in under-resourced contexts and have been found to impact performance on individual intelligence measures negatively (Cockcroft et al., 2016; Foxcroft, 2004;

Hernández et al., 2017; Laher & Cockcroft, 2013; Santiago et al., 2013). This negative impact automatically disadvantages most South African children, mainly when assessed using internationally standardized and normed assessment measures. In addition, most cognitive assessments are written in English, which is still a barrier for most South African children who are not fluent or rather exposed to it (Zulu, 2019). The WISC-V was normed for English first language speakers (Weschler, 2014), and most South African children speak English as a second or additional language. This was also noted in the current study (Chapter 4), where most participants spoke English as a second language. The results highlight practitioners' importance in practicing caution when administering and interpreting internationally developed measures.

Research Question 2: *Are the selected WISC-V and SSAIS-R verbal subtests valid in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?*

In the present study, construct validity in the selected WISC-V, and SSAIS-R subtests was investigated to determine the extent to which subtests designed to measure certain constructs do so in a sample of South African children, predominantly ESL from an under-resourced background. This was done by correlating the WISC-V Vocabulary subtest with the SSAIS-R Vocabulary subtest. Similarly, the WISC-V Comprehension subtest was correlated with the SSAIS-R Comprehension subtest, and finally, the WISC-V Similarities subtest was correlated with the SSAIS-R Similarities subtests. In addition, the Pearson's correlation coefficients run also investigated the correlations among the rest of the subtests.

As discussed in Chapter 4, the results of these Pearson's correlation coefficients indicated positive and significant relationships among all the verbal subtests. Moderately positive relationships were also indicated among the SSAIS-R verbal subtests and among the WISC-V verbal subtests. The selected verbal subtests from both intelligence measures focus on a child's verbal skills and it can thus be expected that there are positive correlations among all the subtests. Higher correlations, however, should be shown on

subtests that measure the same underlying constructs. The Vocabulary and Comprehension subtests of the SSAIS-R, both measure long-term memory and crystallized intelligence. The Vocabulary and Similarities subtests of the SSAIS-R both measure word knowledge and long-term memory. Finally, the Similarities and Comprehension subtests of the SSAIS-R indicated the correlation among the selected SSAIS-R verbal subtests as they both measure verbal reasoning, logical reasoning, and long-term memory (van Eeden, 1993).

On the other hand, the Vocabulary and Similarities subtests of the WISC-V indicated the strongest correlation among the WISC-V selected verbal subtests. Both subtests measure a child's word knowledge and verbal concept formation. The Vocabulary and Comprehension subtests of the WISC-V both measure crystallized intelligence and long-term memory and the Similarities and Comprehension subtests both measure verbal reasoning and verbal expression (Weschler, 2014). These results indicate that the subtests all measure a single construct to a greater or lesser extent. Given that only verbal subtests from the two individual intelligence measures were included in this study, this would be the participants' verbal skills or verbal intelligence.

Within the context of CHC theory, this will be called crystallized intelligence (*Gc*), sometimes referred to as verbal comprehension-knowledge (Flanagan & Dixon, 2014; Schneider & McGrew, 2018). This broad ability includes several narrower abilities assessed by the correlated subtests. Regarding the two Similarities subtests, the narrower skills involved would be lexical knowledge, general verbal information, and language development (Flanagan & Dixon, 2014). However, the subtests of individual intelligence measures rarely measure one broad ability and its related narrow abilities. Other cognitive skills assessed include verbal-, abstract-, and inductive reasoning, long-term memory storage and retrieval, verbal concept formation and comprehension, and associative and categorical thinking (Van Eeden, 1997; Wechsler, 2014). The strong correlation between the Similarities subtests indicates that these subtests could measure the participants' performance concerning these constructs.

Regarding the Comprehension subtests from the WISC-V and SSAIS-R, the results of the Pearson correlation coefficient again found a moderate positive relationship between these subtests. From a CHC perspective, the broad ability assessed would again be verbal comprehension-knowledge. The narrower abilities include general verbal information, language development, listening ability, and oral production and fluency (Flanagan & Dixon, 2014; Van Eeden, 1997; Wechsler, 2014). Other cognitive abilities that would be assessed include long-term memory storage and retrieval and logical reasoning. Further, as Van Eeden (1997) and Wechsler (2014) mentioned, the Comprehension subtests also require more social, moral, and ethical judgment and understanding of societal rules, values, and practices than the other verbal subtests. Again, the positive correlation between these subtests indicates that these skills were assessed in this sample of South African, predominantly ESL children from an under-resourced background.

Finally, the SSAIS-R and WISC-V Vocabulary subtests also showed a positive, moderate correlation. Under the broad verbal comprehension-knowledge ability, these subtests measure predominantly lexical knowledge, general verbal information, listening ability, and language development (Flanagan & Dixon, 2014; Van Eeden, 1997; Wechsler, 2014). Other cognitive abilities include long-term memory storage, retrieval, and verbal concept formation (Van Eeden, 1997; Wechsler, 2014). Even though the WISC-V Vocabulary subtest relies quite heavily on oral production and fluency, the moderate correlation between these subtests again shows that they measured the same constructs in this sample of South African, predominantly ESL, children from an under-resourced background.

According to the outcome of the Pearson's correlation coefficients, the WISC-V and SSAIS-R verbal subtests included in this study showed construct validity in this sample. The fact that the participants' scores are not age-appropriately developed when one looks at the mean scores on the different subtests speaks to the fact that the skills mentioned in this group of children can be strengthened.

Here cognizance must be taken that the subtests were also presented and answered in English, a second language for most participants. All verbal subtests were heavily reliant on English language development and acquiring knowledge within specific cultural contexts. Thus, the children's lower scores were most likely the result of cultural and linguistic-specific crystallized knowledge (Plebe & De La Cruz, 2015). Crystallized intelligence and verbal comprehension are broad abilities influenced mainly by linguistic and cultural factors (Archibald, 2013).

Question 3: *Are the selected WISC-V and SSAIS-R verbal subtests reliable in assessing the verbal skills of a sample of South African, predominantly ESL, children from an under-resourced background?*

The extent to which the SSAIS-R verbal subtest and the WISC-V verbal subtests provide consistent and stable results and the extent to which the results are replicable was investigated through the Spearman-Brown split-half formula. According to Kaufman and Kaufman (2004), this is the most appropriate way to investigate the internal consistency reliability of individual intelligence measures, where the items in subtests become progressively more complex, and discontinuation rules are applied. While the results indicated high internal consistency reliability for the WISC-V subtests, poor to fair internal consistency reliability was indicated for the SSAIS-R subtests. This raises some concern about the ability of the SSAIS-R subtests included in this study will be able to consistently measure the underlying abilities of this sample of South African, predominantly ESL, children from an under-resourced background.

Several factors could have impacted the internal consistency reliability of the SSAIS-R subtests. In this regard, Foxcroft and Roodt (2013) and Van Eeden (1997) mention socioeconomic factors. Also, although the SSAIS-R indicated high reliability in the past, the reliability was calculated on non-environmentally disadvantaged groups (Van Eeden, 1997). This includes groups of children from more well-resourced backgrounds with access to essential resources for developing their intellectual capabilities. Also, the children in the

standardization sample were more English proficient than the current sample as this individual intelligence measure was standardized on English first language children (Foxcroft & Roodt, 2013). For the study, only learners from disadvantaged backgrounds were considered for participation. Because the SSAIS-R was not normed for these contexts, there is concern about the impact of these contexts and homogeneity on the reliability (Zhu & Han, 2011).

Another factor that could have impacted the reliability of the SSAIS-R in an under-resourced context is the factor of variations in test situations. Factors include location, noise levels, distraction, and understanding of the test content and instructions (Zhu & Han, 2011). Although the researcher aimed to minimize the impact of testing situations by administering the assessments in quiet classrooms, there is concern about the participants' understanding of the content of the SSAIS-R. The content of the SSAIS-R is based on Western culture and thus uses Western terminology (Van Eeden, 1997). Therefore, participants who are disadvantaged due to their environments are handicapped in understanding the cultural content of the items and familiarization with the content (Van Eeden, 1997). It is important to note however that these factors can impact the children's performances on both assessment measures. Considering that, the number of items in the SSAIS-R subtests could have negatively impacted its reliability.

According to Drost (2011), the number of items of a measurement can impact the reliability of that measure. The more the number of items, the more reliable an assessment measure will be (Gravetter et al., 2018). In terms of the Similarities and the Comprehension subtests, the WISC-V has more items than the SAAIS-R. For the Similarities subtest, the WISC-V has 23 items, and the SSAIS-R has 15 items. For the Comprehension subtests, the WISC-V has 19 items, whilst the SSAIS-R has 15 items. The lower reliability scores of the SSAIS-R can thus be attributed to the discrepancy between the number of items between the intelligence measures.

The researcher also administered the assessments one after the other and swapped the order around to minimize the impact of extraneous factors. In addition, the researcher scored the assessments to ensure consistency. As noted by Gravetter et al. (2018), the reliability of the scorer can negatively impact the reliability of an assessment measure. Factors such as 'guessing' by the participants could not be controlled by the researcher, although the participants were advised not to. These factors can further impact reliability (Drost, 2011).

The SSAIS-R Comprehension subtest (and the WISC) indicated the lowest internal consistent reliability (.65). As mentioned earlier, the SSAIS-R Comprehension subtest measures verbal reasoning and developing concepts, verbal comprehension, and expression. The subtest also measures the ability to use experience and demonstrate practical knowledge and judgment (Kuehnel et al., 2019). Comprehension encompasses components, i.e., linguistic and cognitive components, that help an individual generate meaning from texts (Arendse, 2020). The SSAIS-R Comprehension subtest relies on social reasoning skills, general knowledge, long-term memory, and logical reasoning (Cockcroft & Blackburn, 2008). Comprehension subtests are not just reliant on a child's verbal skills or his/her ability to express themselves verbally. However, they also rely on a child's understanding of social situations. Children from under-resourced contexts often do not have exposure to the exact situations that other children have, which could have negatively impacted the internal consistency reliability of this subtest.

The reliability of the SSAIS-R could have been impacted by the outdated nature of the SSAIS-R (Cockcroft, 2013) and some of the subtests' items. Further research on factors that impact the reliability of all the SSAIS-R subtests when compared to the WISC-V subtests is dire.

Conclusion

The results indicated that the children scored significantly higher on the SSAIS-R than on the WISC-V for Vocabulary and Similarities and did not score significantly different

on the intelligence measures for Comprehension. The study indicated that concurrent validity was achieved in investigating the linear relationships between the selected verbal subtests of the tests. However, regarding the subtests' internal consistency reliability, the statistical analysis showed that the SSAIS-R may be less internally consistent than the WISC-V when used in South African children who are predominantly ESL and come from an under-resourced background. This suggests that although valid in terms of concurrent validity, the SSAIS-R will not produce consistent results when repeated in this sample.

The findings highlighted that further research in under-resourced contexts is needed on the validity and reliability of commonly used individual intelligence measures, and caution should be considered in their utilization. The results also showed critical gaps and limitations, which will be explored in Chapter 6.

Chapter 6: Summary, Recommendations, and Limitations

Psychological assessments and individual intelligence measures have an extensive role in the future of the educational system of South Africa. However, further research is needed for the available individual intelligence measures to be considered valid and reliable in various South African contexts. The study aimed to compare and investigate the performance of a sample of South African children, predominantly ESL, from an under-resourced background on selected verbal subtests of the SSAIS-R and the WISC-V. In addition, it aimed to investigate the concurrent validity and internal consistency reliability of these subtests in the mentioned sample. Given that these are commonly used individual intelligence measures, the research aimed to contribute to understanding the utility of these measures in the South African context and their reliability and validity when administered to children from an under-resourced background. The findings indicate that across the WISC-V and SSAIS-R subtests, the children in the sample performed at a level that would be considered as indicating weaknesses in the areas assessed. The children in the sample also scored significantly higher on the SSAIS-R than on the WISC-V for the Vocabulary and Similarities subtests and did not score significantly higher on the intelligence measures for the Comprehension subtests.

The study also found that concurrent validity was established using linear correlations between the tests' selected verbal subtests. Nevertheless, the statistical analysis revealed that the SSAIS-R may be less internally consistent than the WISC-V for assessing the constructs of interest in predominantly ESL South African children from disadvantaged backgrounds. This shows that, while the SSAIS-R is valid in terms of concurrent validity, it will not give consistent findings when repeated in this sample of South African children. The findings highlighted the need for more research on the validity and reliability of commonly used individual intelligence measures in under-resourced contexts as these can often be impacted by a number of factors.

Strengths of the Research

As noted in chapters 1 and 2, there is limited published research on the WISC-V and SSAIS-R, especially in South Africa. This study aimed to contribute to the scarcity of literature. The study focused on the utility of the selected verbal subtests and their concurrent validity and internal consistency reliability in the South African context. More specifically, in under-resourced contexts, minimal research studies have been conducted. The literature highlighted the importance of ethical test selection in South Africa, as most of the individual intelligence measures used in the country may be biased toward the majority.

As reflected in the current study's findings, results indicated significant discrepancies between the children's performance on the WISC-V and SSAIS-R selected verbal subtests. The results also indicated that the results of children from under-resourced backgrounds on the selected SSAIS-R verbal subtests may not be as internally consistent as those obtained from the WISC-V subtests, even though these subtests measure similar constructs. These results can be attributed to various factors that directly or indirectly impact the scores, such as socioeconomic status, language, culture, and quality of education. The study highlighted the importance of considering the possible factors that could impact the assessment results in under-resourced backgrounds.

The current study identified opportunities for further research in individual intelligence measures in under-resourced backgrounds. This includes the following: larger sample sizes to investigate the validity and reliability of these assessment measures further; stratified research to investigate the impact that socioeconomic status, language, culture, quality of education, and living conditions could have on the results; as well as investigations into how learners from these contexts perform on other indexes and subtests, e.g., non-verbal indexes and subtests.

Limitations of the Research

Several limitations were faced in the different phases of the research, from data collection to data interpretation which may have had a direct or indirect impact on the study results. The limitations will be highlighted below.

In terms of the methodology, some limitations need to be acknowledged. First, the sampling criteria specified that learners from Gauteng, attending a quantile 1 public school, would form part of the study. Due to time constraints, only two schools participated in the research study and thus the sample did not reflect the broader population of Gauteng and South Africa.

Due to the requirements set forth by the Gauteng Department of Education, data collection cannot occur in the fourth term of a school year. The sampling and data collection were thus revised, and additional participants were recruited from two children's homes. Secondly, the sample size was small ($N = 58$) and only based in Gauteng. A larger sample size would allow generalizations to the broader South African population.

Information about the factors that could impact the assessment results was obtained using the biographical questionnaire presented to the parents/caregivers. The study was based on under-resourced backgrounds where most of the population is not proficient in English. The biographical questionnaire was written in English, which was difficult for most parents/caregivers to understand and interpret. Another limitation of the data received from the biographical questionnaire is that the population had minimal access to psychological assessments and individual intelligence measures. Thus the children may have difficulties that impact their learning that had not been formally diagnosed. This impacts the validity and reliability of the results obtained from the biographical questionnaire about whether the participants were diagnosed with difficulties that impact learning and academic performance. Lastly, information about the parent's education level could not be ascertained in children's homes.

The literature used is based on international studies due to limited studies being done in South Africa and thus applicable to foreign nationals and those members of society in the middle class or upper who have access to resources. Moreover, minimal literature is available on the SSAIS-R; thus, the literature used is mostly outdated or was conducted by a limited number of researchers. Nevertheless, the literature highlighted the assessments' foundation and structures and gave an in-depth understanding of the relationships between the investigated variables.

Given the limited number of subtests, the participants' Full-Scale Intelligence Quotient (FSIQ), SSAIS-R Verbal and Non-Verbal scaled scores, and other WISC-V composite scores could not be calculated. Thus, the overall results regarding the utility and appropriateness of the assessment measures in South Africa are limited.

Recommendations

Recommendations for future studies can be made, including a comparative analysis between the WISC-V and SSAIS-R non-verbal subtests.

Further research on larger sample sizes can be conducted to investigate the psychometric properties of WISC-V and SSAIS-R in under-resourced contexts (as this study only examined concurrent validity and internal consistency reliability on a sample size of 58 participants).

Further, comparing the FSIQs of these assessment measures and their scaled and composite scores may benefit the literature and give an understanding of whether the overall scores may be applicable in these contexts and can be used for diagnostic and other purposes.

Limited studies have been done on the applicability of psychological assessment and individual intelligence measures in under-resourced contexts. Further studies on other individual intelligence measures commonly used in South Africa can be done, particularly in these contexts where various factors may impact the results. These studies will allow practitioners to select appropriate and fair assessment measures for the diverse context of

South Africa and to determine which assessments are most suitable for the South African population.

In addition, it would be beneficial for researchers to delve further into the psychometric properties of these individual intelligence measures, for example, their predictive validity. The literature notes that language plays a prominent role in intelligence measures. In a multilingual society like South Africa, it may be difficult to discern whether poor performance is due to language (English proficiency) or it is indeed due to a low level of the construct(s) being measured. Language and its impact on children's performance on individual intelligence measures require further exploration in South Africa.

Conclusion

The present study investigated and compared the performance of a group of South African children who predominantly speak English as a second language and come from an under-resourced background on selected verbal subtests of the WISC-V and SSAIS-R. In addition, the concurrent validity, and the internal consistency reliability of these subtests, commonly used in assessing South African children, were investigated. The results highlighted the various factors that could impact assessment results in South Africa, particularly from under-resourced backgrounds.

Not all contexts of South Africa have been investigated regarding psychological assessments and individual intelligence measures. As such, the present study can be used to further investigate the appropriateness of commonly used individual intelligence measures in under-resourced contexts. As noted, delving more profoundly could have implications for South Africa, where there is a lack of individual intelligence measures that can be considered appropriate for the entire population.

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Appendixes

Appendix A – GDE Info letter



GAUTENG DEPARTMENT OF EDUCATION INFORMATION LETTER

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT RESEARCH

Good Day. My name is Tsholofelo Rampai. I am a student at the University of Witwatersrand studying Master of Education in Educational Psychology in the School of Human and Community Development, Department of Psychology. I am conducting research for the purpose of completing my masters degree and would like to request permission to conduct research in several schools in Gauteng.

The focus of my research is on the suitability of two cognitive assessment measures (intelligent tests) in the South African context, particularly in under-resourced contexts. These include The Wechsler Intelligence Scale for Children - Fifth Edition (WISC-V) and The Senior South African Individual Scales - Revised (SSAIS-R) and in order to conduct the research, I need a group of participants between Grades 4 to 7 from under-resourced (non-fee-paying schools) schools. Taking this into consideration, I would like to ask for permission to be granted access to conduct the research and to approach examples of said schools in the Gauteng province.

The research will require the administration of the above-mentioned assessments on each of the participants. In addition, consent will be obtained from you, the schools' principals, and the parents or legal guardians of the potential participants to access the participants' English results/records in order to investigate the extent to which the said measures can predict the children's performance on English as their language of learning and teaching. Only the subtests will be administered and will take approximately 20 to 30 minutes to administer. The assessments will take place over 2 days, where one assessment will be administered on one day and the other assessment on another day on the same participants. The assessments will be conducted at a time that will not negatively impact on the participants' or schools' academic or related activities and the assessments will be administered by a registered educational student psychologist who have been specifically trained in the administration of these measures, under the supervision of a registered psychologist.

Participation in the study is completely voluntary and there are no benefits. There are also no risks, as the research does not expose the participants and schools to any harm. The participants and the schools also have the right to withdraw from the study at any time without any consequences and participants do not have to answer any questions that they do not feel comfortable with.

Anonymity and confidentiality of the schools and participants will be ensured. Although participants will be assessed individually and face-to-face, and their names will be required to link parental consent forms, biographical questionnaires and assessment results, all results will be transferred onto an Excel spreadsheet where identifying information will then be removed to ensure anonymity and confidentiality going forward. Also, this data will be stored in a password protected file and computer where the results, personal and biographical

Umthombo Building – 2nd Floor, Room U211, Braamfontein East Campus, Private Bag 3, WITS 2050
T +27 11 717 4503/53 | E psych.SHCD@wits.ac.za | www.wits.ac.za/shcd/psychology/

IYUNIVESITHI YASEWITWATERSRAND | YUNIVESITHI YA WITWATERSRAND



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information will be linked by means of codes. The raw data will be stored in a locked cupboard at the University of the Witwatersrand. In this manner, anonymity and confidentiality of the school and participants in the final research report and other potential publications, can be ensured.

The results of the study will be used for a research report that will be stored in the University of the Witwatersrand main library and will be made available online on the WITS institutional repository environment (WIREDSpace) where all electronic copies of research reports, theses and dissertations are kept. In addition to the results being compiled in a research report, it may also be used for other research activities, including the publication of a chapter in a book, a peer-reviewed research article, and/or presentation at a conference. The school will also be provided with a summary of the research results. Raw and digital data will be kept indefinitely for research purposes.

I therefore request permission in writing to conduct my research in Gauteng schools. Should you consent for me to conduct the study and access school records, please indicate this in writing. The permission letter should be on the Gauteng letterhead, signed and dated, and specifically referring to myself by name and the title of my study.

Please contact directly if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Tsholofelo Rampai

Tsholofelo Rampai
Researcher and M.Ed Psychology Student
+27 72 044 1802
1476882@students.wits.ac.za

Adri Vorster
Research Supervisor
011 717 4554
adri.vorster@wits.ac.za

Professor CB Penny
Chairperson of the Human Research Ethics
Committee (Medical)
011 717 2301
Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi
Committee Secretariat
011 717 2700 or 1234
Zanele.Ndlovu@wits.ac.za
Rhulani.Mkansi@wits.ac.za

Appendix B- GDE Approval

**GAUTENG PROVINCE**

Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	13 April 2022
Validity of Research Approval:	08 February 2022– 30 September 2022 2022/138
Name of Researcher:	Rampai TG
Address of Researcher:	149 Dolomite Drive Carletonville
Telephone Number:	072 0441 802
Email address:	tsholofelorampai@gmail.com
Research Topic:	Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background.
Type of qualification	Master of Education
Number and type of schools:	5 Primary Schools
District/s/HO	Gauteng West, Johannesburg East, Johannesburg North, Johannesburg West

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below are met. Approval may be withdrawn should any of the conditions listed below be flouted:

1

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Office of the Director: Education Research and Knowledge Management

7th Floor, 17 Simmonds Street, Johannesburg, 2001

Tel: (011) 355 0488

Email: Faith.Tshabalala@gauteng.gov.za

Website: www.education.gpg.gov.za

1. The letter would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.
2. The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.
3. **Because of the relaxation of COVID 19 regulations researchers can collect data online, telephonically, physically access schools, or may make arrangements for Zoom with the school Principal. Requests for such arrangements should be submitted to the GDE Education Research and Knowledge Management directorate.**
4. **The Researchers are advised to wear a mask at all times, Social distance at all times, Provide a vaccination certificate or negative COVID-19 test, not older than 72 hours, and Sanitise frequently.**
5. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s has been granted permission from the Gauteng Department of Education to conduct the research study.
6. A letter/document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs, and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.
7. The Researcher will make every effort to obtain the goodwill and cooperation of all the GDE officials, principals, and chairpersons of the SGBs, teachers, and learners involved. Persons who offer their cooperation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.
8. Research may only be conducted after school hours so that the normal school program is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
9. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.
10. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
11. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.
12. The researcher is responsible for supplying and utilising his/her research resources, such as stationery, photocopies, transport, faxes, and telephones, and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
13. The names of the GDE officials, schools, principals, parents, teachers, and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.
14. On completion of the study, the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.
15. The researcher may be expected to provide short presentations on the purpose, findings, and recommendations of his/her research to both GDE officials and the schools concerned.
16. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a summary of the purpose, findings, and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

Mr. Gurnani Mukatun

Acting CES: Education Research and Knowledge Management

DATE: 13/04/2022

2

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7th Floor, 17 Simmonds Street, Johannesburg, 2001

Tel: (011) 355 0488

Email: Faith.Tshabalala@gauteng.gov.za

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Appendix C- School Principal Information Letter



SCHOOL PRINCIPAL INFORMATION LETTER AND CONSENT FORM

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT RESEARCH

Good Day. My name is Tsholofelo Rampai. I am a student at the University of Witwatersrand studying Master of Education in Educational Psychology in the School of Human and Community Development, Department of Psychology. I am conducting research for the purpose of completing my masters degree and would like to request permission to conduct research at your school.

The focus of my research is on the suitability of two cognitive assessment measures (intelligent tests) in the South African context, particularly in under-resourced contexts. These include The Wechsler Intelligence Scale for Children - Fifth Edition (WISC-V) and The Senior South African Individual Scales - Revised (SSAIS-R) and in order to conduct the research, I need a group of participants between Grades 4 to 7 from under-resourced (non-fee-paying schools) schools. Taking this into consideration, I would like to invite learners from your school to partake in my research.

The research will require the administration of the above-mentioned assessments on each of the participants. In addition, consent will be obtained from you, the schools' principals, and the parents or legal guardians of the potential participants to access the participants' English results/records in order to investigate the extent to which the said measures can predict the children's performance on English as their language of learning and teaching. Only the subtests will be administered and will take approximately 20 to 30 minutes to administer. The assessments will take place over 2 days, where one assessment will be administered on one day and the other assessment on another day on the same participants. The assessments will be conducted at a time that will not negatively impact on the participants' or schools' academic or related activities and the assessments will be administered by a registered educational student psychologist who have been specifically trained in the administration of these measures, under the supervision of a registered psychologist.

Participation in the study is completely voluntary and there are no benefits. There are also no risks as the research does not expose the participants and schools to any harm. The participants and the school also have the right to withdraw from the study at any time without any consequences and participants do not have to answer any questions that they do not feel comfortable with.

Anonymity and confidentiality of the schools and participants will be ensured. Although participants will be assessed individually and face-to-face, and their names will be required to link parental consent forms, biographical questionnaires and assessment results, all results will be transferred onto an Excel spreadsheet where identifying information will then be removed to ensure anonymity and confidentiality going forward. Also, this data will be stored in a password protected file and computer where the results, personal and biographical



information will be linked by means of codes. The raw data will be stored in a locked cupboard at the University of the Witwatersrand. In this manner, anonymity and confidentiality of the school and participants in the final research report and other potential publications, can be ensured.

The results of the study will be used for a research report that will be stored in the University of the Witwatersrand main library and will be made available online on the WITS institutional repository environment (WIREDSpace) where all electronic copies of research reports, theses and dissertations are kept. In addition to the results being compiled in a research report, it may also be used for other research activities, including the publication of a chapter in a book, a peer-reviewed research article, and/or presentation at a conference. The school will also be provided with a summary of the research results. Raw and digital data will be kept indefinitely for research purposes.

I therefore request permission in writing to conduct my research at your school. Should you consent for your school to partake in the study, please indicate this in writing. The permission letter should be on your school's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

Please contact directly if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Tsholofelo Rampai

Tsholofelo Rampai
Researcher and M.Ed Psychology Student
+27 72 044 1802
1476882@students.wits.ac.za

Adri Vorster
Research Supervisor
011 717 4554
adri.vorster@wits.ac.za

Professor CB Penny
Chairperson of the Human Research Ethics
Committee (Medical)
011 717 2301
Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi
Committee Secretariat
011 717 2700 or 1234
Zanele.Ndlovu@wits.ac.za
Rhulani.Mkansi@wits.ac.za



PRINCIPAL CONSENT FORM

I, _____, hereby give consent for Tsholofelo Rampai to conduct her research on the suitability of specific cognitive assessment measures in under resourced backgrounds in the South African context, at _____ (name of school).

I understand that:

- Participation in this study is completely voluntary and there are no foreseeable risks or benefits for partaking in it.
- The research does not expose any of the participants or schools to any harm.
- Researcher will access learners' English records/term marks.
- All participants and schools have the right to withdraw from the study at any time, without any consequence.
- Participants do not have to answer any questions that they do not feel comfortable with.
- The school's and participants' information will be treated as confidential.
- Anonymity and confidentiality will be ensured in the final research report or any publications/presentations that might arise from this research.
- The results of the study will be compiled into a research report, which will be stored in the University of the Witwatersrand main library and made available online on the WITS Institutional Repository environment on WReDSpace, where an electronic copy of all research reports, dissertations and theses are kept.
- Results of the study might also be published in the form of peer reviewed journal articles and/or book chapters. Likewise, it might be presented at conferences.
- The data and information, in electronic format, will be kept indefinitely and used for research purposes.
- The school will also be provided with an executive summary of the research results.

School Principal's Signature

Researcher's Signature

Date

Appendix D – Parent Letter



PARENT/LEGAL GUARDIAN CONSENT AND INFORMATION LETTER

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

Dear Sir/Madam,

My name is Tsholofelo Rampai. I am a student at the University of Witwatersrand studying Master of Education in Educational Psychology in the School of Human and Community Development, Department of Psychology. I am conducting research for the purpose of completing my masters and would like to invite your child/ward to partake in my research.

The focus of my research is on the suitability of two cognitive assessment measures (intelligent tests) in the South African context, particularly under-resourced contexts. These include The Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V) and The Senior South African Individual Scales – Revised (SSAIS-R). Should you give consent for your child/ward to participate in the study he or she will be assessed on these tests. Each of these tests will take approximately 20 to 30 minutes to administer and will be conducted on two separate days. The assessments will be conducted at a time that will not negatively impact on the participants' or schools' academic or related activities and the assessments will be administered by a registered educational student psychologist who have been specifically trained in the administration of these measures, under the supervision of a registered psychologist.

In addition and with your consent, I will also access your child's English records/ term marks in order to investigate the extent to which the said measures can predict the children's performance on English as their language of learning and teaching. A biographical questionnaire to be completed by you will also be attached. All the information of the children and the school will be kept confidential. No information that can identify your child/ward or the school will be included in the final research report or any other publications and presentations that might take place. Only my supervisor and I will have access to the raw data and the assessment results. Results will not be disclosed to anyone without your written and informed consent as the parent or legal guardian.

Participation in the study is completely voluntary and it is your choice to decide whether your child will partake or not. The only benefit will be that you will have access to your child/wards assessment results. All parents, children and schools have the right to withdraw from the study any time without any consequences and the children also do not have to answer any questions they do not feel comfortable with.

Anonymity and confidentiality of the schools and participants will be ensured. Although participants will be assessed individually and face-to-face, and their names will be required to link parental consent forms, biographical questionnaires and assessment results, all results will be transferred onto an Excel spreadsheet where identifying information will then be removed to ensure anonymity and confidentiality going forward. Also, this data will be stored in a password protected file and computer where the results, personal and biographical information will be linked by means of codes. The raw data will be stored in a locked cupboard



at the University of the Witwatersrand. In this manner, anonymity and confidentiality of the school and participants in the final research report and other potential publications, can be ensured.

The results of the study will be used for a research report that will be stored in the University of the Witwatersrand main library and will be made available online on the WITS institutional repository environment (WIREDSpace) where all electronic copies of research reports, theses and dissertations are kept. In addition to the results being compiled in a research report, it may also be used for other research activities, including the publication of a chapter in a book, a peer-reviewed research article, and/or presentation at a conference. The school will also be provided with a summary of the research results. Raw and digital data will be kept indefinitely for research purposes.

I will offer feedback to you in written form. The feedback will contain a summary of the findings with guidelines to support the language development of the general sample. As a limited number of subtests will be done, the information obtained provides limited information regarding children's functioning and thus, cannot be used for diagnostic purposes. The information obtained will be confidential and as such, specific feedback cannot be provided to the school. Should you however, wish to obtain specific feedback regarding your child's scores, this can be requested and will be provided.

Should you consent for your child/ward to be a part of this research, please sign the attached consent form and kindly complete the biographical questionnaire.

Please contact directly if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Tsholofelo Rampai

Tsholofelo Rampai
Researcher and M.Ed Psychology Student
+27 72 044 1802
1476882@students.wits.ac.za

Adri Vorster
Research Supervisor
011 717 4554
adri.vorster@wits.ac.za

Professor CB Penny
Chairperson of the Human Research Ethics
Committee (Medical)
011 717 2301
Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi
Committee Secretariat
011 717 2700 or 1234
Zanele.Ndlovu@wits.ac.za;
Rhulani.Mkansi@wits.ac.za



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PARENT/LEGAL GUARDIAN CONSENT FORM

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

I, _____, parent/legal guardian of _____, currently in Grade _____, hereby give consent for Tsholofelo Rampai to include my child/ward in her research on the suitability of specific cognitive assessment measures in under resourced backgrounds in the South African context, I understand that:

- My child/ward will be assessed on the following assessment measures: The Wechsler Intelligence Scale for Children Fifth edition (WISC-V) and The Senior South African Individual Scales – Revised (SSAIS-R)
- The researcher will access my child's/ward's English records/term marks.
- Participation in this study is completely voluntary and there are no foreseeable risks or benefits for partaking in it.
- The research does not expose my child/ward or his/her school to any harm.
- My child/ward and his/her school have the right to withdraw from the study at any time; without any consequence.
- My child/ward does not have to answer any questions that he/she does not feel comfortable with.
- The school's and my child's/ward's information will be treated as confidential. Anonymity and confidentiality will be ensured in the final research report or any publications/presentations that might arise from this research.
- The results of the study will be compiled into a research report, which will be stored in the University of the Witwatersrand main library and made available online on the WITS Institutional Repository environment on WIReDSpace, where an electronic copy of all research reports, dissertations and theses are kept.
- A biographical questionnaire will be completed
- Results of the study might also be published in the form of peer reviewed journal articles and/or book chapters. Likewise, it might be presented at conferences.
- The data and information, in electronic format, will be kept indefinitely and used for research purposes.
- The school will be provided with an executive summary of the research results.

Parent/Legal Guardian's Signature

Researcher's Signature

Date

Umthombo Building – 2nd Floor, Room U211, Braamfontein East Campus, Private Bag 3, WITS 2050
T +27 11 717 4503/53 | E psych.SHCD@wits.ac.za | www.wits.ac.za/shcd/psychology/

Appendix E- Caregivers Letter



LEGAL GUARDIAN CONSENT AND INFORMATION LETTER

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

Dear Sir/Madam,

My name is Tsholofelo Rampai. I am a student at the University of Witwatersrand studying Master of Education in Educational Psychology in the School of Human and Community Development, Department of Psychology. I am conducting research for the purpose of completing my masters and would like to invite children in your care to partake in my research.

The focus of my research is on the suitability of two cognitive assessment measures (intelligent tests) in the South African context, particularly under-resourced contexts. These include the Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V) and the Senior South African Individual Scales – Revised (SSAIS-R). Should you give consent for the children to participate in the study, they will be assessed on three subtests from each of the cognitive assessment measures, thus, six subtests in total. As only the verbal subtests will be administered, it will take approximately 20 to 30 minutes to complete the assessment per child. The assessments will be conducted at a time that will not negatively impact on the participants' or their schools' academic or related activities and the assessments will be administered by a registered educational student psychologist who have been specifically trained in the administration of these measures, under the supervision of a registered educational psychologist.

In addition and with your consent, I will also access the children's English records/ term marks in order to investigate the extent to which the said measures can predict the children's performance on English as their language of learning and teaching. A biographical questionnaire to be completed by you will also be attached. All the information of the children and the children's home where they currently reside, will be kept confidential. No information that can identify the children's home, any of the children who partake in the study, or the schools which they attend, will be included in the final research report or any other publications and presentations that might take place. Only my supervisor and I will have access to the raw data and the assessment results. Results will not be disclosed to anyone without your written and informed consent as the children's legal guardian.

Participation in the study is completely voluntary and it is your choice to decide whether the children will partake or not. The only benefit will be that you will have access to their assessment results. However, please note that as only three subtests per cognitive assessment measure will be administered, the results cannot be used for any diagnostic purposes. Regardless, by getting an overview of the children's English language skills, recommendations can be made to their caretakers at the current residence to assist them in strengthening and developing their English language skills as needed.

The children's home and the individual participants have the right to withdraw from the study any time without any consequences and the children also do not have to answer any questions they do not feel comfortable with.



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Anonymity and confidentiality of the home and participants will be ensured. Although participants will be assessed individually and face-to-face, and their names will be required to link their biographical information and assessment results, all results will be transferred onto an Excel spreadsheet where identifying information will be removed to ensure anonymity and confidentiality going forward. Also, this data will be stored in a password protected file and computer where the results, personal and biographical information will be linked by means of codes. The raw data will be stored in a locked cupboard at the University of the Witwatersrand. In this manner, anonymity and confidentiality of the home, the participants, and the schools they attend in the final research report and other potential publications, can be ensured.

The results of the study will be used for a research report that will be stored in the University of the Witwatersrand main library and will be made available online on the WITS institutional repository environment (WIREDSpace) where all electronic copies of research reports, theses and dissertations are kept. In addition to the results being compiled in a research report, it may also be used for other research activities, including the publication of a chapter in a book, a peer-reviewed research article, and/or presentation at a conference. As mentioned, the children's home will also be provided with a summary of the assessment results with recommendations so that the children can be supported in enriching and developing their English language skills as required. Raw and digital data will be kept indefinitely for research purposes.

The feedback that will be offered to you, will be in written form and as mentioned, contain a summary of the findings and guidelines to support the language development of the general sample. As a limited number of subtests will be done, the information obtained provides limited information regarding children's functioning and thus, cannot be used for diagnostic purposes. Should you however, wish to obtain specific feedback regarding specific children's scores, this can be requested and will be provided.

Should you consent for the children in your care to be a part of this research, please sign the attached consent form and kindly complete the biographical questionnaire for each child to the best of your knowledge.

Please contact me directly if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Tsholofelo Rampai

Tsholofelo Rampai
Researcher and M.Ed Psychology Student
+27 72 044 1802
1476882@students.wits.ac.za

Adri Vorster
Research Supervisor
011 717 4554
adri.vorster@wits.ac.za

Professor CB Penny
Chairperson of the Human Research Ethics
Committee (Medical)
011 717 2301
Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi
Committee Secretariat
011 717 2700 or 1234
Zanele.Ndlovu@wits.ac.za
Rhulani.Mkansi@wits.ac.za

Umtombo Building – 2nd Floor, Room U211, Braamfontein East Campus, Private Bag 3, WITS 2050
T +27 11 717 4503/53 | E psych.SHCD@wits.ac.za | www.wits.ac.za/shcd/psychology/

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

I, _____, legal guardian of the children at _____, hereby give consent for Tsholofelo Rampai to include the children in my care in her research on the suitability of specific cognitive assessment measures in under-resourced backgrounds in the South African context, I understand that:

- The children will be assessed on the following: the Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V) and the Senior South African Individual Scales – Revised (SSAIS-R). Only three subtests per intelligence test will be used, data collection will be quick and will not impact on the children's other activities.
- The researcher will access the children's English records/term marks.
- Participation in this study is completely voluntary and there are no foreseeable risks or benefits for partaking in it.
- The research does not expose the children or their home to any harm.
- The children have the right to withdraw from the study at any time; without any consequence.
- The children do not have to answer any questions that they do not feel comfortable with.
- The home and the children's information will be treated as confidential. Anonymity and confidentiality will be ensured in the final research report or any publications/presentations that might arise from this research.
- The results of the study will be compiled into a research report, which will be stored in the University of the Witwatersrand main library and made available online on the WITS Institutional Repository environment on WIRedSpace, where an electronic copy of all research reports, dissertations and theses are kept.
- A biographical questionnaire will be completed for each participant.
- Results of the study might also be published in the form of peer-reviewed journal articles and/or book chapters. Likewise, it might be presented at conferences.
- The data and information, in electronic format, will be kept indefinitely and used for research purposes.
- The home will be provided with an executive summary of the research results.

Parent/Legal Guardian's Signature

Researcher's Signature

Date

Appendix F- Biographical Questionnaire



PARENT/ LEGAL GUARDIAN BIOGRAPHICAL QUESTIONNAIRE

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

Dear Parent/Legal Guardian

Thank you very much for your willingness to complete this questionnaire and for allowing your child to take part in this study.

Please complete the questions below as comprehensively as possible by adding a cross (x) or a tick (v) in the spaces provided. Where possible, please elaborate on your answers as I value your insight into your child's current learning and functioning.

1. Child's Name _____

2. Child's Date of Birth _____

3. Child's Grade

Grade 4	☐
Grade 5	☐
Grade 6	☐
Grade 7	☐

4. Child's Gender

Male	☐
Female	☐
Prefer not to say	☐

5. What is your child's first language? _____

6. What is your child's second language? _____

7. Other languages that your child is regularly exposed to? _____

8. If English is your child's second or additional language, how long has he/she been exposed to it? (please elaborate if necessary)

9. Mother's Highest Level of Education

Primary School (Grade 7 or less?)	☐
Grade 8 or 9	☐
Grade 10 or 11	☐
Grade 12 or the Equivalent	☐
Certificate	☐
Higher Certificate	☐
Diploma	☐
Postgraduate Diploma	☐
Bachelor's Degree	☐
Professional First Degree Postgraduate	☐
Honour's Degree	☐
Master's Degree	☐
Doctoral Degree	☐

10. Father's Highest Level of Education

Primary School (Grade 7)	☐
Grade 8 or 9	☐
Grade 10 or 11	☐
Grade 12 or the Equivalent	☐
Certificate	☐
Higher Certificate	☐
Diploma	☐
Postgraduate Diploma	☐
Bachelor's Degree	☐
Professional First Degree Postgraduate	☐
Honour's Degree	☐
Master's Degree	☐
Doctoral Degree	☐

11. Has your child ever been formally diagnosed with a Specific Learning Disorder or Difficulty that impacts on his/her learning? (If yes, please elaborate)

Yes	☐
No	☐

12. Has your child ever been formally diagnosed with a Language Disorder or Difficulty that impacts on his/her learning? (If yes, please elaborate)

Yes ☐
No ☐

13. Has your child ever been diagnosed with an Emotional Disorder or Difficulty that impacts on his/her learning? (If yes, please elaborate)

Yes ☐
No ☐

14. Has your child ever been diagnosed with ADHD or ADD? (If yes, please elaborate)

Yes ☐
No ☐

15. Has your child ever been diagnosed with a Physical Disorder or Difficulty that impacts on his/her learning? (If yes, please elaborate)

Yes ☐
No ☐



16. Are there any other factors, that in your opinion, impact on your child's learning at present? (If yes, please elaborate)

Yes ☐
No ☐

Appendix G- Clearance Certificate Schools



R14/49 Miss Tsholofelo Rampai

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)**CLEARANCE CERTIFICATE NO. M220531**

NAME: Miss Tsholofelo Rampai
(Principal Investigator)
DEPARTMENT: School of Human and Community Development
PROJECT TITLE: *Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background*
DATE CONSIDERED: 27/05/2022
DECISION: Approved unconditionally
CONDITIONS: This approval applies only to the study sites listed in Annex 1 attached. Further sites may be added on presentation of evidence of management approval to the HREC (Medical)
SUPERVISOR: Mrs A. Vorster
APPROVED BY: 
 Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL: 16/08/2022

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **May** and will therefore be due in the month of **May** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date

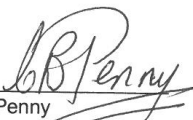
Annex 1**Protocol No. M220531****Miss Tsholofelo Rampai**

Study sites approved under this Clearance Certificate

Study siteDate of HREC (Med) Approval

[REDACTED] School
[REDACTED] School

14/07/2022
16/08/2022

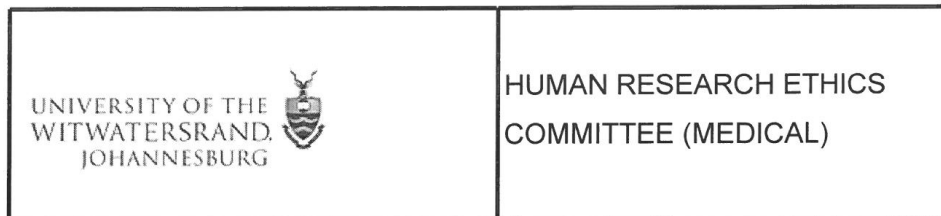


Dr CB Penny
Chair: HREC (Medical)
University of the Witwatersrand, Johannesburg

Date: 16/08/2022

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix H- Children's Home 1 Clearance



2022/09/28

Ms T Rampai
School of Human and Community Development
Department of Psychology
University

Sent by e-mail to: tsholofelorampai@gmail.com

Dear Ms Rampai

Re: Protocol Ref No: M220531

Protocol Title: *Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background*

Principal Investigators: Ms T Rampai

Thank you for your letter of 2022/09/04, received here on 2022/09/22.

I confirm that we have noted and approve of your proposal to add the [REDACTED] Children's Home as an additional study site.

Thank you for keeping us informed.

Yours Sincerely

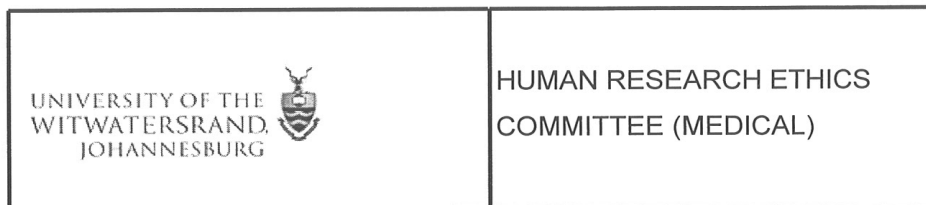


.....
Mr I Burns
For the Human Research Ethics Committee (Medical)



.....
Dr CB Penny, Chairperson, Human Research Ethics Committee (Medical)

Appendix I- Children's Home 2 Clearance Certificate



2022/12/09

Ms T Rampai
School of Human and Community Development
Department of Psychology
University

Sent by e-mail to: tscholofelorampai@gmail.com

Dear Ms Rampai

Re: Protocol Ref No: M220531
Protocol Title: *Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background*
Principal Investigators: Ms T Rampai

Thank you for your letter of 2022/11/14.

We have noted and approve of the addition of [REDACTED] as an additional study site. Referring to the first bullet on page 2 of your Consent Form, the retained data should be anonymised and anyone else seeking to use it would (a) need your consent and (b) require to get their own ethics clearance.

Thank you for keeping us informed.

Yours Sincerely


.....
Mr I Burns
For the Human Research Ethics Committee (Medical)


.....
Dr CB Penny, Chairperson, Human Research Ethics Committee (Medical)

Appendix J- Participant Assent Forms



PARTICIPANT INFORMATION LETTER AND ASSENT FORM

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

Dear Learner,

My name is Tsholofelo Rampai and I am a student at the University of the Witwatersrand. One of my projects is to conduct research and I would like to ask you if you would be willing to help me with my project. If you agree, then I will do some tasks with you. You will help me by answering some questions and look at pictures and tell me what they are. Some questions might be more difficult than others, but I ask that you answer as many questions as you can and if you do not want to answer certain questions you can tell me.

I will need to see you for two days for about 20 minutes to do the tasks and we will meet at a time that is convenient for you, your parents and teacher. You can decide if you want to be part of my project and if you no longer want to be part of my project you can also tell me.

The project is not part of your school or your teachers or anyone else and no one will see your answers. However, your parents might ask me to tell them how you did on the tasks and then I will tell them, and your teachers how they can help you with any schoolwork that is a bit difficult for you. But no one apart from my supervisor, who is my teacher, will know your score.

If you agree to participate in my research, please fill your name and sign the consent form below.

Thank you very much.

Tsholofelo Rampai
Researcher and M.Ed Psychology Student
+27 72 044 1802
1476882@students.wits.ac.za

Adri Vorster
Research Supervisor
011 717 4554
adri.vorster@wits.ac.za

Professor CB Penny
Chairperson of the Human Research Ethics
Committee (Medical)
011 717 2301
Clement.Penny@wits.ac.za

Ms. Z Ndlovu or Mr Rhulani Mkansi
Committee Secretariat
011 717 2700 or 1234
Zanele.Ndlovu@wits.ac.za
Rhulani.Mkansi@wits.ac.za



PARTICIPANT ASSENT FORM

Investigating the psychometric properties of the WISC-V and SSAIS-R verbal subtests in a sample of South African children from an under-resourced background

- I have been given a Participant Information Sheet which explains the project which is that I will do some tasks by answering questions, look at pictures and tell what they are.
- I understand that the project will take about 20 minutes over two days and the project will not take place during school time.
- I was given sufficient time to read the information sheet/ it was read to me in a language I fully understand and I was given time to ask any questions and answers given were clear.
- I understand that I will not receive any money or reward for participation.
- I understand that some questions will be harder than others, and I do not need to answer any question I am not comfortable with.
- I understand that I can decide if I want to be part of the project and if I do not want to be part of the project anymore, I will not be punished.
- I understand that the project is not part of school and no one will see my answers, however I will tell you parents how you did on the tasks and how you can be assisted in tasks that is difficult for you. But, no one will your score except for me and my supervisor- who is my teacher.

Learner's Name

Learner's Signature

Date: