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**Cross-Cultural Adaptation of the Administration Instructions of the
Developmental Test of Visual Perception 3rd Edition for isiZulu-
Speaking Children**

This dissertation is presented in a publication format and submitted in
fulfilment of the requirements for the degree
M Occupational Therapy

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Declaration

I, the undersigned, declare that the dissertation hereby submitted to the University of Pretoria for the degree M Occupational Therapy and the work contained therein is my own original work and has not previously, in its entirety or in part, been submitted to any university for a degree.

Signed  this 20th day of April 2021

Dedication

Dedicated to Jehovah-Jireh, the Lord our provider.

Acknowledgements

I would like to thank my supervisors, Mrs Maretha Bekker and Professor Kitty Uys for your support and direction. It was a privilege being guided by your wealth of knowledge and experience.

To my husband, Francois, thank you for always encouraging me to chase my dreams and being the wind under my wings. You inspire me to go beyond what I thought possible.

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Abstract

Background: Visual perceptual skills are vital for developing academic skills and contribute to language development and socio-cultural participation. The Developmental Test of Visual Perception 3rd Edition evaluates visual perceptual skills but is only available in English. IsiZulu is the most spoken language in South Africa, English being the fourth.

Aim of the study: To translate and cross-culturally adapt the administration instructions of the Developmental Test of Visual Perception 3rd Edition into isiZulu.

Design: Qualitatively driven multimethod sequential design.

Setting: KwaZulu-Natal Province, Free State Province, North West Province and Gauteng Province, South Africa

Participants: Six translators/contributors, five isiZulu-speaking occupational therapists and ten isiZulu-speaking children.

Methods: The translation and adaptation progressed through five steps: forward translation, committee synthesis, back-translation, committee synthesis and pre-test. Qualitative feedback on the functional, cultural and conceptual equivalence was obtained at various intervals.

Significance: This study promotes authentic assessment for isiZulu-speaking children and a framework for the cross-cultural adaptation of assessment instruments.

Conclusion: This study describes a rigorous methodology for translating and cross-culturally adapting the administration instructions of the Developmental Test of Visual Perception 3rd Edition into isiZulu to advance its authenticity within the South African context. The methodology proved successful in maintaining functional, cultural and conceptual equivalence.

Keywords: authentic assessment, conceptual equivalence, cultural equivalence, functional equivalence, linguistic translation

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List of Abbreviations

Abbreviation / Acronym	Meaning
BT1	Backward translation one
BT2	Backward translation two
DTVP-3	Developmental Test of Visual Perception 3 rd Edition
ECI	Early childhood intervention
GDE	Gauteng Department of Education
ITC	International Test Commission
LSEN	Learners with special educational needs
P-FTL	Pre-final version in target language
PI-TL	Preliminary initial version in target language
SIAS Policy	Screening, Identification, Assessment and Support Policy
SL	Source language
TL	Target language
TL1	Target language translation one
TL2	Target language translation two
TL3	Target language translation three
VMI	Visual-motor integration

CHAPTER 1

1. Introduction

1.1. Background and rationale

Visual perceptual and visual-motor integration (VMI) skills form part of the foundational skills necessary for developing reading and writing skills while also contributing to the development of language, social and cultural participation.¹ When children experience developmental delays in their visual perception and VMI, their engagement in various areas of occupation is negatively impacted. Occupational therapists must be able to accurately assess visual perceptual skills to detect deficits and inform effective intervention.^{1, 2} The Developmental Test of Visual Perception (DTVP) is widely used by occupational therapists for this purpose.^{3, 4} It has been the author's experience that the DTVP 3rd edition (DTVP-3) is also regularly included in the test battery used by occupational therapists to inform the child's support needs within the schooling system in South Africa. The DTVP-3 is a norm-referenced assessment instrument with defined administration procedures and instructions.⁵ However, the standardised administration instructions in the examiner's manual are only offered in English.⁵ The following chapter will introduce the need that informed the current study and describe the research aim and objectives. The significance of the research and the theoretical framework that guided it will also be discussed.

In previous studies, the administration of the DTVP within the South African context was consistently conducted in English. One study reported administering the DTVP-3 in Afrikaans but did not elaborate on the method used to translate it into Afrikaans.³ According to the 2011 (most recently published) census, the four most represented first spoken languages in the South African population were: isiZulu (22.7%), isiXhosa (16%), Afrikaans (13.3%) and English (9.6%).⁶ The most represented first spoken languages in the province of Gauteng were isiZulu (19.8%) and English (13.3%).⁶ Therefore, a significant representation of children assessed using the DTVP-3 do not have access to it in their home language. For this reason, it cannot be considered an authentic assessment instrument for these children.⁷

Authentic assessment is an alternative to traditional evaluation procedures and was born within the context of early childhood intervention (ECI).^{7, 8} It advocates for the use

of developmentally appropriate evaluation methods within an environment that emulates the functional setting within which the child would naturally perform the skills under investigation.^{7, 8} Bagnato, Neisworth and Pretti-Frontozza have prioritised eight major standards in considering an evaluation instrument for young children.⁷ They are acceptability, authenticity, collaboration, evidence, multi factors, sensitivity, universality and utility.⁷ These standards provide a guideline for the practitioner when considering best practice in evaluating young children.⁷ Each standard consists of numerous quality indicators that can weigh an assessment instrument's authenticity.⁷ Another essential precept of authentic assessment is the realistic representation of the child's strengths and weaknesses to not over-diagnose or undersupport the child.^{7, 8} The English DTVP-3 administration instructions may misrepresent a child's abilities and challenges when presented to a child who is not a native English-speaker.

Therefore, a great need existed in the South African context for the translation of the English DTVP-3 administration instructions to be more representative of the South African population.

Mere direct linguistic translation of an assessment instrument is insufficient to meet the requirements of equivalence.⁹⁻²² If an assessment instrument is not cross-culturally adapted to ensure that the translation is equivalent to the source language, bias may be introduced.¹⁹ Various methods of cross-cultural adaptation have been recommended throughout literature.^{9, 11-16, 18, 20, 21} Sousa and Rojjanasriat have suggested a comprehensive and rigorous method for translation based on their review of published literature on the cross-cultural adaptation of instruments and scales within the context of healthcare research.²¹ They recommend specific steps as a guideline in translating and adapting an assessment instrument, including consultations from various language experts and input from lay native speakers of the target language.²¹ The current literature is clear that cross-cultural translation of an assessment instrument requires a systematic and methodological approach for equivalence to be maintained.^{15, 19, 21, 22}

Firstly, this study has translated and cross-culturally adapted the instructions of the DTVP-3 using a combination of the methods suggested in literature.^{9, 19, 21, 22} Secondly, it has also examined the functional, cultural and conceptual equivalence after

translation into isiZulu to improve the authenticity of the DTVP-3 as an assessment instrument within the South African context.^{7, 19, 21, 22}

1.2. Problem statement

Occupational therapists work in various geographical and cultural settings. As a profession, we strive to adapt to these contexts, use authentic assessments, and provide tailored interventions for our clients - whether individuals, groups or populations.² The South African population is rich in diversity, representing many languages and cultures.⁶ Therefore, occupational therapists often work with children whose home language is one of the eleven official South African languages besides English. In addition, the majority of the children seen by occupational therapists are referred due to suspected or known barriers to typical development. Therefore, they are already a potentially compromised population, and language barriers further compound obstacles to their successful engagement. At present, no cross-culturally adapted translation of the DTVP-3 is available for non-English first language speaking children in the South African context. Therefore, when presented to children other than those who are fluent in English, the DTVP-3 in its current form does not align with the standards for authentic assessment.⁷

Receiving the administration instructions in a language other than the child's first language could likely have a detrimental effect on the child's opportunity for equal performance since a limited number of South Africans report English as their first language.^{6, 19} This may also lead to elevated levels of anxiety. The deviation from authentic assessment standards may lead to mismeasurement and misrepresentation of the child's abilities.⁷ Because isiZulu is the most represented spoken language in South Africa,⁶ there is a significant need for cross-cultural adaptation of the administration instructions of the DTVP-3 to isiZulu.

1.3. Research question

How are the administration instructions of the DTVP-3 translated and cross-culturally adapted into isiZulu?

1.4. Aims of the study

The study aimed to translate and cross-culturally adapt the administration instructions of the DTVP-3 into isiZulu.

1.5. Objectives of the study

1. To linguistically translate the administration instructions of the DTVP-3 into isiZulu.
2. To examine whether the isiZulu translation represents a cross-cultural adaptation that satisfies the standard for ensuring functional, cultural, and conceptual equivalence.
3. To conduct a pre-test study to provide preliminary feedback on whether the adaptation is understandable for the isiZulu-speaking child in the Tshwane (Gauteng Province, South Africa) area.

1.6. Definition of key terms

- **Authentic Assessment** is the developmentally appropriate alternative to conventional testing.⁷ It advocates for adapting the assessment to the child in their context instead of placing decontextualised limits on the child.^{7, 23}
- **Administration instructions** are the specific directions given to the child during the administration of a standardised assessment instrument such as the DTVP-3.⁵
- **Conceptual equivalence** is the frequency with which the concept occurs or is familiar in both the source and target language.²¹ This affects whether the source language and target language are comparable in the degree of difficulty.
- **Cross-cultural adaptation** is the adaptation for use in another context beyond mere direct translation while taking into account whether the result is not only semantically correct but is also equivalent.¹⁹
- **Cultural equivalence** reflects whether members of the target population may interpret the underlying meaning after translation similarly as was intended in the source language.¹⁹ The culturally appropriate manner of speaking.
- **Decentring** refers to moving away from the wording of the source language to retain the same meaning or familiarity in the target language.¹⁹

- The **Developmental Test of Visual Perception 3rd Edition** is a standardised assessment instrument developed by Pro-Ed and used to measure the development of visual perceptual skills.⁵
- **Functional equivalence** relates to the retention of language meaning through translation and whether it will elicit a similar response as in the source language.¹⁹
- **Linguistic translation** is the direct or forward translation from the source language to the target language.¹⁹
- **Occupational therapists** are trained in evaluating and remediating a child's participation in meaningful occupations such as school or play.²⁴

1.7. Setting

All activities during steps I to IV took place on virtual platforms. As a result, the translation reflects the dialects of translators from or located in the KwaZulu-Natal Province, Free State Province, North West Province and Gauteng Province of South Africa.

Step V took place within the basic education sector and included occupational therapists located in the provinces of KwaZulu-Natal and Gauteng, South Africa. The children who participated during step V were situated in Pretoria, Gauteng Province, South Africa.

1.8. Assumptions

The **ontological assumptions** of a study are related to the nature of reality and its characteristics.²⁵ An evaluation of development can be an anxiety-provoking activity for the child, parent and administering therapist. The subjective experience of the evaluation environment and process may also differ significantly amongst these role players. Another factor that may influence the experience is that, by definition, the population in need of occupational therapy services has already been identified as “at-risk” and can therefore be described as a compromised population due to suspected or known developmental delay. If assessment administration in a second language is also considered, the experience can be complex or even daunting.

In conducting a qualitative study, the **epistemological assumptions** guided the researcher to get close to the study participants.²⁵ Therefore, knowledge is known

within the context of the subjects' experience and the investigator's experience.²⁵ During the step V pre-test, the subjective experiences of the administering and reviewing occupational therapists were explored in terms of the usability of the adapted version and the therapists' views on the translation's functional, cultural and conceptual equivalence. The children's experiences of the isiZulu version were related to the user experience of being the subject of the assessment. The investigator was also aware that the data collected regarding the experiences of the therapists and children were subject to the context of the investigator's own experience within the specialised education setting. Since the therapist has regularly been exposed to the reality of assessing a compromised population of children at risk where the principles of authentic assessment may be wanting, her interpretation of the data collected was undeniably influenced by her experiences. However, the feedback collected also affected her experience when working with children facing barriers to learning and language.

Based on the **axiological assumptions** of qualitative research, the researcher considered and revealed her own values as they related to the study.²⁵ In the context of this study, the researcher valued authentic assessment and the impact that language had on that assessment. The researcher also valued inclusion, equity and equal opportunity.^{7, 19} The researcher valued the effect that authentic assessment had on the identification and intervention of developmental difficulties in children and the role that assessment plays in informing the level of support needs for typically developing children and at-risk learners.

The procedures that guide a qualitative study include its **methodological assumptions** and are shaped by the researcher's experience with collecting and analysing the data.²⁵ The cross-cultural adaptation of the instructions of the DTVP-3 was guided by a rigorous, systematic process informed by existing literature.^{9, 15, 19, 21, 22} Figure 3.1 in Chapter 3 shows this step by step process. The step V pre-test study endeavoured to examine the linguistic and cultural equivalence¹⁹ to ensure conceptual relevance⁹ of the translation through subjective feedback and suggestions from occupational therapists using the equivalence feedback questionnaire (Appendix A). A dichotomous scale²¹ (Appendix B) in the form of pictures was used to reflect feedback from children who were evaluated using the newly translated instructions.

1.9. Delineation

The focus of this study was to translate and cross-culturally adapt the DTVP-3 administration instructions into isiZulu following methods found in the existing literature. The translation and adaptation were limited solely to the administration instructions; the rest of the administration and scoring manual was not translated. After adaptation of the administration instructions, the pre-test was limited to feedback from isiZulu-speaking children between the ages of seven years two months and ten years seven months old, as well as the administering occupational therapists and native language reviewers. Although it is recommended that the translated version be further revised after the pre-test, pilot tested and then administered on a larger scale to establish reliability and validity, this was not included in the scope of the current study. The reliability and validity of the original DTVP-3 within the South African, or any other, context were not investigated in this study.

1.10. Significance

The significance of this study for isiZulu-speaking children is to provide the right to be assessed with an authentic visual perceptual assessment instrument in their native language. Since visual perceptual skills impact reading, writing, spelling and mathematics, it is imperative to identify deficits as early as possible to avoid negative impacts on their education and other areas of occupation.¹ Authentic assessment and early intervention aligns with and complements the Department of Education's Screening, Identification, Assessment and Support (SIAS) Policy,²⁶ which represents the implementation of Education White Paper 6²⁷ on inclusive education. The SIAS Policy outlines procedures to be followed to promote access to inclusive education for all learners, regardless of barriers to learning.²⁶ It emphasises the importance of identifying a child's support needs so that each child can be accommodated first and foremost within the community.²⁶ Authentic assessment is paramount to identify support needs, which guides the implementation of inclusive education.²³ Therefore, by adapting the DTVP-3 to the South African context, its alignment with the principles and standards of developmentally appropriate assessment is enhanced, and the implementation of inclusive education can be facilitated. The scope of this study allowed four of the eight standards of developmentally appropriate assessments to be applied to the DTVP-3. These are the standards of acceptability, evidence, universality

and utility as set out by Bagnato, Neisworth and Pretti-Frontczak.⁷ Each of these standards comprises various corresponding quality indicators.⁷ The quality indicators applicable to this study were social appropriateness, diversity representation, equitable design, intervention context, and performance monitoring. Table 1.1 relates the principles and standards outlined by Bagnato, Neisworth and Pretti-Frontczak to the translation of the DTVP-3 by referring to the applicable quality indicators of each standard.⁷

Table 1.1: The adaptation of the DTVP-3 as applied to the standards for authentic assessment by Bagnato, Neisworth and Pretti-Frontczak⁷

	Quality Indicator	Translation and Cross-Cultural Adaptation of the DTVP-3
Standards for authentic assessment	Acceptability	Social appropriateness By translating and cross-culturally adapting the DTVP-3, its social appropriateness within the South African context is improved since it will be presented in a more acceptable way to isiZulu-speaking children, parents, and other caregivers, namely in their native language.
	Evidence	Diversity representation Although this study will not include large-scale reliability and validity testing of the translated instructions, it can be seen as a first step toward building a body of literature that encourages even greater diversity in the population for which the DTVP-3 is tailored.
	Universality	Equitable design By translating and cross-culturally adapting the DTVP-3, the population of children who are provided equal opportunity to demonstrate skill through this assessment instrument in South Africa is broadened.
	Utility	Intervention content Translation of the DTVP-3 intends to remove the unnecessary language barrier that isiZulu speaking children could experience when being assessed with the current version of the DTVP-3, which will lead to more accurate results and more precisely inform the content of the occupational therapy intervention plan.
	Utility	Performance monitoring As the authenticity of the DTVP-3 within the South African context is improved through its translation and cross-cultural adaptation, it becomes even more valuable in monitoring the isiZulu-speaking child's response to intervention.

The significance of this study for clinicians, such as occupational therapists, is represented by the diversification of the authentic assessment instruments available to them. Clinicians widely use the DTVP-3 in the initial assessment of children with suspected or known barriers to development.⁴ It provides information on the development of visual perceptual and fine motor skills and the integration of these skills.⁵ The DTVP-3 is a valuable instrument for identifying the need for early intervention, informing intervention goals, guiding contextual support and monitoring response to intervention. It also promotes effective, efficient intervention, which is an essential element of authentic assessment.⁷ Therefore, with improved authentic assessment instruments, such as the adapted isiZulu DTVP-3, paediatric occupational therapists will be better able to identify and monitor the support needs of the young South African population they serve.

Lastly, this study's significance extends beyond the DTVP-3 and paediatric occupational therapy. It outlines a rigorous, scientific translation and cross-cultural adaptation method based on international literature,^{9, 15, 21, 22} which can be applied to other assessment instruments to improve their authenticity within the South African context.

1.11. Theoretical framework

The theoretical framework for this study falls within the Occupational Therapy Practice Framework: Domain and Process.² This framework outlines the Occupational Therapy Process, which includes evaluation, intervention and targeting of outcomes in service delivery to support the client's health and participation. Therefore, this study relates to the evaluation/assessment considerations within the Occupational Therapy Process. Authentic and accurate assessment procedures are necessary to ensure that outcomes are specifically targeted and that the intervention plan is meaningful, focused and relevant. When an assessment instrument does not represent authentic assessment, it may misrepresent the child by over-emphasizing or exaggerating their limitations.⁷ This mismeasurement may also prevent the occupational therapist from developing an accurately targeted intervention plan and compromise the efficiency of intervention implementation and review.

This study endeavoured to expand upon the DTVP-3 as part of the repertoire of assessment instruments available to occupational therapists in evaluating and analysing occupational performance. The Practice Framework also emphasises assessing and analysing a person's occupational performance by taking the context and environment into account, which further aligns with the principles of authentic assessment.⁷

The foundation of authentic assessment is contrary to conventional testing and originated from ECI best practice. It advocates for developmentally appropriate evaluation procedures which reflect an accurate representation of a young child's skills within a natural, functional setting.^{7,28} Conventional testing is argued to introduce limits in terms of content, procedures, process and evidence, which may lead to mismeasurement of a child's abilities in an unnatural context and deny their rights to beneficial expectations and opportunities.^{7,23} Such mismeasurement misrepresents the child and instead of highlighting competence within uniqueness, may over-emphasize the child's limitations.⁷ Instead, authentic assessment emphasises a contextual, evidence-based approach to ECI based on the pillars of developmentally appropriate practice, inclusion, natural environments, equity and response to intervention.⁷ The foundation for this study focused on two of the ECI principles that underlie authentic assessment, namely inclusion and equity.

Bagnato, Neisworth and Pretti-Frontczak define inclusion as "that all children have opportunities to interact with peers in natural everyday settings and routines, at home, in school and throughout the community."^{7(p.4)} This agrees with the Occupational Therapy Practice Framework in emphasising the importance of supporting clients (children) in the dynamic intersection between their occupational engagements and their context, as well as the Education White Paper 6, which advocates inclusion within the child's community.^{2,27} The cross-cultural adaptation of the DTVP-3 attempted to reduce the mismeasurement of isiZulu-speaking children so that typically developing as well as at-risk children could have access to appropriate interventions to support their inclusive participation in their natural context.

The principle of equity advocates that "both intervention and measurement must allow all children the opportunities and ways to show their best competencies," as emphasised by Bagnato, Neisworth and Pretti-Frontczak as well as Peña.^{7, 19(p.4)}

Reducing linguistic and cultural barriers during evaluation through the cross-cultural adaption of the DTVP-3 administration instructions promotes equal opportunity participation for isiZulu-speaking children.

The eight major standards for developmentally appropriate and authentic assessment instruments and procedures with their corresponding quality indicators have been summarised in Chapter 2 (Figure 2.1).⁷ These standards can be seen as an ideal towards which ECI assessment instruments should strive. The DTVP-3 aligns with these standards to varying degrees across the quality indicators. The translation and cross-cultural adaptation of the DTVP-3 administration instructions represented an endeavour to improve upon the quality indicators of social appropriateness (standard of acceptability), diversity representation (standard of evidence), equitable design (standard of universality), intervention content (standard of utility) and performance monitoring (standard of utility) of the DTVP-3 as assessment instrument within the South African context (refer to Table 1.1).

1.12. Research design

The research followed a qualitatively driven multimethod sequential design.²⁹ The design (Figure 3.1 in Chapter 3) was based on work by Guillemin et al., Sousa et al., Wang et al., Peña, Beaton et al. and other authors.^{9, 11-16, 18, 19, 21, 22} This design was chosen since it promotes the standards of authentic assessment while the sequential nature of the multimethod design serves to strengthen the findings further.^{29, 30} This is accomplished by ensuring that key role players, with knowledge and experience of the isiZulu language and culture, are an integral part of the translation, adaptation and pre-test process.

The translation progressed through five steps. Each step implements one or more of the research objective(s), as summarised in Table 1.2. Table 1.2 below shows the relationship between the steps of the study and the study objectives. A comprehensive account of the methodology is presented in Chapter 3.

Table 1.2: Relationship between steps I to V and research objectives

	Objective 1	Objective 2	Objective 3
Step I: Forward Translation into Target Language (TL)	✓		
Step II: Synthesis and Agreement by Committee-1	✓		
Step III: Blind Back-Translation of Preliminary Initial Version in Target Language (PI-TL)	✓		
Step IV: Synthesis and Agreement by Committee-2		✓	
Step V: Pre-Test		✓	✓

1.13. Overview of chapters

The following chapters make up this report:

Chapter 1 consists of the introduction and background to the research study. In Chapter 2, the researcher reviews literature from different authors relevant to this study. This literature informed and guided the development of the thorough and rigorous methodology implemented during this study. Chapter 3 presents the research design and describes the five steps of the methodology in detail, including the study population and study context. The sampling method is also detailed and includes the sample, sampling method and data collection. In this chapter, the rigour and quality control measures are also discussed. Chapter 4 comprises the manuscript, summarising the study and presenting the findings in preparation for publication in the South African Journal of Occupational Therapy. In Chapter 5, the researcher expands on the Chapter 4 manuscript by elaborating further on the findings. Hence, the demographic results, detailed findings and a discussion of each step are presented in Chapter 5. The researcher concludes the dissertation in Chapter 6 with the limitations, strengths and recommendations for future researchers.

CHAPTER 2

2. Literature Review

2.1. Introduction

This chapter reviews the relevant literature related to the occupational therapy process, authentic assessment and the DTVP-3 as assessment instrument. It emphasises the functional implications of visual perceptual skills and provides an orientation to the DTVP-3 and its subtests. The relevance of the DTVP-3 and how it relates to language representation in South Africa will be discussed. Translation methods are explored in-depth and will subsequently be used to inform the study methodology.

2.2. Occupational therapy

The American Occupational Therapy Association outlines the occupational therapy process consisting of evaluation, intervention and targeting of intervention outcomes within the client's functional context.² Therefore, it is imperative that occupational therapists have authentic assessment instruments to accurately assess skills and subskills in order to identify deficiencies, inform efficient intervention and effectively target outcomes.³¹

Many of the characteristics of authentic assessment, such as evaluating occupational performance within appropriate contexts and taking into account the impact of the environment on occupational functioning, are well established within occupational therapy practice.^{2, 32}

2.3. Authentic assessment

Authentic assessment is a functional assessment approach developed within the field of ECI.^{7, 23, 33-37} The capturing of a young child's true competency in a setting within which it would naturally occur is the foundation of authentic assessment.²³ Authentic assessment advocates for separation from conventional testing methods within ECI. Conventional testing is argued to introduce limits in terms of content, procedures, process and evidence, which may lead to mismeasurement of a child's abilities in an unnatural context and deny their right to beneficial expectations and opportunities.^{7, 23, 28, 38} Such mismeasurement misrepresents the child and, instead of highlighting

competence within uniqueness, may over-emphasize the child’s limitations or under identify them for services.^{7, 23, 28, 38} Authentic assessment takes place in natural or analogue (stepped to provide opportunity for representative behaviour) contexts.²³ It advocates for evaluating functional performance through observation over time, as opposed to assessment of scripted behaviours (e.g. managing to reach the other side of the room, as opposed to being able to “walk” across the room).²³ It also maintains that assessment tools and procedures should also be suitable for children from diverse cultural, language and stimulation access backgrounds.²³ Active cooperation with parents or caregivers plays a key role; therefore, they are included in the evaluation team.²³ Bagnato, Suen, Brickley, Smith-Jones and Dettore conducted a three-year longitudinal study that demonstrated the effectiveness of authentic assessment as part of a functional intervention programme.³⁹ Other authors have also reported findings from real-life applications supporting the use of authentic assessment practices.^{40, 41}

Bagnato, Neisworth and Pretti-Frontczak presented the eight major standards for developmentally appropriate and authentic assessment instruments and procedures which can be seen as the ideal to which ECI assessment instruments should strive.⁷ The standards of acceptability, authenticity, collaboration, evidence, multifactors, sensitivity, universality and utility guide the practitioner when considering best practice in evaluating young children.⁷ Each standard consists of several quality indicators that can be used to weigh the authenticity of an assessment instrument.⁷ Figure 2.1 provides an overview of the eight quality standards with their corresponding quality indicators.

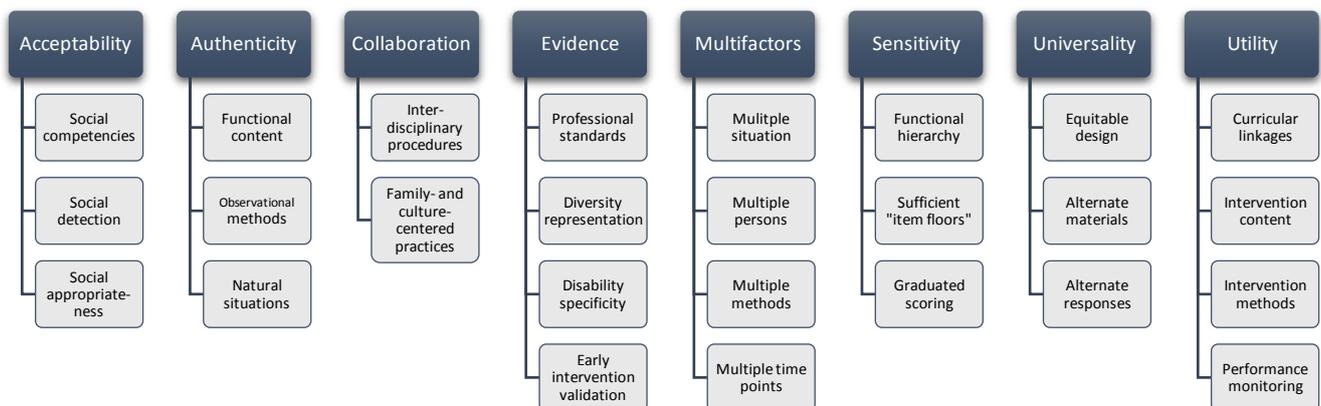


Figure 2.1: Standards for developmentally appropriate assessment with respective quality indicators by Bagnato, Neisworth and Pretti-Frontczak⁷

Although authentic assessment has its roots in ECI, many of the principles can be extended to the evaluation of school-going children. Four of the eight standards for developmentally appropriate and authentic assessment procedures can be applied to the DTVP-3 within school-based assessment. The translation and cross-cultural adaptation of the administration instructions of the DTVP-3 represents an endeavour to further improve upon the quality indicators of social appropriateness (acceptability), diversity representation (evidence), equitable design (universality), intervention content (utility) and performance monitoring (utility) of the DTVP-3 as assessment instrument within the South African context (refer to Table 1.1 in Chapter 1). Although the current study does not address all the standards for authentic assessment, the DTVP-3 is intended to be merely a component of a battery of evaluation techniques that comprise a holistic evaluation of the school-going child.

2.4. Visual perception

Schneck defines visual perception as “the total process responsible for the reception and cognition of visual stimuli”.¹ The components of visual perception, namely visual receptive functions and visual cognitive functions, are essential for the processing and interpreting of the information gained through the visual system and constitute the ability to derive functional meaning from the visual world.^{1, 42-44} In the Occupational Therapy Practice Framework: Domain and Process, these components are categorized under client factors of sensory functions and specific mental functions, respectively.² Visual perceptual and visual-motor functions underpin a child’s ability to engage in the meaningful occupation of education in the form of reading, writing and other school-related tasks.^{2, 45} This is also supported by Schneck, who links poorer visual perceptual scores with nonproficient readers experiencing academic difficulties and difficulty with literacy.⁴² Literacy, in turn, has an impact on all areas of occupational performance, including but not limited to functional skills (e.g. reading the class timetable), social participation (e.g. reading a new acquaintance’s name tag) and life skills (e.g. reading road signs).^{2, 42} Visual perceptual development has also been linked to the development of functional skills such as attention, social interaction and motor development in childhood.⁴⁶ Therefore, the evaluation of visual perceptual skills and how they impact occupational engagement falls within the scope of occupational therapy.²

2.5. The Developmental Test of Visual Perception 3rd Edition

The DTVP-3 is among the most widely used visual perceptual assessment instruments.^{3, 4} It was one of the first visual perceptual tests to be developed based on statistically established norms.⁵ It has gained popularity amongst professionals such as psychologists, special education teachers, diagnosticians, researchers, occupational therapists and optometrists since its 2nd edition was released.⁵ The third and latest edition of the DTVP-3 is widely used by occupational therapists to evaluate visual perceptual skills. It has also been the author's experience that the DTVP-3 is regularly included in the test battery used by occupational therapists to inform the child's support needs within the schooling system in South Africa.

The DTVP-3 consists of five subtests evaluating eye-hand coordination, copying, figure-ground, visual closure and form constancy with procedures as described below:⁵

- For *eye-hand coordination*, the child is required to draw precise lines within defined visual boundaries going in straight lines and in curves.
- During *copying*, the child is presented with various line drawing models that must be reproduced within a specified area.
- When evaluating *figure-ground* skills, the child is shown plates with overlapping pictures, and the child must identify the individual figures.
- The procedure for evaluating *visual closure* involves presenting the child with incomplete figures, and the child is required to identify which incomplete figure identically matches the completed model figure.
- In the *form constancy* subtest, the child is presented with a stimulus shape drawing. The child must find and indicate the shapes from among a series of other pictures where the stimulus shapes are hidden as shapes of varying size, position, shade or as part of other drawings.

The DTVP-3 can be administered to inform intervention strategies and measure the effectiveness of an intervention.⁵ This link between the assessment instrument and the therapeutic outcomes is a characteristic of authentic assessment practices.^{34, 47} It is worth noting that the representative norm sample of the DTVP-3 also included children with specific learning disabilities, speech-language impairment, hearing

impairment, attention-deficit/hyperactivity disorder and other disabilities.⁵ This representation of diverse support needs is another tenet of authentic assessment.⁷ Appendix C shows approval was granted for use of the DTVP-3 in this study.

2.6. Language representation in South Africa

Unfortunately, the standardized administration instructions in the original manual of the DTVP-3 appear in English⁵ and is currently the only widely available version in South Africa. In previous studies, the administration of the DTVP (including previous editions) within the South African context was consistently conducted in English, except for one study which did not elaborate on the method used to translate the instructions into Afrikaans.³ According to the 2011 (most recently published) census, the most represented first spoken languages in the South African population were isiZulu (22.7%), isiXhosa (16%), Afrikaans (13.3%), English (9.6%), Sepedi (9%) and Setswana (8%).⁶ The most represented first spoken languages in the province of Gauteng were isiZulu (19.8%), English (13.3%), Afrikaans (12.4), Sesotho (11.6%), Sepedi (10.6%) and Setswana (9.6%).⁶ Therefore, assuming that occupational therapy services are available as they should be, a significant representation of children assessed using the DTVP-3 do not have access to it in their native language.

2.7. Methods of translation

2.7.1. Linguistic translation

Globalization and migration have contributed to the need for cross-cultural translation and adaptation of instruments, especially in healthcare research.²¹ Direct or linguistic translations of assessment instruments have been utilized in various contexts. One method of linguistic translation is crowdsourcing the translation through online open translation tools. However, one study experienced difficulties in quality assurance of the translation and establishing its suitability for different contexts.⁴⁸ In another study, Guo investigated the viability of using a machine translator, such as Google Translate, but found various challenges and shortfalls rendering this method insufficient when used in isolation.⁴⁹ Another method is reflected in a published case study by Jones et al.⁵⁰ During the process of translating elements of the ABA intervention programme from English to Welsh, Jones et al. found it necessary to establish new terminology for key concepts.⁵⁰ Methods they used to devise new terminology included allowing

old words to gain new meaning, adaptation, derivation and neologisms.⁵⁰ As part of this case study, it was also experienced that direct translation by professional translators tended to be inadequate in maintaining grammatical fluency. The technically correct translations also failed to capture the intent of the original text.⁵⁰

2.7.2. Cross-cultural adaptation to ensure equivalence

Many authors have stressed that mere linguistic translation is insufficient to modify an assessment instrument for use with a different population group.^{9-11, 13-16, 18-21} Instead, an instrument must be cross-culturally adapted to ensure equivalence and avoid potential sources of bias.^{9, 19, 21, 22} Peña highlights that for an instrument to be cross-culturally adapted, a translated instrument must, in addition to mere linguistic equivalence, also meet the requirements of functional, cultural and metric equivalence.¹⁹ Linguistic equivalence can be facilitated through the backward translation method of translating from the source language to the target language, followed by backward translation from the target language back to the source language by a translator unfamiliar with the original text. Then the original text and back-translated text are compared for discrepancies and consolidated.^{19, 51-53} Another method to ensure linguistic equivalence is through review by a native speaker of the target language.¹⁹ Functional equivalence ensures that the same response or behaviour will be elicited in the target language as was intended in the source language.^{19, 54} One of two methods is often employed to facilitate functional equivalence.¹⁹ The one method is decentring, whereby wording in the target language may shift away from the original wording to prioritize linguistic familiarity.^{19, 52, 55} Another method is adopting a dual focus in which the instrument is developed in both languages simultaneously.^{19, 56} Cultural equivalence emphasizes the degree to which different cultural and linguistic groups interpret and respond to the perceived meaning conveyed by the instrument items.¹⁹ Cultural equivalence is closely related to functional equivalence.^{19, 51, 55, 57} Metric equivalence is an evaluation of whether the difficulty of an item is comparable in both the source and target languages. According to Peña, using parallel vocabulary measures that focus on word frequency comparisons between the source and target languages may encourage metric equivalence during translation.¹⁹

Instruments used cross-culturally need to be equivalent on many levels to provide an equal opportunity to demonstrate skill.¹⁹ These authors reiterate that a translation should meet the basic standards set for all measures. It must be reliable, valid, legal, cost-effective and meet requirements for equivalence relative to the source language measure beyond mere linguistic translation.⁹⁻²²

Various methods of cross-cultural adaptation have been recommended throughout literature^{9, 11-16, 18, 20, 21, 52}. Sousa and Rojjanasrirat have suggested a method for translation based on their review of methodological studies focusing on the cross-cultural adaptation of instruments and scales within the context of health care research.²¹ They recommend the following steps as a guideline:²¹

Step1: Translation of the original assessment instrument into the target language (forward translation) by at least two independent translators.^{13-16, 18, 21, 22} These translators produce TL1 and TL2, respectively.²¹ Sousa and Rojjanasrirat advocate that the translators should be of dissimilar backgrounds, representing both health professionals familiar with the terminology and procedures of the assessment instrument and laypersons, respectively.²¹ They should have the TL as their mother language and have experience in the culture and colloquialisms of the TL.²¹

Step 2: Comparison of the two translated versions (TL1 and TL2) of the instrument by a third bilingual, bicultural independent translator and use of a committee approach to resolve discrepancies.²¹ The committee consists of the two initial translators, the third independent translator and the researcher.²¹ This committee reaches an agreement to produce the preliminary initial translated version (PI-TL) and can convene in-person or virtually.^{16, 21}

Step 3: Blind backward translation of the translated instrument (PI-TL) back to the original language (SL) by two other independent translators.²¹ The mother language of the translators involved in this step should be the SL; however, they should be fluent in both the SL and TL.²¹ Similar to step 1, these translators should represent both healthcare professionals and laypersons.²¹ However, the translators involved in the back-translation must not be familiar with the original assessment instrument to avoid previous exposure from influencing the back-translation, thereby ensuring a blind

back-translation.^{15, 21} They will produce two backward translated versions (B-TL1 and B-TL2, respectively).²¹

Step 4: Comparison of the two back-translated versions (B-TL1 and B-TL2) with the original instrument (SL) by a multidisciplinary committee.²¹ This committee should consist of the researcher, all four translators involved in steps 1 and 3, a healthcare worker familiar with the original assessment instrument and at least one monolingual person whose mother language is the TL.²¹ If possible, it would be beneficial for the developer of the original assessment instrument to also contribute to the committee and clarify any questions that may arise.²¹ This committee then resolves any ambiguities or discrepancies between the SL, B-TL1 and B-TL2 to produce the pre-final version (P-FTL).²¹

Step 5: Pre-testing of the pre-final version of the instrument among participants whose language is the target language.^{9, 14, 15, 21} These participants should be representative of the target population for which the translation is intended, and the use of a dichotomous scale (clear or unclear) is recommended.²¹ Participants should also be encouraged to rewrite statements deemed to be unclear.²¹ Furthermore, review by an expert panel of professionals trained in the constructs of the assessment instrument is recommended.^{19, 21}

2.8. Conclusion

It is clear from the aforementioned literature that the authenticity of the DTVP-3 for use by occupational therapists in the South African context can benefit from enhancement. It is also evident that the cross-cultural translation of an assessment instrument requires a systematic and methodological approach for equivalence to be maintained. This study endeavoured to adapt the instructions of the DTVP-3 cross-culturally using a combination of the methods suggested in the literature and to pre-test the functional, cultural and conceptual equivalence after translation into isiZulu.^{19, 21, 22} In the next chapter, the methodology and study design will be discussed in detail. The population, sampling and data analysis are also described. Chapter 3 concludes with considerations of rigour and quality control built into the design to ensure rigour.

CHAPTER 3

3. Methodology

3.1. Introduction

This research followed a qualitatively driven multimethod sequential design.²⁹ The design was based on work by Guillemín et al., Sousa et al., Wang et al., Peña, Beaton et al. and other authors^{9, 11-16, 18, 19, 21, 22} This design was chosen since it promotes the standards of authentic assessment (Figure 2.1),⁷ while the sequential nature of the multimethod design serves to strengthen the findings further.^{29, 30} This is accomplished by ensuring that key role players, with knowledge and experience of the isiZulu language and culture, are an integral part of the translation, adaptation and pre-test process. The following chapter describes the research design in detail, including the five steps, target population, sampling method and size, data analysis and quality control measures employed to ensure rigour throughout the study.

3.2. Research design

The translation progressed through five rigorous steps as shown in Figure 3.1. Each step implements one or more of the research objective(s). Therefore the study design, in the form of steps I to V, are discussed as they relate to the specific research objectives of this study. Figure 3.1 also relates the steps of the study to the objectives that they implement.

Research objective 1:

Step I: Forward Translation into Target Language: The original version was linguistically translated from the source language (SL), English, into the target language (TL), isiZulu, using three independent translators. Translators 1, 2 and 3 produced target language translation 1 (TL1), target language translation 2 (TL2) and target language translation 3 (TL3), respectively.

Step II: Synthesis and Agreement by Committee-1: Next, TL1, TL2 and TL3 were compared by committee-1, who discussed and resolved any discrepancies between the three translations to synthesize the preliminary initial translated version in the target language (PI-TL). Committee-1 consisted of translator 1, translator 2, translator 3 and the investigator.

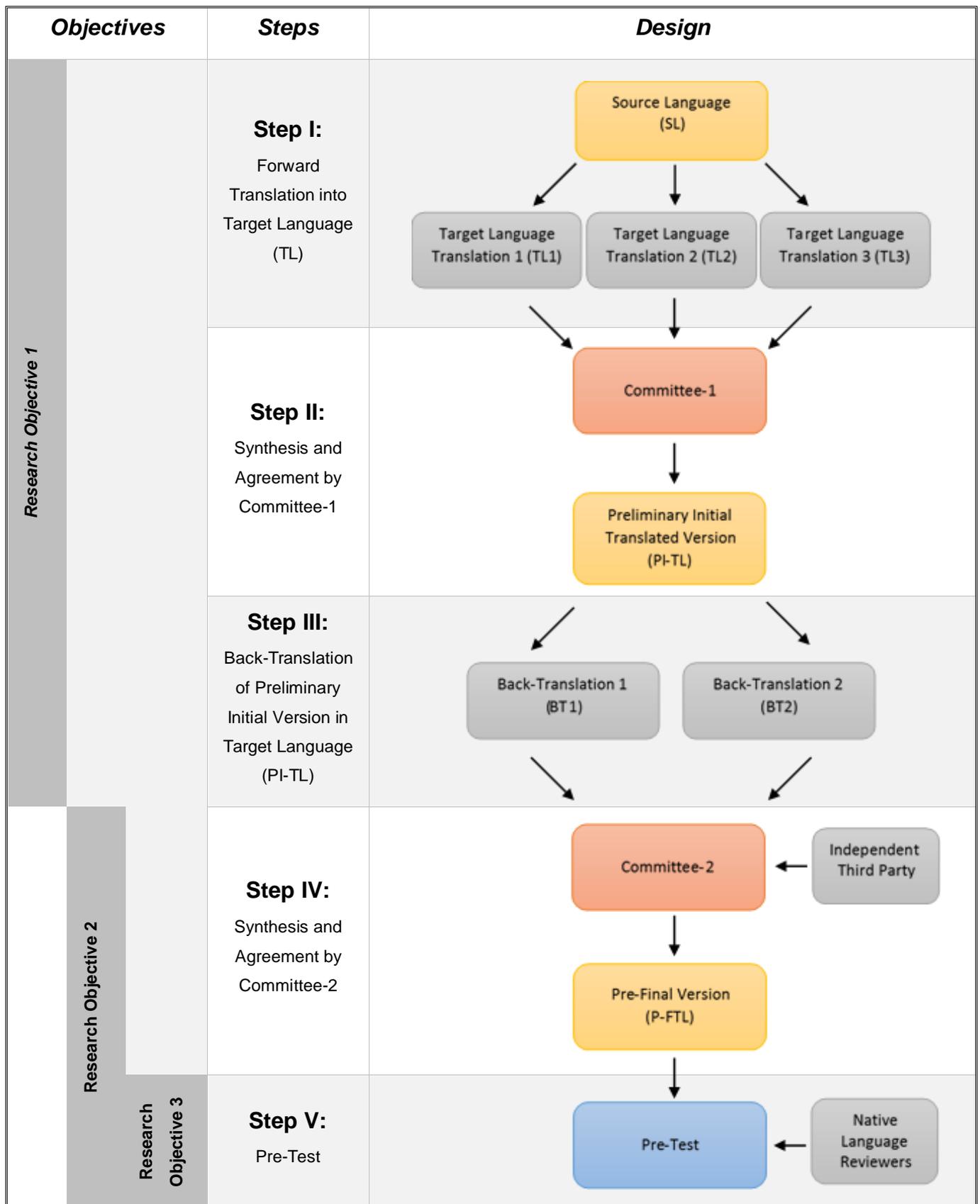


Figure 3.1: Study design based on works by Guillemin et al., Beaton et al., Sousa et al., and Wang et al.^{9,15,21,22}

Step III: Back-Translation of the PI-TL (isiZulu) back into the SL (English): During step III, the PI-TL was translated back into the SL by two other independent translators. This blind back-translation was done by translators unfamiliar with the original assessment instrument to preclude previous exposure from influencing the backward translation. Translators 4 and 5 produced back-translation 1 (BT1) and back translation 2 (BT2), respectively.

Research objective 2:

Step IV: Synthesis and Agreement by Committee-2: At this step, committee-2 compared the SL, PI-TL, BT1 and BT2 versions. The committee discussed and resolved discrepancies to synthesize the pre-final version in the target language (P-FTL). Committee-2 consisted of translator 1 (TL1 translator), translator 2 (TL2 translator), translator 3 (TL3 translator), translator 4 (BT1 translator), translator 5 (BT2 translator), the investigator, and an independent isiZulu-speaking third party. This independent third party was an isiZulu-speaking professional trained in administering the DTVP-3. The inclusion of a native isiZulu speaker (who is also a trained professional) enhanced the quality of the P-FTL by contributing relevant experience in administering the assessment instrument with isiZulu-speaking children.

Research objectives 2 & 3:

Step V: Pre-test: During the pre-test step, the newly translated and adapted isiZulu version of the administration instructions was used by isiZulu-speaking occupational therapists to administer the DTVP-3 to isiZulu-speaking children. To ensure that all therapists uniformly administered the isiZulu instructions, the therapists first attended a virtual briefing on the administration procedures. They also received the isiZulu administration instructions on identical cue cards. These measures were undertaken to minimise administrator variability.

After each administration, the child provided qualitative descriptive feedback regarding his/her experience using the child feedback questionnaire (see Appendix B). The administering therapist assisted each child to record his/her response to the questionnaire. Each participating occupational therapist also provided feedback on the functional, cultural and conceptual equivalence of the isiZulu administration instructions by completing the equivalence feedback questionnaire (Appendix A),

adapted from Hambleton and Zenisky's Translation and Adaptation Review Form (Appendix D).^{12, 17} This form was used with approval from the publisher (Appendix E).

Upholding the ethical principle of debriefing, the administering therapists scored the response booklet and included the results, together with other clinical observations, in a screening report for each child (Appendix F). This feedback on the child's performance was given to the child's parent/guardian after completion of step V.

As part of step V, two native language reviewers also commented on the equivalence of the isiZulu translation through the equivalence feedback questionnaire.¹⁹ The two native isiZulu speakers were occupational therapists with experience in administering the DTVP3 who had not been involved in steps I to IV.

3.3. Population

3.3.1. Steps I to IV

During steps I to IV, the target population consisted of professionals and laypersons fluent in isiZulu based in KwaZulu-Natal Province, Free State Province, North West Province and Gauteng Province, South Africa.

3.3.2. Step V

The step V pre-test represented three population groups. The first target population was isiZulu-speaking children between the ages of seven years two months and ten years seven months attending primary schools in Tshwane, Gauteng Province, South Africa. The second population of step V was isiZulu-speaking administering therapists. These were therapists currently working as occupational therapists in Tshwane, Gauteng, South Africa. The therapists were not known to the children prior to the study. The third population of step V was native language reviewers based in KwaZulu-Natal Province, South Africa.

3.4. Sampling method and sample size

3.4.1. Steps I to IV

The steps I to IV participants were recruited using purposive snowball sampling from the investigator's and supervisors' network of professional acquaintances and colleagues. Translators 1 to 5 and the independent third party (six participants in total)

were recruited to meet specific criteria. Table 3.1 shows the diverse but specific characteristics required of the various study participants.

3.4.2. Step V

The administering therapists and native language reviewers (also refer to Table 3.1) were recruited using purposive snowball sampling through acquaintances, colleagues, fellow post-graduate students, and school-based occupational therapists' professional networks. It should be noted that step V represented a pre-test, not a pilot study. Therefore, a small sample size was used to gain initial feedback from the target population, and a pilot study (not included in this study) would follow after the pre-test.²¹

The third target population of step V was children from primary schools in the vicinity of the administering occupational therapists. Approval for conducting school-based research was obtained from the Department of Education (Appendix G). The sample of children was recruited by contacting schools in the vicinity of the administering occupational therapists. After permission from the Gauteng Department of Education (GDE) and the principals of each primary school was obtained, information was made available to the parents. This information explained the details of the study and invited their children to participate voluntarily.

3.5. Data analysis

Analysis of the data collected throughout the proposed study was structured according to the steps of the study and respective research objectives. Refer to Figure 3.1 for an illustration of the relationship between the steps and the research objectives.

3.5.1. Data collection step I

Research objective 1:

The data collected in step I (TL1, TL2 and TL3) was combined in table form and underwent a content comparison. Discrepancies between the versions were noted for discussion in step II.

Table 3.1: Sample size and criteria

Step	Sample	Criteria
Step I Step II Step IV	Translator 1 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Bilingual and bicultural ➤ Healthcare professional familiar with the DTVP-3
Step I Step II Step IV	Translator 2 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Bilingual and bicultural ➤ Familiar with colloquialisms, slang and contextual interpretations of the target language (isiZulu)
Step I Step II Step IV	Translator 3 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ Bilingual ➤ Bicultural
Step III Step IV	Translator 4 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language English ➤ Bilingual and bicultural ➤ Healthcare professional unfamiliar with the English DTVP-3 administration instructions
Step III Step IV	Translator 5 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language English ➤ Bilingual and bicultural ➤ Familiar with colloquialisms, slang and contextual interpretations of the source language (English)
Step IV	Independent third party (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Not previously involved in steps I to IV
Step V	Administering therapists (n=3)	Inclusion: <ul style="list-style-type: none"> ➤ Qualified occupational therapist holding current registration with the Health Professions Council of South Africa. ➤ Self-professed fluency in reading, speaking and understanding isiZulu. ➤ Currently practising within the field of paediatrics, with at least one year of postgraduate experience in regular use of the DTVP-3 in clinical practice. Exclusion: <ul style="list-style-type: none"> ➤ Therapists who participated during the step I-IV translation of the instructions. ➤ Therapists who were unable to attend the refresher and briefing session.
Step V	isiZulu-speaking Children (n=10)	Inclusion: <ul style="list-style-type: none"> ➤ Children between the ages of 7 years 0 months and 12 years 11 months. ➤ Children fluent in isiZulu, with isiZulu as the home language of one or both parents/guardians. ➤ Children located in Tshwane, Gauteng, South Africa, during data collection. Exclusion: <ul style="list-style-type: none"> ➤ Children who were assessed by an occupational therapist within the past six months.
Step V	Native language reviewers (n=2)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Experience in administering the DTVP-3 ➤ Not otherwise involved in steps I to V

3.5.2. Data collection step II

Research objective 1:

The three forward translations (TL1, TL2 and TL3) were compared (as prepared during step I) by committee-1. The discrepancies and agreements reached by the committee-1 members were detailed and tabulated, as demonstrated by Pasin et al.¹⁸ The successes and challenges experienced in these steps were also noted.

3.5.3. Data collection step III

Research objective 1:

The data collected during step III (BT1 and BT2) were combined in table form and underwent a content comparison with the SL. Discrepancies between the versions were noted for discussion in step IV.

3.5.4. Data collection step IV

Research objective 2:

Committee-2 compared the original SL, PI-TL, BL1 and BL2 - the discrepancies and agreements reached were detailed and discussed, as demonstrated by Pasin et al.¹⁸ The discussion points of committee-2 were recorded, and whether they related to functional, cultural and conceptual equivalence was noted by the researcher. A random sample (42%) of the recording and observations regarding equivalence were verified by an external rater. The successes and challenges experienced in these steps were also noted.

3.5.5. Data collection step V

Research objectives 2 & 3:

The data collected during step V also underwent content analysis. The responses to the child feedback questionnaire (provided by the isiZulu-speaking children) and equivalence feedback questionnaire (provided by the administering therapists and native language reviewers) were summarized to reflect the participants' subjective experiences of the functional, cultural and conceptual equivalence of the translations as recommended by the ITC Guidelines for Test Translation and Adaptation.¹²

3.6. Rigour/quality control

The design of this study was chosen and tailored to ensure that quality control measures were incorporated throughout the various steps of the study, leading to an inherently rigorous design.

3.6.1. Quality control measures in step I

As informed by the relevant literature, more than one translator was used during the direct forward translation.^{9, 15, 21, 22} The qualifications and backgrounds of the translators were specifically chosen to ensure that the resulting versions represent a high standard of linguistic translation while at the same time ensuring that it remains accessible to the average isiZulu-speaking person.^{15, 21}

3.6.2. Quality control measures in step II

Using a committee approach to discuss and resolve discrepancies between the two translations also served a function of quality control.¹⁵

3.6.3. Quality control measures in step III

In step III, the use of multiple translators with specific knowledge and experience contributed to the credibility of the back translation.²¹ The back-translation itself has also been described as a quality control measure in literature.^{9, 12, 15, 17, 20-22}

3.6.4. Quality control measures in step IV

The membership and structure of committee-2 were purposefully chosen for quality control.^{15, 21} Moreover, the credibility of the agreement (P-FTL) reached by committee-2 was further enhanced through the inclusion of the native isiZulu-speaking professional third party as an independent party who was not involved during the forward or backward translations.²¹ After step IV had been concluded, the researcher reviewed the content of the committee-2 discourse. Observations were made regarding whether the discourse featured functional, cultural, or conceptual equivalence themes. These observations were verified by an external rater as a control measure.

3.6.5. Quality control measures in step V

Before commencement of the step V pre-test, the administering therapists received uniform cueing cards with the isiZulu administration instructions. They also attended

a virtual meeting where the test procedures of the original DTVP-3 were reviewed to ensure consistency and transferability.⁵⁸ The entire step V procedure served as a quality control measure for steps I to IV. The purpose of gathering feedback from the administering therapists, native language reviewers and children was to determine whether steps I to IV had been carried out with the necessary rigour to ensure equivalence between the SL and P-FTL.²¹

CHAPTER 4

4. Original Research Paper

Draft manuscript in preparation for submission to the South African Journal of Occupational Therapy

Abstract

Introduction: Visual perceptual skills are vital for developing academic skills and contribute to language development and socio-cultural participation. The Developmental Test of Visual Perception 3rd Edition evaluates visual perceptual skills but is only available in English. IsiZulu is the most spoken language in South Africa (22.7%), with English being the fourth. Therefore, the English version of the Developmental Test of Visual Perception 3rd Edition cannot be described as a universally authentic assessment instrument in this context.

Methods: This study aimed to translate and cross-culturally adapt the Developmental Test of Visual Perception 3rd Edition administration instructions into isiZulu using a five-step qualitatively driven multimethod sequential design. Qualitative feedback on the functional, cultural and conceptual equivalence was obtained at various intervals.

Results: This study demonstrated a methodology for translating and cross-culturally adapting the administration instructions of the Developmental Test of Visual Perception 3rd Edition into isiZulu to advance the authenticity of the assessment within the South African context. The isiZulu version was found to be functionally, culturally and conceptually equivalent.

Conclusions: This research has demonstrated a framework upon which the cross-cultural adaptations of other assessment instruments and other languages in South Africa can be based.

Key Words: Authentic assessment, functional equivalence, cultural equivalence, conceptual equivalence, linguistic translation, visual perception, occupational therapy

Introduction and Literature Review

This article presents the rigorous method used to translate and cross-culturally adapt the Developmental Test of Visual Perception Third Edition (DTVP-3) administration instructions into isiZulu while maintaining its functional, cultural and conceptual equivalence. This cross-cultural adaptation was done in advocacy for improved authentic assessment practices in evaluating visual perceptual skills among isiZulu-speaking children in South Africa.

Schneck defines visual perception as the process incorporating the reception and cognition of stimuli perceived by the visual system.¹ The components of visual perception are essential for the processing and interpreting of information gained through the visual system. Therefore, it constitutes the ability to derive functional meaning from the visual world.^{1, 42} Visual-motor functions and visual perception support a child's ability to engage in the meaningful educational occupations such as reading, writing and other school-related tasks.^{2, 45} Visual perceptual development has also been linked to developing functional skills such as attention, social interaction and motor development in childhood.⁴⁶

The evaluation of visual perceptual skills and how they impact occupational engagement falls within the scope of occupational therapy intervention.² The American Occupational Therapy Association outlines the occupational therapy process as consisting of evaluation, intervention, and targeting intervention outcomes within the client's functional context.² Therefore, it is imperative that occupational therapists have authentic assessment instruments to accurately evaluate skills and subskills to identify deficiencies and inform efficient intervention and effectively target outcomes.^{1, 2, 31} Many of the characteristics of authentic assessment, such as evaluating occupational performance within appropriate contexts and taking into account the impact of the environment on occupational functioning, is well established within the profession of occupational therapy.^{2, 32}

Authentic assessment is an alternative to traditional evaluation procedures and was born within the context of early childhood intervention (ECI).⁸ It advocates for using developmentally appropriate evaluation methods within an environment that emulates the functional setting within which the child would naturally perform the skills under investigation.⁷ Conventional testing is argued to introduce limits in terms of content, procedures, process and evidence, which may lead to mismeasurement of a child's abilities in an unnatural context and deny their rights to beneficial expectations and opportunities.^{7, 23, 28, 38} Such mismeasurement misrepresents the child and instead of highlighting competence within uniqueness, may over-emphasize the child's limitations.^{7, 28, 38} Bagnato et al. have emphasized eight major standards for developmentally appropriate and authentic assessment instruments and procedures based

on over 25 years of collaborative documents compiled by many major national professional organizations.⁷ These standards are acceptability, authenticity, collaboration, evidence, multi factors, sensitivity, universality and utility. Each standard can be described using quality indicators which highlight aspects important for ensuring that the standards are upheld. These standards can be considered an ideal for which ECI assessment instruments and occupational therapy assessment practices should strive. This study has focused on specific quality indicators that fall under the standards of acceptability, evidence, universality and utility. These quality indicators are social appropriateness, diversity representation, equitable design, intervention content and performance monitoring quality indicators for the DTVP-3 are enhanced through translation and cross-cultural adaptation as shown in Table I.

The DTVP was one of the first visual perceptual tests to be developed based on statistically established norms.⁷ It has gained popularity since the second edition was released.⁷ The third

Table II: The enhancement of the DTVP-3 as applied to the standards for authentic assessment⁹

		<i>Quality Indicator</i>	<i>Translation and Cross-Cultural Adaptation of the DTVP-3</i>
<i>Standards for authentic assessment</i>	Acceptability	Social appropriateness	By translating and cross-culturally adapting the DTVP-3, its social appropriateness within the South African context is improved. In doing so, it can be presented in a manner more acceptable to isiZulu-speaking children, parents and other caregivers, namely in their native language.
	Evidence	Diversity representation	Although this study will not include large-scale reliability and validity testing of the translated instructions, it can be seen as a first step toward building a body of literature that encourages even greater diversity in the population for which the DTVP-3 is tailored.
	Universality	Equitable design	By translating and cross-culturally adapting the DTVP-3, the population of children who are provided equal opportunity to demonstrate skill through this assessment instrument in South Africa is broadened.
	Utility	Intervention content	Translation of the DTVP-3 intends to remove the unnecessary language barrier that isiZulu speaking children could experience when being assessed with the current version of the DTVP-3, which will lead to more accurate results and more precisely inform the content of the occupational therapy intervention plan.
	Utility	Performance monitoring	As the authenticity of the DTVP-3 within the South African context is improved through its translation and cross-cultural adaptation, it becomes even more valuable in monitoring the isiZulu-speaking child's response to intervention.

and latest edition (the DTVP-3) is widely used by occupational therapists to evaluate visual perceptual skills. The DTVP-3 consists of five subtests evaluating eye-hand coordination, copying, figure-ground, visual closure and form constancy.⁵ It can be administered to inform intervention strategies and measure the effectiveness of an intervention.⁵ This link between the assessment instrument and the therapeutic outcomes is a characteristic of authentic assessment practices.^{34, 47}

The majority of the children seen by occupational therapists have already been identified as a potentially compromised population before obstacles to their occupational engagement could be further compounded by language barriers. In previous studies, the administration of the DTVP within the South African context was consistently conducted in English, except for one study, which did not elaborate on the method used to translate it into Afrikaans.³ However, according to the 2011 (most recent) Census, the most represented first spoken languages in the South African population were isiZulu (22.7%), isiXhosa (16%), Afrikaans (13.3%) and English (9.6%).⁶ The most represented first spoken languages in the province of Gauteng were isiZulu (19.8%) and English (13.3%).⁶ Hence, a significant representation of children evaluated using the DTVP-3 do not have access to it in their home language. Therefore, it cannot be considered an authentic assessment instrument for these children.⁷

Direct or linguistic translation of assessment instruments has been utilized in various contexts. One method of linguistic translation is crowdsourcing the translation through online open translation tools. However, one study experienced difficulties in quality assurance of the translation and establishing its suitability for different contexts.⁴⁸ In another study, Guo investigated the viability of using a machine translator, such as Google Translate, but found various challenges and shortfalls rendering this method insufficient when used in isolation.⁴⁹ Another method is reflected in a published case study by Jones et al.⁵⁰ While translating elements of the ABA intervention programme from English to Welsh, Jones et al. found it necessary to establish new terminology for key concepts.⁵⁰ Methods they used to devise new terminology included adaptation (allowing old words to gain new meaning), derivation and neologisms.⁵⁰ As part of this case study, it was also experienced that direct translation by professional translators tended to be inadequate in maintaining grammatical fluency. The technically correct translations also failed to capture the intent of the original text.⁵⁰

Many authors have stressed that mere linguistic translation is insufficient to modify an assessment instrument for use with a different population group.^{9, 10, 14-16, 19-21} Instead, an instrument must be cross-culturally adapted to ensure equivalence and avoid potential sources of bias.^{9, 19, 21, 22} Peña emphasizes that merely meeting the requirements of equivalence is insufficient for an instrument to be cross-culturally adapted. It must also meet

the requirements of functional, cultural and metric equivalence.¹⁹ Linguistic equivalence can be facilitated through the backward translation method of translating from the source language to the target language, followed by back-translation from the target language back to the source language by a translator unfamiliar with the original text. Then the original text and back-translated text are compared for discrepancies and consolidated.¹⁹ Another method to ensure linguistic equivalence is through review by a native speaker of the target language.¹⁹ Functional equivalence ensures that the same response or behaviour will be elicited in the target language as was intended in the source language.⁵⁴ One of two methods is often employed to facilitate functional equivalence.¹⁹ One method is decentring, whereby wording in the target language may shift away from the original wording to prioritize linguistic familiarity.^{19, 52, 55} Another method is adopting a dual focus in which the instrument is developed in both languages simultaneously.^{19, 56} Cultural equivalence emphasizes the degree to which different cultural and linguistic groups interpret and respond to the perceived meaning conveyed by the instrument items.^{19, 22} Cultural equivalence is closely related to functional equivalence.¹⁹ Conceptual or metric equivalence is an evaluation of whether the difficulty of an item is comparable in both the source and target languages by taking into account the frequency with which it occurs in that language.^{19, 21, 22} According to Peña, using parallel vocabulary measures, which focus on word frequency comparisons between the source and target languages, may encourage metric equivalence during translation.¹⁹

It is clear that instruments used cross-culturally need to be equivalent on many levels to provide an equal opportunity to demonstrate skill.^{15, 17, 19} Many authors reiterate that a translation should meet the basic standards set for all measures in that it must be reliable, valid, legal and cost-effective, as well as meet requirements for equivalence beyond mere linguistic translation.^{12, 14-17, 19-22}

Various methods of cross-cultural adaptation have been recommended throughout literature^{9, 12, 14-16, 20, 21}. Sousa and Rojjanasrirat have suggested a method for translation based on their review of methodological studies focusing on the cross-cultural adaptation of instruments and scales within the context of health care research.²¹ They recommend the following steps as a guideline:²¹

Step 1: Translation of the original assessment instrument into the target language (forward translation) by at least two independent translators.^{14-16, 21, 22} These translators produce target language translations one (TL1) and two (TL2), respectively.²¹ The translators should have the target language (TL) as their mother language and have experience in the culture and colloquialisms of the TL.²¹ *Step 2:* Comparison of the instrument's two translated versions (TL1 and TL2) by a third bilingual, bicultural independent translator and a committee approach to

resolving any discrepancies.²¹ The committee consists of the two initial translators, the third independent translator and the researcher.²¹ This committee reaches an agreement to produce the preliminary initial translated version (PI-TL).^{16, 21} *Step 3:* Blind backward translation of the translated instrument (PI-TL) back to the original language (SL) by two other independent translators.²¹ The mother language of the translators involved in this step should be the SL. However, they should be fluent in both the SL and TL.²¹ It is essential that the translators involved in the back-translation not be familiar with the original assessment instrument to avoid previous exposure from influencing the back-translation, thereby ensuring a blind back-translation.^{15, 21} They will produce two backward translated versions (B-TL1 and B-TL2, respectively).²¹ *Step 4:* A multidisciplinary committee compares the two back-translated versions (B-TL1 and B-TL2) with the original instrument (SL).²¹ This committee should consist of the researcher, all four translators involved in steps 1 and 3, a healthcare worker familiar with the original assessment instrument and at least one monolingual person whose mother language is the TL.²¹ This committee then resolves any ambiguities or discrepancies between the SL, B-TL1 and B-TL2 to produce the pre-final version in the target language (P-FTL).²¹ *Step 5:* Pre-test the pre-final version of the instrument among participants whose language is the target language.^{9, 14, 15, 21} These participants should be representative of the target population for which the translation is intended, and the use of a dichotomous scale (clear or unclear) is recommended.²¹

It is clear from the literature that cross-cultural translation of an assessment instrument requires a systematic and methodological approach for equivalence to be maintained.^{15, 19, 21, 22} Receiving administration instructions in a language other than the child's first language could have a detrimental effect on the child's opportunity for equal performance and does not align with the standards of authentic assessment.^{15, 19} Placing a child in such a situation could lead to mismeasurement and misrepresentation of the child's abilities.⁷ Since isiZulu is the most represented spoken language in South Africa; there is a significant need for cross-cultural adaptation of the administration instructions of the DTVP-3 to isiZulu. This article reports on the rigorous process necessary to translate and cross-culturally adapt the administration instructions of the DTVP-3 into isiZulu.

Methodology

This study aimed to cross-culturally adapt the instructions of the DTVP-3 using a combination of the methods suggested in literature; as well as examining the functional, cultural and conceptual equivalence after translation into isiZulu to improve the authenticity of the DTVP-3 as an assessment instrument within the South African context.^{7, 19, 21, 22} The study's objectives were as follows: *Objective 1:* To translate the administration instructions of the DTVP-

3 into isiZulu linguistically.¹⁹ *Objective 2:* To examine whether the isiZulu translation represents a cross-cultural adaptation which satisfies the standard for ensuring functional, cultural, and conceptual equivalence.^{19, 21} *Objective 3:* To conduct a pre-test study to provide preliminary feedback on whether the adaptation is comprehensible for the isiZulu-speaking child in the Tshwane (Gauteng Province, South Africa) area. This qualitatively driven multimethod sequential study followed the ethical principles of human research and received approval from the Faculty of Health Sciences Research Ethics Committee (Ethics Approval: 459/2020).²⁹ Figure 2 presents the five steps of the design and is based on work by Guillemin et al., Sousa et al., Wang et al., and Beaton et al.^{9, 15, 21, 22} Each step implements one or more of the research objectives. Therefore the study design has been described with references to the objectives.

OBJECTIVE 1:

Step I: Forward Translation into Target Language: The original version was linguistically translated from the source language (SL), English, into the target language (TL), isiZulu, using three independent translators. Translator 1 was a native isiZulu-speaking occupational therapist trained in the administration of the DTVP-3. Translator 2 was a bilingual isiZulu-speaking layperson unfamiliar with the DVTP-3 but familiar with colloquialisms, slang and contextual interpretations of the target language. Translator 3 was a bilingual and bicultural third party trained in teaching languages to children. Translators 1, 2 and 3 produced target language translation 1 (TL1), target language translation 2 (TL2) and target language translation 3 (TL3), respectively.

Step II: Synthesis and Agreement by Committee-1: Next, TL1, TL2 and TL3 were compared by committee-1, who discussed and resolved any discrepancies between the three translations to synthesize the preliminary initial translated version in the target language (PI-TL). Committee-1 consisted of translator 1, translator 2, translator 3 and the investigator.

Step III: Blind Back-Translation of Preliminary Initial Version in Target Language (PI-TL): During step III, the PI-TL was translated back into the SL by two other independent translators. Translator 4 was a healthcare professional unfamiliar with the DTVP-3. Translator 5 was a bilingual and bicultural layperson. Translators 4 and 5 produced back-translation 1 (BT1) and back translation 2 (BT2), respectively. The blind back-translation was done by translators unfamiliar with the original assessment instrument to preclude previous exposure to the original SL administration instructions from influencing the backward translation.

OBJECTIVE 2:

Step IV: Synthesis and Agreement by Committee-2: At this step, committee-2 compared the SL, PI-TL, BT1 and BT2 versions. The committee discussed and resolved discrepancies to synthesize the pre-final version in the target language (P-FTL). Committee-2 consisted of translator 1 (TL1 translator), translator 2 (TL2 translator), translator 3 (TL3 translator), translator 4 (BT1 translator), translator 5 (BT2 translator), the investigator, and an independent isiZulu-speaking third party. This independent third party was a native isiZulu-speaking professional trained in administering the original assessment instrument. By including a native isiZulu speaker who was also a trained professional, the quality of the P-FTL was enhanced. This third party contributed relevant experience in administering the assessment instrument with isiZulu-speaking children.

Following the conclusion of step IV, the committee-2 discourse was analysed for themes of functional, cultural and conceptual equivalence. This analysis was verified by external rater number one through a random sampling of 42%.

OBJECTIVES 2 & 3:

Step V: Pre-test: During the pre-test step, the newly translated and adapted isiZulu version of the administration instructions was used by isiZulu-speaking occupational therapists to administer the DTVP-3 to isiZulu-speaking children. The therapists first attended a virtual briefing on the administration procedures and received the isiZulu administration instructions on identical cue cards. These measures were undertaken to minimise administrator variability.

After each administration, the child provided qualitative descriptive feedback regarding his/her experience using a feedback questionnaire. The administering therapist assisted each child in recording his/her response to the questionnaire. Each participating occupational therapist also provided feedback on the functional, cultural and conceptual equivalence of the isiZulu administration instructions by completing an equivalence feedback questionnaire (adapted from Hambleton and Zenisky's Translation and Adaptation Review Form).^{12, 17} The questions of the equivalence feedback form were analysed for themes of functional, cultural and conceptual equivalence. This analysis was verified by external rater number two through a random sampling of 33%.

As part of step V, two native language reviewers also commented on the equivalence of the isiZulu translation through the equivalence feedback questionnaire.¹⁹ The two native isiZulu speakers were occupational therapists with experience in administering the DTVP3 who had not been involved in steps I to IV.

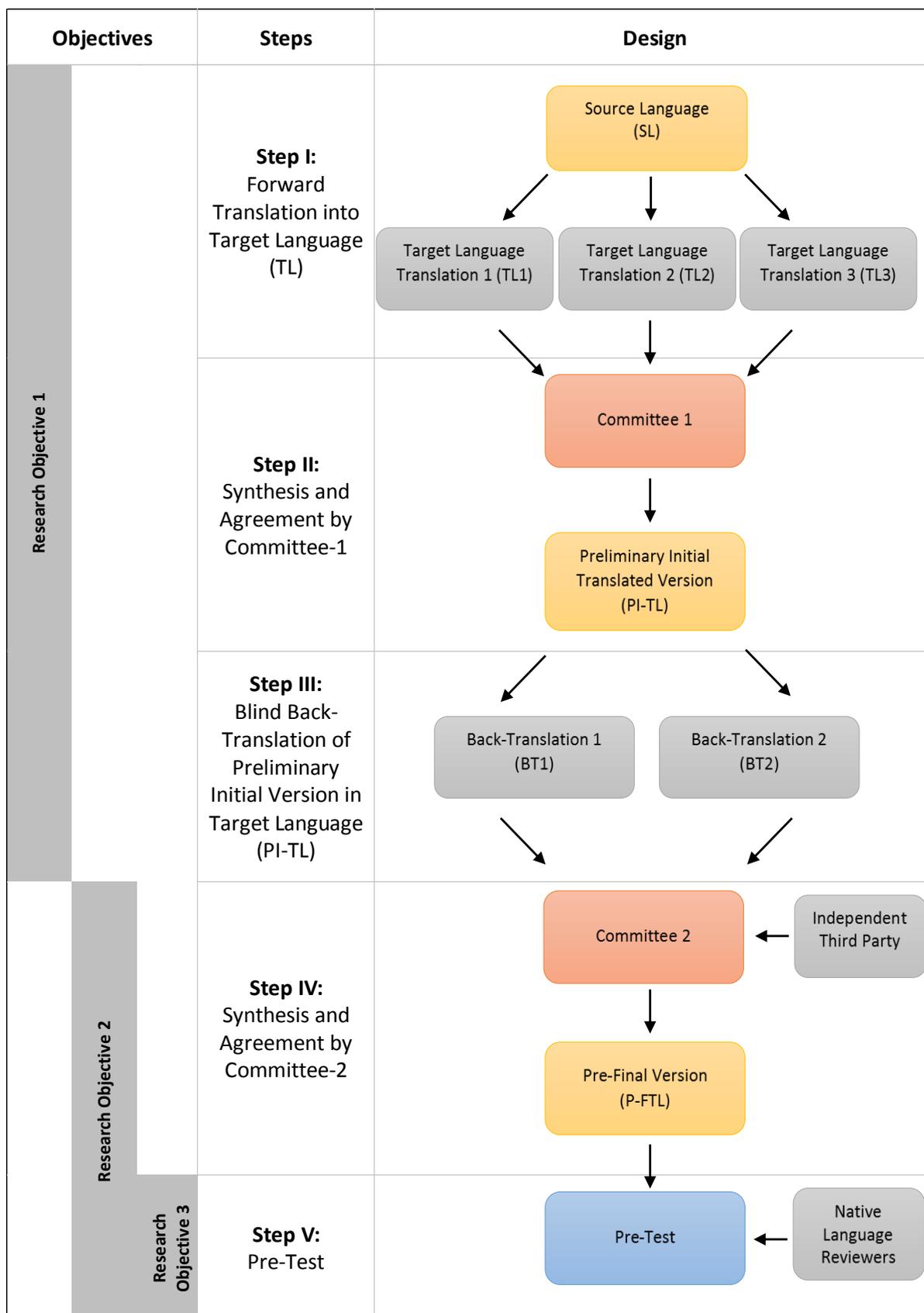


Figure 1: Study design based on works by Guillemin et al., Beaton et al., Sousa et al., and Wang et al. ^{21, 22, 25, 29}

Population

During steps I to IV, the target population consisted of professionals and laypersons fluent in isiZulu based in KwaZulu-Natal Province, Free State Province, North West Province and Gauteng Province, South Africa. The step V pre-test represented three population groups. The first target population was isiZulu-speaking children between the ages of seven years two months and ten years seven months attending primary schools in Tshwane, Gauteng Province, South Africa. The second population of step V was isiZulu-speaking administering therapists. These were therapists currently working as occupational therapists in Tshwane, Gauteng, South Africa. The therapists were not known to the children prior to the study. The third population of step V was native language reviewers based in KwaZulu-Natal Province, South Africa.

Sampling method and sample size

The steps I to IV participants were recruited using purposive snowball sampling from the investigator's and supervisors' network of professional acquaintances and colleagues. Translators 1 to 5 and the independent third party were recruited to meet specific criteria as shown in Table II.

The step V administering therapists and native language reviewers were recruited using purposive snowball sampling through acquaintances, colleagues, fellow postgraduate students, and school-based occupational therapists' professional networks. It should be noted that step V represents a pre-test (not a pilot study); therefore, a small sample size was used to gain initial feedback from the target population before a pilot study is conducted.²¹ The second target population of step V was children from primary schools in the vicinity of the administering occupational therapists. The sample of children was recruited by contacting schools in the vicinity of the administering occupational therapists. After permission from the Gauteng Department of Education (GDE) and the principals of each primary school was obtained, information was made available to the parents. This information explained the details of the study and invited their children to participate voluntarily. The third population of step V was the native language reviewers, who were recruited using purposive snowball sampling of acquaintances, colleagues, fellow postgraduate students, and school-based occupational therapists' professional network.

Data Collection and Analysis

The data collected in step I (TL1, TL2 and TL3) was tabulated and underwent a content comparison. Discrepancies between the versions were noted for discussion in step II by

Table III: Sampling method, size and criteria

<i>Sample</i>		<i>Criteria</i>
Step I - II	Translator 1 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Bilingual and bicultural ➤ Healthcare professional familiar with the DTVP-3
	Translator 2 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Bilingual and bicultural ➤ Familiar with colloquialisms, slang and contextual interpretations of the target language (isiZulu)
	Translator 3 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ Bilingual ➤ Bicultural
Step III-IV	Translator 4 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language English ➤ Bilingual and bicultural ➤ Healthcare professional unfamiliar with the English DTVP-3 administration instructions
	Translator 5 (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language English ➤ Bilingual and bicultural ➤ Familiar with colloquialisms, slang and contextual interpretations of the source language (English)
	Independent third party (n=1)	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Not previously involved in steps I to IV
Step V	Administering therapists (n=3)	Inclusion: <ul style="list-style-type: none"> ➤ Qualified occupational therapist holding current registration with the Health Professions Council of South Africa. ➤ Self-professed fluency in reading, speaking and understanding isiZulu. ➤ Currently practising within the field of paediatrics, with at least one year of postgraduate experience in regular use of the DTVP-3 in clinical practice. Exclusion: <ul style="list-style-type: none"> ➤ Therapists who participated during the Step I-IV translation of the instructions. ➤ Therapists unable to attend the refresher and briefing session.
	Children (n=10)	Inclusion: <ul style="list-style-type: none"> ➤ Children between the ages of 7 years 0 months and 12 years 11 months. ➤ Children fluent in isiZulu, isiZulu being the first language of one or both parents/guardians. ➤ Children located in Tshwane, Gauteng, South Africa during data collection. Exclusion: <ul style="list-style-type: none"> ➤ Children assessed by an occupational therapist within the past six months.
	Native language reviewers	Inclusion: <ul style="list-style-type: none"> ➤ First language isiZulu ➤ Experience in administering the DTVP-3 ➤ Not otherwise involved in steps I to V

committee-1. The discrepancies and agreements reached by the committee-1 members were detailed and tabulated, as demonstrated by Pasin et al.¹⁸

The data collected during step III (BT1 and BT2) were combined in table form and underwent a content comparison with the SL. Discrepancies between the versions were noted for discussion by committee-2, who compared the original SL, PI-TL, BL1 and BL2. The discussion points of committee-2 were recorded, and the researcher noted whether they related to functional, cultural and conceptual equivalence. A random sample (42%) of the recording and observations regarding equivalence made was verified by external rater number one.

The data collected from step V also underwent content analysis. The responses to the child feedback questionnaire (completed by the isiZulu-speaking children) and equivalence feedback questionnaire (completed by the administering therapists and native language reviewers) were summarized as recommended by the ITC Guidelines for Test Translation and Adaptation.¹² A random sample (33%) of the equivalence feedback questionnaire questions and the equivalences they represent was verified by external rater number two.

Results of steps I to IV

This study proceeded through five rigorous steps of translation and cross-cultural adaptation. Table III describes the demographics of the participants in steps I to IV. As shown in the table, the participants represented various locations in the provinces of KwaZulu-Natal, Free State, North West and Gauteng, contributing a variety of vernaculars which broadened the translation beyond the dialect of a single province.

Table IV: Participant population description of steps I to IV

<i>Participant</i>	<i>Contribution</i>	<i>Step</i>	<i>Location</i>	<i>Occupation</i>
<i>Translator 1</i>	Produced TL1 Contributed to Committee-1 and -2	Steps I, II, III and IV	KwaZulu-Natal Province, South Africa	Occupational therapist
<i>Translator 2</i>	Produced TL2 Contributed to Committee-1 and -2	Steps I, II, III and IV	Free State Province, South Africa	Language teacher in the private sector formerly affiliated with the African Language Institute
<i>Translator 3</i>	Produced TL3 Contributed to Committee-1 and -2	Steps I, II, III and IV	North West Province, South Africa	Language teacher in the primary education sector
<i>Translator 4</i>	Produced BT1 Contributed to Committee-2	Steps III and IV	KwaZulu-Natal Province, South Africa	Speech therapy student
<i>Translator 5</i>	Produced BT2 Contributed to Committee-2	Steps III and IV	KwaZulu-Natal Province, South Africa	Administration officer
<i>Independent Third Party</i>	Contributed to Committee-2	Step IV	KwaZulu-Natal Province, South Africa	Occupational therapist

As part of step I, the translators completed the forward translation of the DTVP-3 administration instructions to produce the three isiZulu versions (TL1, TL2 and TL3). Google Translate, and the researcher's basic familiarity with elementary isiZulu, were used to prepare the comparison of SL, TL1, TL2 and TL3 by numbering the corresponding sentences. This numbering was done to ease the comparison of translated versions and facilitate verbal referencing of specific sentences during step II

The step II committee-1 meeting took place on a virtual platform. The members of committee-1 were translator 1, translator 2, translator 3 and the researcher. During this committee, the members compared TL1, TL2 and TL3. They collaborated to adapt or correct discrepancies between the translations, reaching an agreement on the version that would become PI-TL. The administration instructions consisted of 46 numbered sentences, each discussed individually by committee-1. Committee-1 collaborated to alter or combine TL1, TL2 and TL3 in 61% of the sentences. In 4% of the sentences, either TL2 or TL3 were agreed upon as the PI-TL without alteration. In 35% of the sentences, TL1 was agreed upon by all members as the PI-TL without alteration. These unaltered sentences from TL1 were judged as the most appropriate and easily understandable wording. TL1 appeared to consist of shorter, more concise sentences. Since the occupational therapist produced TL1, it could be argued that experience in working with the target audience (namely young children) and relevant experience in administering the DTVP-3 was a significant asset during the translation process. It proved to be important that all the committee members should be familiar with the actual testing procedure of the DTVP-3. The translators were provided with examples of the subtests, but some confusion remained regarding whether the children would have to read the instructions themselves. However, it was explained that the instructions would be given verbally by an adult trained in administering the DTVP-3.

During step III, translators 4 and 5 blind back-translated the PI-TL from isiZulu into English. Translator 4 and translator 5 were specially selected to have no prior familiarity with the SL. The two back-translated versions (BT1 and BT2) were produced. The majority (74%) of the 46 sentences revealed no discrepancy between the SL, BT1 and BT2. Therefore, most sentences were accurately translated during steps I and II. 26% of the 46 sentences revealed some discrepancies.

The step IV committee-2 meeting was conducted virtually where the members compared the original SL, PI-TL, BT1 and BT2, deliberated the discrepancies and reached an agreement to produce the P-FTL. The members of committee-2 were translator 1, translator 2, translator 3, translator 4, translator 5, an independent third party and the researcher.

Table V: Results of step IV

<i>Sub-characteristic</i>	<i>Sentence numbers</i>	<i>n</i>	<i>% out of 12</i>
<i>A discrepancy existed between SL, BT1 and BT2 but committee-2 retained PI-TL without alteration.</i>	3, 4, 6, 9	4	33%
<i>Committee-2 collaborated to correct or produce P-FTL.</i>	2, 13, 18, 27, 30, 32, 43, 44	8	67%
<i>Functional equivalence considered</i>	18, 44	2	17%
<i>Cultural equivalence considered</i>	2, 3, 9, 30, 32	5	42%
<i>Conceptual equivalence considered</i>	2, 3, 4, 30, 32, 43	6	50%

Table IV shows an analysis of the discourse during committee-2. Committee-2 judged PI-TL as the most accurate version in 33% of the sentences with discrepancies. In these instances, PI-TL was accepted as the P-FTL without alteration. 67% of the sentences which contained discrepancies were discussed by the committee-2 members who collaborated and produced P-FTL while considering various concepts of equivalence (i.e. functional, cultural and conceptual equivalence). The equivalences described in Table IV were not mutually exclusive, and some sentences enjoyed consideration of multiple sub-characteristics.

When considering the 12 sentences which revealed discrepancies, cultural equivalence was the main discussion point for 42% of the 12 sentences. An example of a sentence considering cultural equivalence is sentence number 9: “See the dog? You are going to draw a line from the dog to this bone over here.” During the committee-2 discussion, the members agreed that “from... to...”, as it occurs in sentence number 9, is not a culturally appropriate manner of giving instruction in isiZulu. Instead, the members agreed that P-FTL should read: “*Bukainja. Dweba ulayini uyaku kwithambo* (Look at the dog. Draw a line to the bone).” Another example of cultural equivalence occurred in sentences number 2, 7 and 9, where committee-2 chose “*dweba*” (draw) instead of “*uzodweba*” (you will draw) to remain faithful to the culturally familiar way of giving instructions. In four sentences (3, 18, 30 and 32), committee-2 concluded that appropriate pointing is vital for ensuring equivalence. The necessity for pointing is also due to the way instructions are given in isiZulu, which differs from English. Therefore, the translation and cross-cultural adaptation of these sentences is linked to the use of pointing to the specific stimulus by the administering therapist to support cultural equivalence.

Functional equivalence was the focus of 17% of the discussion surrounding the 12 sentences with discrepancies. An example of this occurred in sentence 44: "...there may be more than one shape like the one at the top." Decentring was necessary to ensure that the instructions elicit the same response from the child. The PI-TL was not clear that the child had to look for more than one answer. However, committee-2 collaborated on P-FTL to ensure the child would understand to look for multiple responses. Similar confusion was revealed in sentence 18: "The car can go around the racetrack in either direction." Initially, this sentence was mistranslated as "*Imoto ingahamba noma yikuphi*. (The car can go anywhere)", which the child could misinterpret as drawing anywhere on the page instead of within the targeted stimulus. After much deliberation, committee-2 improved on the functional equivalence to ensure that the desired response (drawing a line within the targeted stimulus) would be elicited from the child.

Conceptual equivalence was the focus of discussion in 50% of these sentences. In the P-FTL, conceptual equivalence was obtained through words such as "*ulayini*" (used in sentences 2, 3, 7, 9, 10, 13, 14, 17 and 19) instead of "*umugqa*". *Umugqa* is the proper isiZulu word for "line"; however, it was decided that it may not be equally familiar to young children. Similarly, the word "*ipeni*" (sentences 4, 6, 8, 15 and 19) was chosen for pencil since it was considered by committee-2 to be more familiar to a young child than the proper isiZulu word for "pencil". Conceptual equivalence proved challenging in sentences number 30 and 32, which read "...which of these shapes down here are part of the drawing at the top of the page." The isiZulu word for "part of" or "*ingxenye*" ("part") was considered by the committee-2 members as unlikely to be in a young child's vocabulary. In sentences number 30 and 32, the committee agreed that with appropriate pointing by the administering therapist, *ingxenye* should be omitted. Similarly, sentence 43 (excerpted below) also includes "...they may be part of a drawing", which presented the same challenge. However, in this case, decentring was required to maintain equivalence. Committee-2 agreed that "*inhlangane neminye imidwebo*" ("combined with other drawings") would be the most suitable alternative in this case.

In order to ensure rigour, an external rater corroborated the equivalence analysis. Out of the 12 sentences with discrepancies, a random selection of 42% was designated for verification. The results of the external rater report confirmed that the equivalences observed during the analysis were present points of discussion during the committee-2 discourse. Table 5.6 below compares the primary analysis results with the results of the external rater report.

The randomised sentence numbers and the committee-2 meeting recording were provided to the external rater for blind verification. The external rater was an occupational therapy professor from the University of Pretoria and one of the study supervisors.

Results of step V

The sample of participants in step V consisted of administering therapists (n=3), native language reviewers (n=2) and isiZulu-speaking children (n=10). The administering therapists involved in the step V pre-test were trained occupational therapists and fluent speakers of isiZulu. Similarly, both native language reviewers who contributed to step V were native isiZulu speakers and trained occupational therapists. Refer to Table V for the contributions settings and professions of the administering therapists (n=3) and native language reviewers (n=2). The sample of isiZulu-speaking children (n=10) who participated in step V ranged from seven years two months old to ten years seven months old. All the children were located in Gauteng Province, South Africa. Table VI below shows the demographic representation of the isiZulu-speaking children.

Table VI: Demographics of step V administering therapists and native language reviewers

<i>Participant</i>	<i>Contribution</i>	<i>Step</i>	<i>Setting</i>	<i>Profession</i>
<i>Administering Therapist 1</i>	Administered the Translated DTVP3 Completed the Equivalence Feedback Questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Administering Therapist 2</i>	Administered the Translated DTVP3 Completed the Equivalence Feedback Questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Administering Therapist 3</i>	Administered the Translated DTVP3 Completed the Equivalence Feedback Questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Native language reviewer 1</i>	Expert review Completed the Equivalence Feedback Questionnaire	Step V	KwaZulu-Natal Province, South Africa	Occupational therapist
<i>Native language reviewer 2</i>	Expert review Completed the Equivalence Feedback Questionnaire	Step V	KwaZulu-Natal Province, South Africa	Occupational therapist

Assent was obtained from each child before the assessment was administered. The administering therapists then administered the DTVP-3 to the isiZulu-speaking children (n=10) using the isiZulu instructions. See Table 6 for the demographic characteristics of the isiZulu-speaking children who participated. Following the assessment administration, the children verbally responded to the Child Feedback Questionnaire. The Child Feedback Questionnaire consisted of three dichotomous questions relating to the children’s experience of the isiZulu administration instructions. The average responses for the three questions were 9.3/10 positive responses. Therefore, the majority of the responses from the isiZulu-speaking children indicated that they could understand the isiZulu administration instructions.

After administering the DTVP-3, the therapists (n=3) completed the equivalence feedback questionnaire. This questionnaire was also completed by native language reviewers (n=2), who had read through the isiZulu administration instructions.

The responses received from a majority of the occupational therapists (administering therapists and native language reviewers) revealed the isiZulu translation to be equivalent. Responses to 80% of the questionnaire items indicated unanimous agreement that the translation was successfully translated and cross-culturally adapted while maintaining functional, cultural and conceptual equivalence. Responses to questionnaire items consisted of either minor rewording suggestions or variations that had already been discussed during the committee steps. Overall, all five occupational therapists (administering therapists and native language reviewers) indicated that the DTVP-3 was successfully translated and cross-culturally adapted.

One of the questionnaire item responses recommended an addition that does not occur in the original SL but would improve upon the practicality of administering the instrument. The suggestion was to add the phrase “*Ngikombise futhi* (Show me again).” Also, in response to the question regarding metaphors, idioms and colloquialisms, one participant suggested alternate wording for the visual closure subtest instructions. The suggestion is a simplified

Table VII: Demographics of step V isiZulu-speaking children

<i>Characteristics</i>		<i>N</i>
<i>Gender</i>	Male	7
	Female	3
<i>Age</i>	7 years old	1
	8 years old	3
	9 years old	4
	10 years old	2
<i>Total</i>		10

paraphrasing of the SL instructions and therefore employs a great degree of decentring. The P-FTL more accurately mirrors the SL version, but the suggested simpler version represents a more culturally appropriate manner of speaking. This suggestion should be considered when the translation is prepared for a pilot study (not included in the scope of this research).

One native language reviewer suggested a significant alteration to how subtest five is presented to the child. This recommendation was noted but not incorporated into the P-FTL since it significantly deviated in structure and length from the SL version. In the researcher's clinical opinion, this could compromise the psychometric properties of the subtest. In the comments section of the questionnaire, four of the five occupational therapists commented that the SL and P-FTL are equivalent. Native language reviewer 1 described the translated version as concise and easy to administer. She also emphasized that even in cases where no direct translation was possible, the meaning remained the same. Administering therapist 1 described the P-FTL version as being "*perfect*".

Discussion/Implications of Research

This study demonstrated a rigorous method for translating and cross-culturally adapting an assessment instrument such as the DTVP-3 to advance the authenticity of the assessment within the South African context. To the researcher's knowledge, this is the first time this method has been applied to test administration instructions in a South African setting. The main finding of this study is that the methodology produced the pre-final isiZulu administration instructions that were revealed to be functionally, culturally and conceptually equivalent to the original version of the DTVP-3. The strength of the methodology is that it consisted of five steps and included two committees with various contributors from diverse backgrounds and professions. Various successes and challenges were experienced throughout the study, providing a roadmap for future researchers. This chapter discusses these successes and challenges.

As integrated into the methodology, the committee approach proved vital to the cross-cultural adaptation of the DTVP-3 into isiZulu. From the beginning of the study, emphasis was placed on translation with the target audience in mind. Simple, developmentally appropriate language was prioritized over more pure vocabulary and formal grammar. As a result, conceptual equivalence was the predominant consideration in the discourse of both committee-1 and committee-2. This emphasis on age-appropriate language was also confirmed by the responses of the two administering therapists and two native isiZulu-speaking occupational therapists. All four therapists judged the P-FTL as similar in meaning, difficulty, commonality, structure, length, familiarity and complexity (according to their responses on the Equivalence

Feedback Questionnaire) and therefore equivalent. Another advantage of the translation methodology used during this study is the addition of the third translator (TL3 translator) in the step I forward translation. This translator had experience teaching children languages, which contributed much value to the translation and the committee-1 discourse.

Various practical considerations worked well during the step I to IV committees. Google Translate, and the researcher's basic familiarity with elementary isiZulu, were used to prepare the comparison of SL, TL1, TL2 and TL3 by numbering the corresponding sentences. This numbering was done to ease the comparison of translated versions and facilitate verbal referencing of specific sentences during the committee discussions. Steps I to IV committee meetings were conducted virtually on a well-known virtual meeting platform. Conducting the meeting online broadened the geographical reach of the study so that participants from other provinces could be included and allowed for more scheduling flexibility.

It proved to be very important that all the committee members be familiar with the actual testing procedure of the DTVP-3. The translators were provided with examples of the subtests, but some confusion remained regarding whether the children would have to read the instructions themselves. It was explained that the instructions would be given verbally by an adult trained in the administration procedures of the DTVP-3. This understanding of the context and administration procedure influenced both committees' discourse, especially committee-1.

South Africa's eleven official languages often blend where cultures harmonize together. As a result, many isiZulu dialects have developed across the provinces and even within the same provinces. Although the translation proved to be equivalent, the differences in the dialects were apparent during both committees and the feedback received from the therapists involved during step V. Some dialect differences, such as the use of *ingxenye* (part), ended up being discussed repeatedly.

One aspect that also contributed much value to the translation was the inclusion of multiple occupational therapists in steps I to IV. During the step I forward translation, the occupational therapist who produced TL1 was able to draw on his training and experience with the DTVP-3 to benefit the translation. As a result, TL1 was concise and accepted as the equivalent version for almost half (n=22) of the sentences chosen by committee-1. For the step IV committee-2 discussion, the independent third party was also a trained occupational therapist. During the committee-2 collaboration, both occupational therapists contributed their experience and assisted in making the translation more applicable to real-life administration, thereby enhancing its equivalence. In the context of this translation, the inclusion of an

additional occupational therapist may have added more value to committee-2 than the monolingual third party suggested by some previous studies.²¹

Through the rigorous method used to translate and cross-cultural adapt the DTVP-3, this study also enhanced its authenticity as an assessment instrument within the context of South Africa. It can be said that the newly translated isiZulu instructions have improved the DTVP-3's social appropriateness within the South African context. Social appropriateness is a quality indicator of authentic assessment. It can be expected that both professionals and parents would find the DTVP-3 a more socially appropriate assessment instrument for isiZulu-speaking school-going children when presented in their native language. Another indicator of authentic assessment procedures is an equitable design enabling equal opportunity to demonstrate skills. Having the administration instructions of the DTVP-3 available to isiZulu-speaking children in their native language provides equal opportunity to children who may not be as proficient in English as in isiZulu. The DTVP-3's utility is founded on its capacity to inform intervention goals and facilitate performance monitoring when treating isiZulu-speaking children with visual perceptual and visual-motor integration difficulties seeking therapeutic intervention. Therefore, its utility as an indicator of authentic assessment can now be considered more appropriate.

The methodology followed during this study was not dependent on the researcher's fluency in the target language. The implication is that an assessment instrument's translation and cross-cultural adaptation can be carried out without being limited by a researcher's language skills. This methodology has already incorporated various mechanisms to ensure that it transcends the language skills of any one participant.

Limitations of the study

Although this qualitatively driven multimethod sequential study presented a thorough and rigorous methodology, it is merely preliminary. The researcher acknowledges that this study included a limited, non-representative sample of administering therapists (n=3) and children (n=10). This study intended to progress only to the pre-test step. Therefore, a pilot study was not included in the scope of this research. Should this study have included a larger sample of administering therapists and children or have progressed to a pilot study, other threats to equivalence might have been revealed. Another limitation of this study is the limited inclusion of participants from the provinces of Gauteng, Free State, Mpumalanga and KwaZulu-Natal. The populations of the Northern Cape, Western Cape, Limpopo, North-West and Eastern Cape provinces were not represented.

Future studies should consider including the original developer/publisher of the assessment instrument in the committee discussions. If the developer could be a contributor to the committee-2 review, the feedback could inform an adaptation of the English version for the South African context.

Conclusion

This study describes a rigorous methodology for translating and cross-culturally adapting the administration instructions of an assessment instrument, such as the DTVP-3, into isiZulu to advance the authenticity of the assessment within the South African context. The methodology progressed through five steps: 1) forward translation into the target language, 2) synthesis and agreement by committee one, 3) blind back-translation of the preliminary initial version in the target language, 4) synthesis and agreement by committee two and 5) pre-testing. The methodology was shown to successfully ensure the functional, cultural and conceptual equivalence of the isiZulu version. The difficulties and successes experienced throughout the process are also reported. This research is intended to be a framework upon which the cross-cultural adaptations of other assessment instruments and other languages in South Africa can be based.

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CHAPTER 5

5. Results and Discussion

5.1. Introduction

The translation process was conducted over five steps to translate the administration instructions of the DTVP-3 into isiZulu linguistically and to examine whether the isiZulu translation represented a cross-cultural adaptation that satisfied the standard for ensuring functional, cultural and conceptual equivalence. This dissertation by manuscript presents the results and discussion in the research article contained in Chapter 4. This article has been prepared for submission to the South African Journal of Occupational Therapy. At the time of submitting this dissertation for examination, the article had not yet been published.

Chapter 5 is presented to augment and expand on the article by elaborating on the results in more detail. Throughout this chapter, Figure 3.1 should be referenced to illustrate the relationship between the three study objectives and the five steps of the methodology. Objective 1 was addressed during the linguistic translation from English to isiZulu, which consisted of the forward translation (step I), committee-1 synthesis (step II) and the backward translation (step III). Objective 2 was to examine whether the isiZulu translation satisfied the standards for equivalence. This objective was addressed during the committee-2 synthesis (step III), where discrepancies in the isiZulu translation were compared with the original English version. The equivalence of the isiZulu translation was also investigated through the feedback received from the administering therapists and isiZulu-speaking children (step V). Feedback from the native language reviewers also examined the equivalence of the isiZulu version as required by objective 2. Objective 3 was to conduct a pre-test of the isiZulu administration instructions using isiZulu-speaking administering therapists and isiZulu-speaking children (step V). Key findings presented in this chapter are structured according to the five steps, and reference is made to the research objective(s) addressed during each step. The chapter ends with a discussion of the results, a conclusion and recommendations for future research.

5.2. Results of step I

Research Objective 1: To linguistically translate the administration instructions of the DTVP-3 into isiZulu.

The study results comprise a rigorous methodology strengthened by the specific participants and the steps to which they contributed. The sample of participants in step I included translator 1, translator 2 and translator 3, who produced TL1, TL2 and TL3, respectively. Table 5.1 describes the diverse backgrounds of the translators, including their contributions, settings, steps in which they contributed, relevant occupations and language backgrounds.

The translators completed the forward translation of the DTVP-3 administration instructions into isiZulu. The three isiZulu versions (TL1, TL2 and TL3) produced were compared as illustrated below:

Example:

#	SL	TL1	TL2	TL3
18	The car can go around the track in either direction.	Imoto ingahamba kulendlela noma ingayiphi indlela.	Imoto ingazungeza indlela yokugijima macala onke.	Imoto ingajikelezi noma yikuphi.

Various practical considerations worked well during step I. Google Translate and the researcher's basic familiarity with elementary isiZulu were used to prepare the comparison of SL, TL1, TL2 and TL3 by numbering the corresponding sentences. This numbering was done to ease the comparison of translated versions and facilitate verbal referencing of specific sentences during step II.

Table 5.1: Demographics of step I

Participant	Contribution	Step	Setting	Occupation	Language
<i>Translator 1</i>	Produced TL1 Contributed to Committee-1 and -2	Steps I, II, III and IV	KwaZulu-Natal Province, South Africa	Occupational therapist	Native isiZulu-speaker
<i>Translator 2</i>	Produced TL2 Contributed to Committee-1 and -2	Steps I, II, III and IV	Free State Province, South Africa	Language teacher in the private sector formerly affiliated with the African Language Institute.	Bilingual and bicultural
<i>Translator 3</i>	Produced TL3 Contributed to Committee-1 and -2	Steps I, II, III and IV	North West Province, South Africa	Language teacher in the basic education sector.	Bilingual and bicultural

5.3. Results of step II

Research Objective 1: To linguistically translate the administration instructions of the DTVP-3 into isiZulu.

The step II committee-1 meeting took place on a virtual platform. The members of committee-1 were translator 1, translator 2, translator 3 and the researcher. During this committee, the members compared TL1, TL2 and TL3. They collaborated to adapt or correct discrepancies between the translations, reaching an agreement on the version that would become PI-TL. Appendix H shows the complete comparison of translated versions from committee-1. See an excerpt from Appendix H below:

Example:

#	SL	TL1	TL2	TL3	PI-TL
18	"The car can go around the track in either direction." ^{5(p.12)}	<i>Imoto ingahamba kulendlela noma ingayiphi indlela.</i>	<i>Imoto ingazungeza indlela yokugijima macala onke.</i>	<i>Imoto ingajikelezi noma yikuphi.</i>	<i>Imoto ingahamba noma yikuphi.</i>

The administration instructions consisted of 46 numbered sentences, each discussed individually by committee-1. Committee-1 collaborated to alter or correct 61% of the sentences. In 35% of the sentences, TL1 was agreed upon by all members as the PI-TL without alteration. In 4% of the sentences, either TL2 or TL3 was agreed upon as the PI-TL without alteration.

It is noteworthy that the committee judged 35% of the TL1 sentences as the most appropriate and easily understandable wording. TL1 appeared to consist of shorter, more concise sentences. Since the occupational therapist produced TL1, it could be argued that experience in working with the target audience (namely young children) and relevant experience in administering the DTVP-3 was a significant asset during the translation process.

Step II was conducted virtually, with the committee meeting taking place on a well-known virtual conferencing platform. Although Covid-19 had provided many challenges during this research, the global shift away from in-person meetings proved an unexpected benefit. Meeting virtually broadened the geographical reach of the study so that participants from other provinces could be included and allowed for more scheduling flexibility.

It proved to be important that all the committee members should be familiar with the testing procedures of the DTVP-3. The translators were provided with examples of the subtests, but some confusion remained regarding whether the children would have to read the instructions themselves. However, it was explained that the instructions would be presented to the children verbally by an adult (usually a therapist) trained in administering the DTVP-3.

5.4. Results of step III

Research Objective 1: To linguistically translate the administration instructions of the DTVP-3 into isiZulu.

The sample of participants in step III included translator 4 and translator 5, who produced BT1 and BT2, respectively. Table 5.2 describes these translators, including their contributions, setting, steps in which they contributed, relevant occupation and language background. During step III, translators 4 and 5 blind back-translated the PI-TL from isiZulu into English. Translator 4 and translator 5 were specially selected not to have prior familiarity with the English administration instructions (or SL) of the DTVP-3. The two back-translated versions (BT1 and BT2) produced during step III were tabulated for comparison as illustrated below:

Example:

#	PI-TL	BT1	BT2
18	<i>Imoto ingahamba noma yikuphi.</i>	<i>The car can go anywhere.</i>	<i>A car can walk drive anywhere.</i>

As shown in Table 5.3, the majority (74%) of the 46 sentences revealed no discrepancy between the SL, BT1 and BT2. Therefore, most sentences were accurately translated during steps I and II. Of the 46 sentences, 26% revealed some discrepancies, which were compared for discussion and resolution during the next step (step IV).

Table 5.2: Demographics of step III

Participant	Contribution	Step	Setting	Occupation	Language
Translator 4	Produced BT1 Contributed to Committee-2	Steps III and IV	KwaZulu-Natal Province, South Africa	Speech therapy student	Native isiZulu-speaker, self-reported as proficient in English
Translator 5	Produced BT2 Contributed to Committee-2	Steps III and IV	KwaZulu-Natal Province, South Africa	Administration officer	Native isiZulu-speaker, self-reported as proficient in English

Table 5.3: Results of step III

Characteristic	Sentence numbers	n	% out of 46
No discrepancy between SL, BT1 and BT2.	1, 5, 7, 8, 10, 11, 12, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 45, 46	34	74%
Discrepancy between SL, BT1 and BT2.	2, 3, 4, 6, 9, 13, 18, 27, 30, 32, 43, 44	12	26%

5.5. Results of step IV

Research Objective 2: To examine whether the isiZulu translation represents a cross-cultural adaptation that satisfies the standard for ensuring functional, cultural, and conceptual equivalence.

The participants of step IV who formed committee-2 were translator 1, translator 2, translator 3, translator 4, translator 5, an independent third party (described in Table 5.4 below) and the researcher. The committee-2 meeting was conducted virtually where the members compared the original SL, PI-TL, BT1 and BT2, deliberated the discrepancies and reached an agreement to produce the P-FTL. Refer to Appendix I for the detailed committee-2 comparison of translated versions. Below is an excerpt from Appendix I showing the translated versions and the P-FTL.

Example:

#	SL	PI-TL	BT1	BT2	P-FTL
18	"The car can go around the track in either direction." ^{5(p.12)}	<i>Imoto ingahamba noma yikuphi.</i>	<i>The car can go anywhere.</i>	<i>A car can walk drive anywhere.</i>	<i>Imoto ingathatha noma ngabe iyiphi indlela.</i>

Table 5.5 shows an analysis of the discourse during committee-2. As can be seen in the table, committee-2 judged the PI-TL as the most accurate version in 33% of the sentences with discrepancies. In these instances, PI-TL was accepted as the P-FTL without alteration. Of the sentences which contained discrepancies, 67% were discussed by the committee-2 members who collaborated and produced P-FTL while considering various concepts of equivalence (i.e. functional, cultural and conceptual equivalence).

Table 5.4: Demographics of step IV independent third party

Participant	Contribution	Step	Location	Occupation
Independent Third Party	Contributed to Committee-2	Step IV	KwaZulu-Natal Province, South Africa	Occupational therapist

Table 5.5: Results of step IV

<i>Sub-characteristic</i>	<i>Sentence numbers</i>	<i>n</i>	<i>% out of 12</i>
<i>A discrepancy existed between SL, BT1 and BT2 but committee-2 retained PI-TL without alteration.</i>	3, 4, 6, 9	4	33%
<i>Committee-2 collaborated to correct or produce P-FTL.</i>	2, 13, 18, 27, 30, 32, 43, 44	8	67%
<i>Functional equivalence considered</i>	18, 44	2	17%
<i>Cultural equivalence considered</i>	2, 3, 9, 30, 32	5	42%
<i>Conceptual equivalence considered</i>	2, 3, 4, 30, 32, 43	6	50%

The equivalences described in Table 5.5 were not mutually exclusive, and some sentences enjoyed consideration of multiple equivalences. Refer to Appendix J for the detailed analysis of the committee-2 discourse.

5.5.1. Cultural equivalence

When considering the twelve sentences which revealed discrepancies, cultural equivalence was the main discussion point for 42% of the twelve sentences. An example of a sentence considering cultural equivalence is sentence number 9: “See the dog? You are going to draw a line from the dog to this bone over here.”^{5(p.12)} During the committee-2 discussion, the members agreed that “from... to...”, as it occurs in sentence number 9, is not a culturally appropriate manner of giving instruction in isiZulu. Instead, the members agreed that P-FTL should read: “*Bukainja. Dweba ulayini uyaku kwithambo*” (Look at the dog. Draw a line to the bone). Another example of cultural equivalence occurred in sentences number 2, 7 and 9, where committee-2 chose “*dweba*” (draw) instead of “*uzodweba*” (you will draw) to remain faithful to the culturally familiar way of giving instructions.

In four sentences (3, 18, 30 and 32), committee-2 concluded that appropriate pointing is vital for ensuring equivalence. Pointing was deemed necessary due to the way instructions are given in isiZulu, which differs from English. Therefore, the translation and cross-cultural adaptation of these sentences was linked to the use of pointing to the specific stimulus by the administering therapist to support cultural equivalence.

5.5.2. Functional equivalence

Functional equivalence was the focus of 17% of the discussion surrounding the twelve sentences with discrepancies. An example of this occurred in sentence 44: “There may be more than one shape like the one at the top.”^{5(p.16)} Decentring was necessary to ensure that the instructions elicit the same response from the child. The PI-TL was not clear that the child had to look for more than one answer. However, committee-2 collaborated on P-FTL to ensure the child would understand to look for multiple responses. Similar confusion was also revealed in sentence 18: “The car can go around the racetrack in either direction.”^{5(p.12)} Initially, this sentence was translated as “*Imoto ingahamba noma yikuphi*” (The car can go anywhere). The child could misunderstand this to mean drawing anywhere on the page instead of within the targeted lines of the stimulus. After much deliberation, committee-2 improved on the functional equivalence to ensure that the desired response would be elicited from the child.

5.5.3. Conceptual equivalence

Conceptual equivalence was the focus of discussion in 50% of these sentences. In the P-FTL, conceptual equivalence was obtained through words such as “*ulayini*” (used in sentences 2, 3, 7, 9, 10, 13, 14, 17 and 19) instead of “*umugqa*”. Despite “*umugqa*” being the proper isiZulu word for “line”, committee-2 decided that it may not be familiar to young children. Similarly, the word “*ipeni*” (sentences 4, 6, 8, 15 and 19) was chosen for “pencil” since it was considered to be more familiar to a young child than the proper isiZulu word. Conceptual equivalence proved challenging in sentences number 30 and 32, which read “...which of these shapes down here are part of the drawing at the top of the page.”^{5(p.15)} The isiZulu word for “part of” or “*ingxenye*” (“part”) was considered by the committee-2 members as unlikely to be in a young child’s vocabulary. In sentences number 30 and 32, the committee agreed that with appropriate pointing by the administering therapist, “*ingxenye*” should be omitted. Similarly, sentence 43 (excerpted below) also includes “...they may be part of a drawing”,^{5(p.16)} which presented the same challenge. In this case, decentring was required to maintain equivalence. Committee-2 agreed that “*inhlangane neminye imidwebo*” (combined with other drawings) would be the most suitable alternative.

Example:

#	SL	P-FTL
43	“The shapes that you are looking for down here might be bigger, smaller, darker, or lighter than the shape at the top; they might be turned on their sides or upside down; or they may be part of a drawing.” ^{5(p.16)}	<i>Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu. Kungenzeka futhi ime ibheke phezulu noma eceleni; noma ihlangane neminye imidwebo.</i>

5.5.4. Rigour during step IV

To ensure rigour, an external rater corroborated the analysis of equivalence themes during the committee-2 discourse. Out of the twelve sentences with discrepancies, a random selection representing 42% was designated. These sentence numbers and the committee-2 recording were provided to one of the study supervisors for blind verification. As shown in Table 5.6, the results of the external rater report (Appendix K) confirmed that the equivalence themes noted during the analysis were indeed points of discussion during the committee-2 discourse.

Table 5.6: Comparison of equivalence analysis and external rater report

Randomized sentence numbers	Analysis (Appendix J)		External rater report (Appendix K)	
	Equivalence	Theme present in discourse?	Equivalence	Theme present in discourse?
2	Functional		Functional	Yes
	Cultural	Yes	Cultural	Yes
	Conceptual	Yes	Conceptual	Yes
18	Functional	Yes	Functional	Yes
	Cultural		Cultural	
	Conceptual		Conceptual	
30	Functional		Functional	
	Cultural	Yes	Cultural	Yes
	Conceptual	Yes	Conceptual	Yes
32	Functional		Functional	Yes
	Cultural	Yes	Cultural	Yes
	Conceptual	Yes	Conceptual	Yes
44	Functional	Yes	Functional	Yes
	Cultural		Cultural	
	Conceptual		Conceptual	Yes

5.5.5. Covid-19 considerations during step IV

Due to the Covid-19 pandemic and nationally instituted lockdown restrictions at the time of conducting step IV, it was necessary to conduct committee-2 virtually. An advantage of conducting committee-2 online was that it allowed for scheduling flexibility. It also eliminated the risk of exposure for the members and eliminated travel time and expenses.

5.6. Results of step V

Research Objective 2: To examine whether the isiZulu translation represents a cross-cultural adaptation that satisfies the standard for ensuring functional, cultural, and conceptual equivalence.

Research Objective 3: To conduct a pre-test study to provide preliminary feedback on whether the adaptation is comprehensible for the isiZulu-speaking child in the Tshwane (Gauteng Province, South Africa) area.

The sample of participants in step V consisted of administering therapists (n=3), native language reviewers (n=2) and isiZulu-speaking children (n=10). Refer to Table 5.7 for the contributions, settings and professions of the administering therapists and native language reviewers. As shown in the table, the native language reviewers were also trained occupational therapists.

Table 5.7: Demographics of step V administering therapists and native language reviewers

<i>Participant</i>	<i>Contribution</i>	<i>Step</i>	<i>Setting</i>	<i>Profession</i>
<i>Administering Therapist 1</i>	Administered the Translated DTVP3 Completed the equivalence feedback questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Administering Therapist 2</i>	Administered the Translated DTVP3 Completed the equivalence feedback questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Administering Therapist 3</i>	Administered the Translated DTVP3 Completed the equivalence feedback questionnaire	Step V	Gauteng Province, South Africa	Occupational therapist
<i>Native language reviewer 1</i>	Completed the equivalence feedback questionnaire	Step V	KwaZulu-Natal Province, South Africa	Occupational therapist
<i>Native language reviewer 2</i>	Completed the equivalence feedback questionnaire	Step V	KwaZulu-Natal Province, South Africa	Occupational therapist

Table 5.8: Demographics of step V isiZulu-speaking children

<i>Characteristics</i>		<i>N</i>
<i>Gender</i>	Male	7
	Female	3
<i>Age</i>	7 years old	1
	8 years old	3
	9 years old	4
	10 years old	2
<i>Total</i>		10

Table 5.8 shows the demographic representation of the isiZulu-speaking children. As can be seen in the table, the sample of isiZulu-speaking children (n=10) who participated in step V ranged from seven years two months old to ten years seven months old. All the children were located in Gauteng Province, South Africa.

5.6.1. Step V results of child feedback questionnaires

Assent was obtained from each child before the assessment was administered. The administering therapists then administered the DTVP-3 to the isiZulu-speaking children (n=10) using the isiZulu instructions. See Table 5.8 for the demographic characteristics of the isiZulu-speaking children who participated. Following the assessment administration, the children verbally responded to the child feedback questionnaire. The child feedback questionnaire consisted of three dichotomous questions relating to the children's experience of the isiZulu administration instructions. Table 5.9 shows the questions of the child feedback questionnaire and a summary of the children's responses. As can be seen in the table, the majority of the responses from the isiZulu-speaking children indicated that they understood the isiZulu administration instructions. See also Appendix L for the detailed collation of the children's responses.

Table 5.9: Summary of children's responses to the child feedback questionnaire

<i>Questions</i>	<i>Positive responses from isiZulu-speaking children (n=10)</i>
Was it easy to understand my isiZulu? Kube lula ukuzwisisa isiZulu sami?	8/10
When I told you what to do, did you understand? Uma ngikutshelile okufanele ukwenze, uzwisisile na?	10/10
Was there any time when you felt unsure what to do? Bekunesikhathi lapho ungazwisisi okufanele ukwenze?	8/10

5.6.2. Step V results of the equivalence feedback questionnaire

After administering the DTVP-3, the administering therapists (n=3) completed the equivalence feedback questionnaire. The equivalence feedback questionnaire was also completed by native language reviewers (n=2), who had read through the isiZulu administration instructions. Table 5.10 presents a summary of the responses received from all the occupational therapists (n=5) who contributed to step V (three administering therapists and two native language reviewers equal to five occupational therapists who contributed to step V). Appendix M provides the collation of individual responses received on the equivalence feedback questionnaire.

As can be seen in Table 5.10, a majority of the responses confirmed the isiZulu translation to be equivalent. Responses to 80% of the questionnaire items indicated unanimous agreement that the translation was successfully translated and cross-culturally adapted while maintaining functional, cultural and conceptual equivalence. This table also demonstrates how the questions of the equivalence feedback questionnaire relate to one or more types of equivalence and that all three of the considered equivalences were represented in the questionnaire.

Responses to questionnaire items consisted of either minor rewording suggestions or variations that had already been discussed during the committee steps. Overall, all five occupational therapists (administering therapists and native language reviewers) indicated that the DTVP-3 was successfully translated and cross-culturally adapted.

One of the questionnaire item responses recommended an addition that does not occur in the original SL but would improve upon the practicality of administering the instrument. The suggestion was to add the phrase "*Ngikombise futhi?*" (Show me again). Also, in response to the question regarding metaphors, idioms and colloquialisms (question four in Appendix M), one participant suggested alternate wording for the visual closure subtest instructions. The suggestion is a simplified paraphrasing of the SL instructions and therefore employs a great degree of decentring. The P-FTL more accurately mirrors the SL version, but the suggested simpler version represents a more culturally appropriate manner of speaking. This suggestion should be considered when the translation is prepared for a pilot study (not included in the scope of this research).

Table 5.10: Summary of occupational therapists' responses to the equivalence feedback questionnaire¹⁷

	Questions	Positive responses from occupational therapists (n=5)	Related to equivalence
1	Do all the administration instructions have the same or highly similar meanings in the two languages?	5/5	Cultural
2	Is the language of the translated isiZulu administration instructions of comparable difficulty and commonality with respect to the words in the administration instructions in the original English version?	5/5	Conceptual
3	Does the translation introduce changes in the text (omissions, substitutions, or additions) that might influence the difficulty of the administration instructions in the two language versions?	4/5	Conceptual
4	Are there differences between the translated isiZulu and original English versions of the administration instructions related to the use of metaphors, idioms, or colloquialisms ? If yes, please indicate which wording needs improvement and suggest an alternative?	4/5	Cultural
5	Is the length of the administration instructions about the same in the two language versions?	5/5	Conceptual
6	Is the format of the administration instructions equally familiar in the two language versions?	5/5	Conceptual
7	Are there any modifications of the administration instructions' structure , such as the placement of clauses or other word order changes that might make the administration instructions more or less complex in the translated isiZulu version?	4/5	Conceptual
8	Are there any grammatical clues that might make the administration instructions easier or harder in the translated isiZulu version?	5/5	Conceptual
9	Are there any grammatical structures in the original English version of the administration instructions that do not have parallels in the translated isiZulu?	5/5	Cultural and conceptual
10	Are there any gender, number or other references that might make this item be cued in the translated isiZulu version?	5/5	Functional
11	Are there any words in the administration instructions that, when translated, change from having one meaning to having more than one common meaning?	5/5	Cultural
12	Have terms in the administration instructions in one language been suitably adapted to the cultural environment of the second language version?	5/5	Cultural
13	Are there cultural differences that would affect the likelihood of a response being chosen when the administration instructions are presented in the original English or translated isiZulu version?	5/5	Functional and cultural
14	Are the concepts covered in the administration instructions at about the same level of abstraction in the two language versions?	5/5	Conceptual
15	Do the concepts or constructs of the administration instructions have about the same familiarity and meaning in both the original English and translated isiZulu versions?	5/5	Conceptual

One native language reviewer suggested a significant alteration to how the form constancy subtest is presented to the child. This recommendation was noted but not incorporated into the P-FTL since it significantly deviated in structure and length from

the SL version. In the researcher's clinical opinion, this could compromise the psychometric properties of the subtest.

In the additional comments section of the questionnaire, four of the five occupational therapists commented that the SL and P-FTL are equivalent. Native language reviewer 1 described the translated version as "...*well translated, easy to administer-short to the point...*" She also emphasized that even in cases "...*where there is no direct translation, the meaning remained the same.*" Administering therapist 1 described the P-FTL version as being "*perfect*".

5.6.3. Covid-19 considerations during step V

During step V, the Covid-19 pandemic imposed significant data collection challenges. The data collection of this step occurred when the schools were reopening, in a limited capacity, following multiple government-imposed lockdowns and extended school holidays (extended due to safety concerns relating to Covid-19). Since the DTVP-3 administration does not require physical contact between the therapist and the child, all Covid-19 safety protocols could be enforced. However, school management, teachers and parents were, with good reason, hesitant to participate in research for fear of unnecessary exposure for the children. Many schools declined to participate, and other schools willing to open their doors had few parents who responded to the invitation. The same hesitation was also experienced during the recruitment of the administering therapists. Despite these challenges, the required sample size of administering therapists and children was recruited, although this step took longer than intended.

CHAPTER 6

6. Conclusion

6.1. Introduction

This qualitatively driven multimethod sequential study describes a rigorous methodology for translating and cross-culturally adapting the administration instructions of the DTVP-3 into isiZulu to advance its authenticity within the South African context. To the researcher's knowledge, it is the first time this method has been applied to the administration instructions of an assessment instrument within this setting. The main finding of this study is that the methodology, which consisted of five steps and included two committees with various contributors from differing backgrounds and professions, produced the pre-final isiZulu administration instructions. These isiZulu administration instructions were pre-tested and revealed as functionally, culturally and conceptually equivalent to the original English version of the DTVP-3.

6.2. Limitations

Although this study presented a thorough, rigorous method for translating and adapting an assessment instrument cross-culturally, it is merely preliminary. Therefore, some limitations must be considered. The researcher acknowledges that this study included a limited, non-representative sample of administering therapists (n=3) and children (n=10). This study intended to progress only to the pre-test step. Therefore, a pilot study was not included in the scope of this research. If this study had included a larger sample of administering therapists and children or progressed to a pilot study, equivalence could have been further enhanced.

This research was intended to demonstrate a framework upon which future translation and cross-cultural adaptation can be based. However, future studies should consider including the original developer/publisher of the assessment instrument in the committee discussions. If the developer could be a contributor to the committee-2 review, the feedback could inform an adaptation of the English version for the South African context.

A variety of isiZulu dialects exist in South Africa. Although the translation proved to be equivalent, the differences in the dialects were apparent during both committees and the feedback received from the therapists involved during step V. Some dialect differences, such as the use of “*ingxenye*” (“part”), ended up being discussed repeatedly. Therefore, this study does not profess to have produced a translation representative of all the isiZulu dialects.

Another limitation of this study is the limited inclusion of participants from the provinces of Gauteng, Free State, Mpumalanga and KwaZulu-Natal. The populations of the Northern Cape, Western Cape, Limpopo, North-West and Eastern Cape provinces were not represented.

Although this study has enhanced the authenticity of the DTVP-3 as an assessment instrument for isiZulu-speaking children, it should never be used in isolation. The results of the DTVP-3 should not be interpreted without a holistic assessment of the child in multiple contexts and input from primary caregivers. The DTVP-3 is one of many tools contributing to the authentic assessment of the school-going, isiZulu-speaking child.

6.3. Strengths

The rigorous methodological design of this study has strengthened it in several ways. One aspect that contributed much value during the translation process (steps I to IV) was the inclusion of multiple occupational therapists who could draw on their experience and expertise in the real-life application of the DTVP-3. During the step I forward translation, the occupational therapist who produced TL1 was able to draw on his training and experience with the DTVP-3 to the benefit of the translation. As a result, TL1 was concise and accepted as the most equivalent version for almost half (n=22) of the sentences chosen by committee-1. For the step IV committee-2 discussion, the independent third party was also a trained occupational therapist. During the committee-2 collaboration, both occupational therapists contributed their experience and expertise to the discourse and assisted in making the translation more applicable to real-life administration, thereby enhancing its equivalence. In the context of this translation, the inclusion of an additional occupational therapist may have added more value to committee-2 than the monolingual third party suggested by some previous studies.

Through the rigorous method used to translate and cross-cultural adapt the DTVP-3, this study also enhanced its authenticity as an assessment instrument within the context of South Africa. It can be said that the newly translated isiZulu instructions have improved the DTVP-3's social appropriateness within the South African context. Social appropriateness is a quality indicator of authentic assessment. It can be expected that both professionals and parents would find the DTVP-3 a more socially appropriate assessment instrument for isiZulu-speaking school-going children when presented in their native language. Another indicator of authentic assessment procedures is equitable design enabling equal opportunity to demonstrate skills. Having the administration instructions of the DTVP-3 available to isiZulu-speaking children in their native language provides equal opportunity to children who may not be as proficient in English as they are in isiZulu. The DTVP-3's utility is founded on its capacity to inform intervention content and facilitate performance monitoring to treat isiZulu-speaking children seeking therapeutic intervention with visual perceptual and visual-motor integration difficulties. Therefore, its utility as an indicator of authentic assessment can now also be considered more appropriate.

Another advantage of the translation methodology used during this study is the addition of the third translator (TL3 translator) in the forward translation (step I). This translator had experience teaching children languages, which contributed much value to the translation and added depth to the committee-1 discourse.

It is also noteworthy that the methodology followed during this study was not dependent on the researcher's fluency in the target language. The implication is that translation and cross-cultural adaptation of an assessment instrument can be carried out without being limited by a researcher's language skills. This methodology has already incorporated various mechanisms to ensure that it transcends the language skills of any one person.

6.4. Recommendations

6.4.1. The profession

The results of this study have produced evidence of a thorough and methodical procedure for translating and cross-culturally adapting an assessment instrument for more authentic application with diverse populations. This study has emphasised the importance of adapting clinical instruments by improving, through sound research, the

authenticity of assessment instruments within unique communities. Through the continued cross-cultural adaptation of these instruments, occupational therapy will be better able to serve diverse populations.

6.4.2. Clinical practice

It has been demonstrated that translating and cross-culturally adapting an instrument requires multiple steps with diverse contributors to be equivalent. Where a cross-culturally adapted version of the administration instructions of an assessment instrument is not available, bilingual therapists should employ extreme caution when informally translating administration instructions and interpreting the results to avoid disadvantaging or misrepresenting the child.

6.4.3. Further research

Future research should build on these results and proceed to pilot and psychometrically standardize the isiZulu administration instructions of the DTVP-3 in collaboration with PROED, the original developers. The feedback offered by the practitioners - who use the assessment instrument on the grassroots level – should also be incorporated. Collaboration with the test developer to adapt the English instructions to resemble the manner of speaking in South Africa could also be valuable.

Future research should build on the current study by applying this methodology to other frequently used assessment instruments and expanding to other languages.

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APPENDICES

Appendix A: Equivalence Feedback Questionnaire

Equivalence Feedback Questionnaire†

Directions

Following examination of the isiZulu administration instructions of the Developmental Test of Visual Perception 3rd Edition, please read the 15 questions on the following four pages and answer each one in as much detail as possible. Please include examples and suggestions. Attach extra paper if necessary.

General

1. Do all the administration instructions have the same or highly similar **meanings** in the two languages? If not, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

2. Is the language of the translated isiZulu administration instructions of comparable **difficulty and commonality** with respect to the words in the administration instructions in the original English version? If not, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

3. Does the translation introduce **changes** in the text (omissions, substitutions, or additions) that might influence the difficulty of the administration instructions in the two language versions? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

†Hambleton RK, Zenisky AL. Translating and Adapting Tests for Cross-Cultural Assessments. In: Matsumoto D, van de Vijver F, editors. Cross-cultural Research Methods. New York, NY: Cambridge University Press; 2010. p. 47-74. (Reproduced with the publisher's permission)

4. Are there differences between the translated isiZulu and original English versions of the administration instructions related to the use of **metaphors, idioms, or colloquialisms**? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

Administration instructions format

5. Is the **length** of the administration instructions about the same in the two language versions? If not, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

6. Is the format of the administration instructions equally **familiar** in the two language versions? If not, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

Grammar and phrasing

7. Are there any modifications of the administration instructions' **structure**, such as the placement of clauses or other word order changes that might make the administration instructions **more or less complex** in the translated isiZulu version? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

8. Are there any **grammatical clues** that might make the administration instructions **easier or harder** in the translated isiZulu version? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

9. Are there any grammatical structures in the original English version of the administration instructions that do not have **parallels** in the translated isiZulu? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

10. Are there any gender, number or other references that might make this item be **cued** in the translated isiZulu version? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

11. Are there any words in the administration instructions that, when translated, change from having **one** meaning to having **more than one** common meaning? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

Cultural Relevance and Specificity

12. Have **terms** in the administration instructions in the English version been suitably adapted to the cultural environment of the isiZulu version? If not, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

13. Are there **cultural** differences that would affect the likelihood of a response being chosen when the administration instructions are presented in the original English or translated isiZulu version? If yes, please indicate which wording needs improvement and what would be your suggestion instead?

Yes		No	
-----	--	----	--

Appendix B: Child Feedback Questionnaire

Child Feedback Questionnaire

Was it easy to understand my isiZulu?

Kube lula ukuzwisisa isiZulu sami?

	
Yes	No

When I told you what to do, did you understand?

Uma ngikutshelile okufanele ukwenze,uzwisisile na?

	
Yes	No

Was there any time when you felt unsure what to do?

Bekunesikhathi lapho ungazwisisi okufanele ukwenze?

Appendix C: DTVP-3 Pro-Ed Permission License Agreement



Permission Date: May 13, 2020

Termination Date: May 13, 2022

Product #: 13700

Permission #: T4338

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University of Pretoria
Cecil Street, Silverhill Extension 6
Pretoria, Gauteng, South Africa
Email: naugurie@gmail.com

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Authors: Hammit, Donald D.; Pearson, Nills A.; Voress, Judith K.

PRO-ED Product Number: #13700 Figure/Table/Exhibit Number (if applicable): N/A

Article/Chapter Title (if applicable): Specific Administration Instructions

Requestor Information:

Name: Sumarié Naudé

University: University of Pretoria

My Address: Cecil Street, Sinoville extension 6, Pretoria, Gauteng, South Africa

Phone: +27795312401

Email: osumarie@gmail.com

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Title of proposed dissertation: "The cross-cultural adaptation of the instructions of the Developmental Test of Visual Perception 3rd Edition for isiZulu speaking children." See previously attached "Description of Proposed Research Study" for additional detail.



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

**THE CROSS-CULTURAL ADAPTATION OF THE INSTRUCTIONS OF THE
DEVELOPMENTAL TEST OF VISUAL PERCEPTION 3RD EDITION FOR
ISIZULU SPEAKING CHILDREN**

Research proposal for the degree: MOccTher

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Supervisor: Mrs. BM Bekker

Co-supervisor: Prof. CJE Uys

Date: 7 April 2020

Note: The current research proposal is being prepared for submission and pending approval from the University of Pretoria's School of Health Care Sciences Postgraduate Committee as well as the Faculty of Health Sciences Research Ethics Committee.

Description of Proposed Research Study

Introduction: As professionals trained in addressing visual perceptual challenges, it is imperative that occupational therapists are able to accurately evaluate visual perceptual skills so as to inform effective and efficient intervention. It has been the experience of the author that the third and latest edition of the Developmental Test of Visual Perception (DTVP-3) (Hammill, et al., 2013) is widely used by occupational therapists in South Africa for the evaluation of visual perceptual skills in children. However, the standardized instructions in the original manual appears in English (Hammill, et al., 2013) and is currently the only widely available version in South Africa. According to the recent census, the most represented first spoken languages in the South African population were isiZulu (22.7%), isiXhosa (16%), Afrikaans (13.3%) and English (9.8%) (Statistics South Africa, 2012). The most represented first spoken languages in the province of Gauteng were isiZulu (19.8%), English (13.3%), Afrikaans (12.4%), Sesotho (11.6%), Sepedi (10.6%) and Setswana (9.8%) (Statistics South Africa, 2012). Therefore, a large representation of South African children evaluated using the DTVP-3 do not have access to it in their first language. Various methods of cross-cultural adaptation have been recommended throughout literature (Beaton, et al., 2000; Carroll, et al., 2001; Dentl, et al., 2015; Gjersing, et al., 2010; Guilemin, et al., 1993; Guo, et al., 2020; International Test Commission, 2016; Pasin, et al., 2013; Smit, et al., 2006). The proposed study will undertake to cross-culturally adapt the instructions of the DTVP-3 using a combination of the methods suggested by the literature, as well as endeavouring to determine the linguistic (or semantic), cultural and conceptual equivalence after translation into isiZulu (Peña, 2007; Sousa & Rojjanasirrat, 2011; Wang, et al., 2015; Guilemin, et al., 1993).

Aim: The aim of the study is to determine the process of cross-cultural adaptation of the standardized instructions of the Developmental Test of Visual Perception 3rd Edition (DTVP-3) into isiZulu.

Research design: The proposed research will be a qualitative descriptive research design.

Methods: The translation of the administration instructions will be carried out according to the following phases as informed by literature: *Phase I:* Translation from source language into target language. *Phase II:* Synthesis of translated version by committee approach. *Phase III:* Blind back-translation into source language. *Phase IV:* Synthesis of

discrepancies by committee approach. *Phase V: Pre-test using qualitative feedback.* The target population for the study will comprise of isiZulu speaking children in Tshwane, Gauteng, South Africa. For the pre-test a convenience sample of approximately 36 typically developing children (3-4 children per year age group from 4 years to 12 years old) and approximately 5-10 qualified, isiZulu-speaking occupational therapists will be utilised. Following the administration of the DTVP-3 using the translated instructions, qualitative descriptive feedback on the translation will be obtained from the children as well as the administering therapists.

Significance: The proposed study will contribute toward the advancement of the profession of occupational therapy in South Africa. It represents one of many contributions in the progression toward improved authentic assessment tools (Bagnato, et al., 2010) frequently used in the profession. With improved authentic assessment tools, paediatric occupational therapists will better be able to identify the support needs, within the public and private sector, of the young South African population which they serve.

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Exhibit B

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Appendix D: Adaptation of the Item Translation and Adaptation Review Form

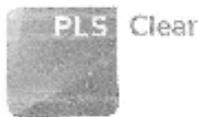
Q	Item Translation and Adaptation Review Form by Hambleton and Zenisky [‡]	Equivalence Feedback Questionnaire	Related to equivalence
1	Does the item have the same or highly similar meaning in the two languages?	Do all the administration instructions have the same or highly similar meanings in the two languages?	Cultural
2	Is the language of the translated item of comparable difficulty and commonality with respect to the words in the item in the source language version?	Is the language of the translated administration instructions of comparable difficulty and commonality with respect to the words in the administration instructions in the source language version?	Conceptual
3	Does the translation introduce changes in the text (omissions, substitutions, or additions) that might influence the difficulty of the item in the two language versions?	Does the translation introduce changes in the text (omissions, substitutions, or additions) that might influence the difficulty of the administration instructions in the two language versions?	Conceptual
4	Are there differences between the target and source language versions of the item related to the use of metaphors, idioms, or colloquialisms?	Are there differences between the target and source language versions of the administration instructions related to the use of metaphors, idioms, or colloquialisms?	Cultural
5	Is the item format, including physical layout, the same in the two language versions?	Not applicable	
6	Is the length of the item stem and, if applicable, answer choices about the same in the two language versions?	Are the length of the administration instructions about the same in the two language versions?	Conceptual
7	Will the format of the item and task required of the examinee be equally familiar in the two language versions?	Is the format of the administration instructions equally familiar in the two language versions?	Conceptual
8	If a form of word or phrase emphasis (bold, italics, underline, etc.) was used in the source language item, was that emphasis used in the translated item?	Not applicable	
9	For educational tests, is there one correct answer in both the source and target language version of the item?	Not applicable	
10	Is there any modification of the item's structure such as the placement of clauses or other word order changes that might make this item more or less complex in the target language version?	Are there any modification of the administration instructions' structure such as the placement of clauses or other word order changes that might make the administration instructions more or less complex in the target language version?	Conceptual

[‡]Hambleton RK, Zenisky AL. Translating and Adapting Tests for Cross-Cultural Assessments. In: Matsumoto D, van de Vijver F, editors. Cross-cultural Research Methods. New York, NY: Cambridge University Press; 2010. p. 47-74. (Reproduced with the publisher's permission)

Q	Item Translation and Adaptation Review Form by Hambleton and Zenisky [‡]	Equivalence Feedback Questionnaire	Related to equivalence
11	Are there any grammatical clues that might make this item easier or harder in the target language version?	Are there any grammatical clues that might make the administration instructions easier or harder in the target language version?	Conceptual
12	Are there any grammatical structures in the source language version of the item that do not have parallels in the target language?	Are there any grammatical structures in the source language version of the administration instructions that do not have parallels in the target language?	Cultural and conceptual
13	Are there any gender or other references that might make this item be cued in the target language version?	Are there any gender, number or other references that might make this item be cued in the target language version?	Functional
14	Are there any words in the item that, when translated, change from having one meaning to having more than one common meaning?	Are there any words in the administration instructions that, when translated, change from having one meaning to having more than one common meaning?	Cultural
15	Are there any changes in punctuation between the source and target versions of the item that may make the item easier or harder in the translated version?	Not applicable	
16	When the passage is translated from the source language to the target language, do the words and phrases of the translated version convey similar content and ideas to the source version?	Not applicable	
17	Does the passage depict any individual or groups in a stereotypic fashion through occupation, emotion, situation, or otherwise?	Not applicable	
18	Does the passage involve writing on a controversial or inflammatory topic, or might the passage be perceived as demeaning or offensive to anyone?	Not applicable	
19	Does the passage include content or require skills that may be unfamiliar to some students in either of the two language or cultural groups?	Not applicable	
20	Except for necessary translations of text or labels, are graphics, tables, and other item elements the same in the source and target language versions of the item?	Not applicable	
21	Have terms in the item in one language been suitably adapted to the cultural environment of the second language version?	Have terms in the administration instructions in one language been suitably adapted to the cultural environment of the second language version?	Cultural

Q	Item Translation and Adaptation Review Form by Hambleton and Zenisky [‡]	Equivalence Feedback Questionnaire	Related to equivalence
22	Are there cultural differences that would have an effect on the likelihood of a response being chosen when the item is presented in the source or target language version?	Are there cultural differences that would have an effect on the likelihood of a response being chosen when the administration instructions are presented in the source or target language version?	Functional and cultural
23	Are measurement and currency units (distance, etc.) from the source language version of the item in the appropriate convention for the country using the target language version?	Not applicable	
24	Are the concepts covered in the item at about the same level of abstraction in the two language versions?	Are the concepts covered in the administration instructions at about the same level of abstraction in the two language versions?	Conceptual
25	Does the concept or construct of the item have about the same familiarity and meaning in both the source and target language versions?	Do the concepts or constructs of the administration instructions have about the same familiarity and meaning in both the source and target language versions?	Conceptual

Appendix E: Translation and Adaptation Review Form License Agreement



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title: Cross-Cultural Research Methods In Psychology
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Number of words	582
Page numbers	71-74
Number of pages	3
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Full details about the adaption	I would like to make adaptations to the original Translation and Adaptation Review Form in order to make it more applicable to the proposed study. I wish to omit questions 5, 8, 9, 13, 15, 16 20 and 23 since they do not apply to the study. I also wis

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Appendix F: Occupational Therapy Screening Report

STRICTLY CONFIDENTIAL

THIS REPORT IS NOT FOR FORENSIC PURPOSES. OBSERVATIONS AND TEST FINDINGS REFLECT A SAMPLE OF THE CHILD'S BEHAVIOUR AND ACHIEVEMENT AT THE TIME OF TESTING IN A CONTROLLED ENVIRONMENT

Name of child: Date of birth: Chronological age: Current school: Grade: Medium of instruction:				Occupational Therapist: Practice contact number: Date of evaluation:			
1. VISUAL PERCEPTION	VMI:	MRP:	GVP:	Very poor	Poor	Below average	Average
1. Figure-ground							
2. Visual closure							
3. Form constancy							
Comments:							
2. GROSS MOTOR ABILITIES				Very poor	Poor	Below average	Average
1. Muscle tone and endurance							
2. Shoulder stability							
3. Bilateral integration							
4. Motor planning							
5. Midline crossing							
Comments:							
3. FINE MOTOR AND SCHOOL RELATED ABILITIES				Very poor	Poor	Below average	Average
1. Copying							
2. Eye-hand coordination							
3. Pencil grip							
4. Pencil control							
5. Handwriting							
Comments:							

4. BEHAVIOUR:
5. RECOMMENDATIONS:

Signed:

Note: This screening was carried out as part of a research study (University of Pretoria Ethics Approval 459/2020). For more information, please contact the researcher at otsumarie@gmail.com.

Appendix G: Gauteng Department of Education Approval



GAUTENG PROVINCE

Department of Education
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8/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	17 February 2021
Validity of Research Approval:	08 February 2021– 30 September 2021 2021/33
Name of Researcher:	Nauda S
Address of Researcher:	617 Cecil Avenue Sinoville ext 6 Pretoria
Telephone Number:	078 631 2401
Email address:	otsumarie@gmail.com
Research Topic:	. Cross cultural adaptation of the administration instructions of the developmental test of visual perception 3 rd edition for isiZulu speaking children
Type of qualification	MOCOTher
Number and type of schools:	Primary Schools
Districts/HO	Tshwane North ,Tshwane South and Tshwane 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 being met. Approval may be withdrawn should any of the conditions listed below be flouted:

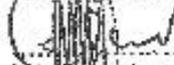
1. Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.

Making education a societal priority

1. Letter that 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 COVID 19 pandemic researchers can ONLY collect data online, telephonically 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. The approval letter will then indicate the type of arrangements that have been made with the school.
4. The Researchers are advised to make arrangements with the schools via Fax, email or telephonically with the Principal.
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 have been granted permission from the Gauteng Department of Education to conduct the research study.
6. A letter/document that outline 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 obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation 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 programme 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 utilizing his/her own 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 brief 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. G. M. Mukatuni
Acting CES: Education Research and Knowledge Management

DATE: 17/02/2021

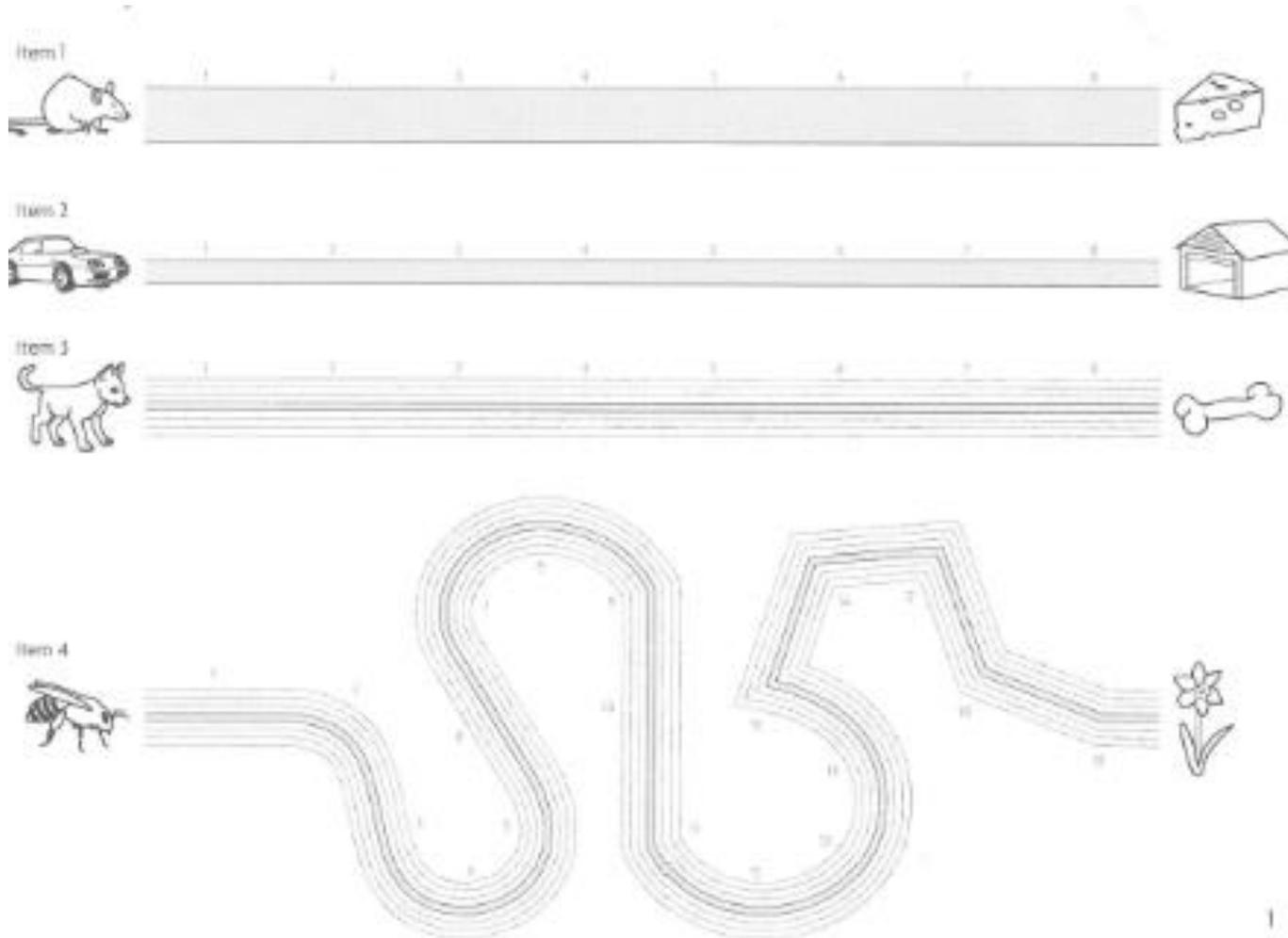
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Appendix H: Committee-1 Comparison of Translated Versions

Subtest 1: Eye-Hand Coordination

Example:



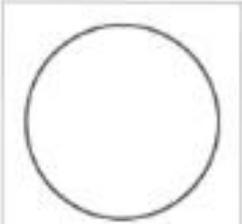
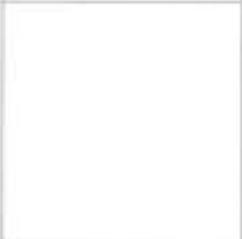
SL	TL1	TL2	TL3	PI-TL
<ol style="list-style-type: none"> 1. "Look at this mouse. 2. You are going to draw a line from the mouse to this cheese over here. 3. Be very careful when you draw your line; try to stay in the center of the gray path. 4. Once you start your line, do not lift your pencil from the paper until you get to the end. 5. Go." 	<ol style="list-style-type: none"> 1. Buka leli gundane. 2. Uzodweba ulayini usuka kuleli gundane kuya ku Cheese. 3. Qaphela uma udweba ulayini; zama ukungaphumeli ngaphandle kwalendlela emnyama. 4. Uma udweba, ungaliphakamisi ipeni uze uqede. 5. Dweba-ke 	<ol style="list-style-type: none"> 1. Bheka nali iGundwane. 2. Uzodweba umangqa osuka kule Gundwane uye kuloya Cheese. 3. Uqaphele uma udweba umuggqa wakho; uzame ukuhlala phakathi nendawo komugqa ompunga. 4. Uma uke waqala ngomugqa, ungalinge use um'sizi wakho ephephen uze ufike ekugcineni. 5. Usungaqala 	<ol style="list-style-type: none"> 1. Bheka leli gundwane. 2. Uyodweba umula kusuka egundwaneni kuya kushizi. 3. Uqaphele uma udweba umula wakho, zama ukuhlala esikhungo sendlela empunga. 4. Uma uqala esikhungo sendlela empunga. Uma uqala umugqa wakho, ungaliphakamisi ipensela lakho ukusuka ephepheni kusukela ekugcineni. 5. Hamba. 	<ol style="list-style-type: none"> 1. Buka leli gundane. 2. Uzodweba ulayini usuka kuleli gundane kuya ku Cheese. 3. Qaphela uma udweba ulayini; zama ukungaphumeli ngaphandle kwalendlela emnyama. 4. Uma udweba, ungaliphakamisi ipeni uze uqede. 5. Dweba.
<ol style="list-style-type: none"> 6. "Remember, do not lift your pencil until you reach the end of the grey path." 	<ol style="list-style-type: none"> 6. "Khumbula, ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama" 	<ol style="list-style-type: none"> 6. "Khumbula, ungalinge ususe/uphakamise um'sizi wakho uze ufike ekugcineni komugqa ompunga." 	<ol style="list-style-type: none"> 6. Khumbula, unga phakamise upensela wakho kufikela ufinyelela umugqa ompunga. 	<ol style="list-style-type: none"> 6. Khumbula, ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama.
<ol style="list-style-type: none"> 7. "See the car? You are going to draw a line from the car over to the garage. 8. Remember, stay in the center of the gray path and don't lift your pencil." 	<ol style="list-style-type: none"> 7. "Buka imoto, uzodweba ulayini usuka kwimoto kuya egaraji leli. 8. Khumbula, uma udweba ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama futhi ungaliphakamisi ipeni." 	<ol style="list-style-type: none"> 7. Uyayibona imoto? Uzodweba umugqa osuka emotweni oya eGaraji. 8. Khumbula, hlala phakathi komugqa ompungga futhi ungasusi umsizi wakho. 	<ol style="list-style-type: none"> 7. Bheka imoto? Uyodweba umugqa kusuka emotweni kufikela egalaji. 8. Khumbula, ukuhlala esikhungo solayini ompunga ungasusi upensela wakho. 	<ol style="list-style-type: none"> 7. Buka imoto. Dweba ulayini usuka kwimoto kuya egaraji. 8. Khumbula, uma udweba ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama futhi ungaliphakamisi ipeni.

SL	TL1	TL2	TL3	PI-TL
<p>9. "See the dog? You are going to draw a line from the dog to this bone over here.</p> <p>10. Be very careful when you draw your line.</p> <p>11. Try to stay in the center of the path. Stay in the gray part of the path."</p>	<p>9. "Bukainja, uzodweba ulayini usuka enjeni kuya kwithambo leli.</p> <p>10. Qaphela uma udweba ulayini.</p> <p>11. Zama ukuhlala kulendlela emnyama ungaphumeli ngaphandle kwendlela".</p>	<p>9. Uyayibona injane? Uzodweba umugqa osuka kulinja uye kule thambo eli lapha.</p> <p>10. Uqaphelisise uma udweba umugqa wakho.</p> <p>11. Uzame ukuhla phakathi nendlela. Hlala kulenxenye empunga yendlela.</p>	<p>9. Bheka injane? Uyodweba umugqa kusuka enjeni kufika ethambeni.</p> <p>10. Qaphela uma udweba umugqa wakho.</p> <p>11. Zama ukuhlala esikhungo solayini ompunga.</p>	<p>9. Buka injane. Dweba ulayini uyaku kwithambo.</p> <p>10. Qaphela uma udweba ulayini.</p> <p>11. Zama ukuhlala kulendlela emnyama.</p>
<p>12. "Look, this time the path curves.</p> <p>13. Draw a line from the bee to the flower.</p> <p>14. Keep your line in the center of the curved path. Stay in the gray part of the path.</p> <p>15. Remember, don't lift your pencil until you reach the flower."</p>	<p>12. "Buka, manje indlela emnyama iyajikeleza.</p> <p>13. Dweba ulayini usuka kulenyosi uya kwi mbali le.</p> <p>14. Ulayini wakho ungaphumeli ngaphandle kwalendlela emnyama.</p> <p>15. Khumbula, ungaphumeli ngaphandle kwalayini uze ufike kule mbali".</p>	<p>12. Bheka, kulokhu lendlela inekhona.</p> <p>13. Dweba umagqa usuka enyosini uye embalini.</p> <p>14. Gcina umagqa wakho phakathi nendawo komugqa onekhona. Hlala endaweni empunga yendlela.</p> <p>15. Khumbula ungaphakamisi umsizi wakho uze ufike embalini.</p>	<p>12. Bheka, manje indlela iyajika.</p> <p>13. Dweba umugqa kusukele enyosini ukuya embalini.</p> <p>14. Gcina umugqa wakho esikhungo sendlela ejikayo.</p>	<p>12. Buka, manje indlela iyajika.</p> <p>13. Dweba ulayini ukuya enyosini.</p> <p>14. Ulayini wakho ungaphumeli ngaphandle kwendlela emnyama.</p> <p>15. Khumbula ungaphakamisi ipeni lakho.</p>
<p>16. "Look at this racetrack.</p> <p>17. Draw a line all the way around the racetrack.</p> <p>18. The car can go around the track in either direction.</p> <p>19. Keep your line in the gray part of the track and don't lift your pencil until you finish."</p>	<p>16. "Buka indlela yomjaho wezimoto.</p> <p>17. Dweba ulayini kulendlela yomjaho wezimoto.</p> <p>18. Imoto ingahamba kulendlela noma ingayiphi indlela.</p> <p>19. Ulayini wakho ungaphumeli ngaphandle kwendlela futhi ungaliphakamisi ipeni uze uqede."</p>	<p>16. Buka lendlela yokugijima.</p> <p>17. Dweba umugqa ozungeza indlela yokugijima.</p> <p>18. Imoto ingazungeza indlela yokugijima macala onke.</p> <p>19. Gcina umagqa wakho phakathi nendawo komugqa ompunga wendlela futhi ungaphakamisi umsizi uze uqete.</p>	<p>16. Bheka kulo mjago.</p> <p>17. Dweba umugqa cishe ngase mjagweni.</p> <p>18. Imoto ingajikelezi noma yikuphi.</p> <p>19. Gcina umugqa wakho kule ngxenge empunga unga phakamisi ipensela lakho uze uqede.</p>	<p>16. Buka indlela yemoto.</p> <p>17. Dweba ulayini kulendlela yemoto.</p> <p>18. Imoto ingahamba noma yikuphi.</p> <p>19. Ulayini wakho ungaphumeli ngaphandle futhi ungaliphakamisi ipeni.</p>

Subtest 2: Copying

Example:

Subtest 2: Copying

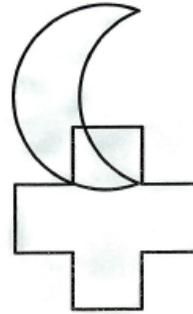
1 	2 	3 
		
4 	5 	6 
		

SL	TL1	TL2	TL3	PI-TL
<p>20. "Look at this page. See all the boxes?"</p> <p>21. Each box has a drawing in the top half and nothing in the bottom half.</p> <p>22. I want you to draw the figure that you see up here in the top part of this box down here in the blank space.</p> <p>23. When you draw your figure, make sure that it stays inside of the box and doesn't touch the sides of the box.</p> <p>24. Do not erase.</p> <p>25. Begin your drawings with the first one.</p> <p>26. When you have completed the first row, move to the bottom row.</p> <p>27. There are more drawings on the next 2 pages.</p> <p>28. Continue drawing until I tell you to stop or you come to the end."</p>	<p>20. "Buka leli khasi. Uyazibona izikwele lezi?"</p> <p>21. Zonke izikwele zinemidwebo phezulu kodwa akukho lutho ezansi.</p> <p>22. Ngifuna udwebe lokhu ozokubona ngenhla kulezikhala ezingezansi ezingenalutho.</p> <p>23. Uma udweba, qinisekisa ukuhlala ngaphakathi kwebhokisi uma udweba, ungaphumeli ngaphandle.</p> <p>24. Ungacimi.</p> <p>25. Qala ke udwebe esikweleni sokuqala.</p> <p>26. Uma usuqedile ngolayini wokuqala, qhubeka udwebe okulandelayo uze ufike ekugcineni.</p> <p>27. Kukhona amanye amakhasi amabili alandelayo.</p> <p>28. Qhubeka udwebe ngize ngithi ima noma usuqedile."</p>	<p>20. "Buka leli khasi. Uyawabona wonke amabhokisi?"</p> <p>21. Ibhokisi ngalinye lidwentshiwe kuhhafu ongenhla kodwa alidwentshiwe kongezansi.</p> <p>22. Ngifuna udwebe lom'dwebo owubona ngenhla ebhokisini uwudwebe ngaphansi lakungena lutho khona.</p> <p>23. Uma udweba umdwebo wakho, qinisekisa ukuthi uhlala ngaphakathi kwebhokisi futhi ungathinti emaceleni.</p> <p>24. Ungacishi.</p> <p>25. Qala imidwebo yakho ngeyokuqala.</p> <p>26. Uma uqeda ukudweba uhla lokuqala, ndlulela kolunge zansi.</p> <p>27. Kuneminye imidwebo emakhasini amabili alandelayo.</p> <p>28. Qhubeka nokudweba ngize ngikutshele ukuthi eme noma uma usufike ekugcinenim"</p>	<p>20. Bhuka kuleli khasi. Uyabona wonke amabhokisi?"</p> <p>21. Ibhokisi ngamunye ngamunye line sidwebo engxenyeni ephezulu futhi akunalutho ngenzani kwesigamu.</p> <p>22. Ngifuna udwebe umdwebo owubonayo phezulu engxenyeni yebokisi ngaphansi kwe sikhala esingenalutho.</p> <p>23. Uma udweba umdwebo wakho., qiniseka ukuthi uhlala ngaphakathi kwebokisi futhi ayithinti izinhlangothi zebokisi</p> <p>24. Ungasuli.</p> <p>25. Qala imidwebo yakho nge ngokucala.</p> <p>26. Uma seweqedile ngomgqa ongezansi.</p> <p>27. Kune midwebo eminingi emakhasini ambili alandelayo.</p> <p>28. Qhubeka udwebe kufikela ngithi ima noma kufikela ufika esiphelelweni.</p>	<p>20. Buka leli khasi. Uyawabona wonke amabhokisi?"</p> <p>21. Wonke ama bhokisi anemidwebo phezulu kodwa akukho lutho ezansi.</p> <p>22. Ngifuna udwebe lokhu ozokubona ngenhla kulezikhala ezingezansi ezingenalutho.</p> <p>23. Uma udweba ungaphumeli ngaphandle kwebhokisi.</p> <p>24. Ungasuli.</p> <p>25. Qala udwebe ebhokisini lokuqala</p> <p>26. Uma usuqedile ngolayini wokuqala, qhubeka udwebe okulandelayo uze ufike ekugcineni.</p> <p>27. Kuneminye imidwebo emabhokisini amabili alandelayo</p> <p>28. Qhubeka udwebe ngize ngithi ima noma ngithi usuqedile."</p>

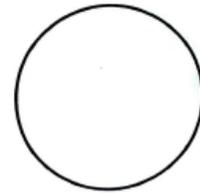
Subtest 3: Figure-Ground

Example:

Example A



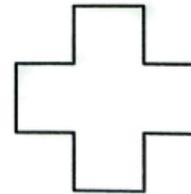
a



b



c



d



e

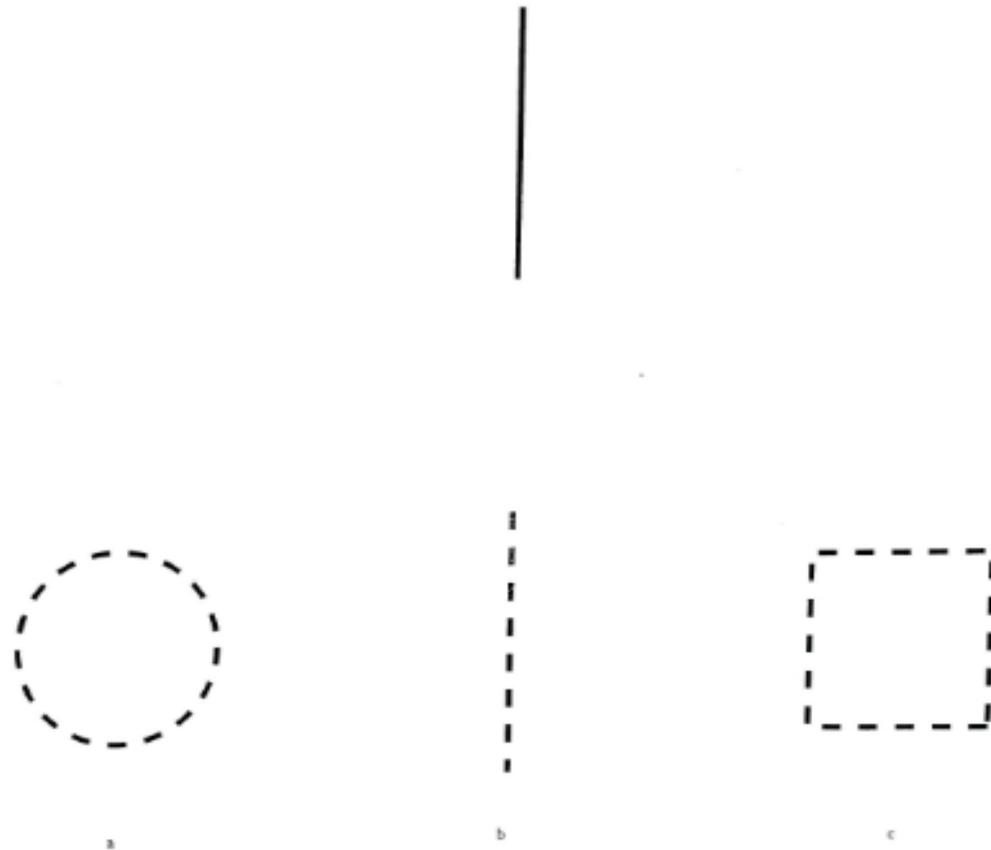
Subtest 3: Figure-Ground 2

SL	TL1	TL2	TL3	PI-TL
<p>29. "Look at this page. See the drawing at the top of the page and the shapes at the bottom of the page?"</p> <p>30. I want you to show me which of these shapes down here are part of the drawing at the top of the page.</p>	<p>29. "Buka leli khasi. Buka umdwebo ophezulu kuleli khasi Kanye nemidwebo engezansi kuleli khasi."</p> <p>30. Ngifuna ungikhombise yonke imidwebo engenhla efana nemidwebo engezansi kuleli khasi"</p>	<p>29. "Buka leli khasi. Uyawubona umdwebo ongenhla kwale khasi kanye nezimo ezingezansi kwale khasi?"</p> <p>30. Ngifuna ungibonise ukuthi yiziphi izimo ezingezansi eziyi ngxenye yomdwebo ongenhla kwale khasi.</p>	<p>29. Bheka kuleli khasi. Bona umdwebo ngaphezulu kwe khasi nezimo ngaphansi kwe khasi?"</p> <p>30. Ngifuna ungikhombise ukuthi iyiphi yezimo eziphansi eyingxenye ye midwebo engaphezulu kwe khasi.</p>	<p>29. Buka leli khasi. Buka umdwebo ophezulu kuleli khasi Kanye nemidwebo engezansi kuleli khasi."</p> <p>30. Ngifuna ungikhombise yonke imidwebo ephezulu efana nemidwebo engezansi kuleli khasi"</p>
<p>31. "Let's do another one."</p> <p>32. I want you to show me which of these shapes down here are part of the drawing at the top of the page."</p>	<p>31. "Asenze okunye futhi."</p> <p>32. Ngifuna ungikhombise yonke imidwebo engezansi efana nemidwebo ephezulu kuleli khasi."</p>	<p>31. "Ásenze enye."</p> <p>32. Ngifuna ungibonise ukuthi yiziphi ezinye izimo ezingezansi eziyi ngxenye yomdwebo ongenhla kwale khasi."</p>	<p>31. Asenze okunye."</p> <p>32. Ngifuna ungikhombise ukuthi yiziphi yezimo phansi ezi ingxenye yomdwebo ekhasini elinga phezulu."</p>	<p>31. "Asenze okunye futhi."</p> <p>32. Ngifuna ungikhombise yonke imidwebo engezansi efana nemidwebo ephezulu kuleli khasi."</p>

Subtest 4: Visual Closure

Example:

Example A



Subtest 4: Visual Closure 28

SL	TL1	TL2	TL3	PI-TL
<p>33. "Look at the drawing at the top of the page.</p> <p>34. Now look at the drawings down her.</p> <p>35. Someone did not finish these drawings.</p> <p>36. Try to imagine what they would look like if they were finished.</p> <p>37. If they were finished, which one of these drawings would look like the drawing at the top?"</p> <p>38. "Let's try another one.</p> <p>39. If these drawings at the bottom were finished, which one would look like the drawing at the top?"</p>	<p>33. "Buka umdwebo ophezulu kuleli khasi.</p> <p>34. Manje buka umdwebo ongezansi.</p> <p>35. Kukhona ongaqedanga ukudweba lemidwebo.</p> <p>36. Zama ukucabanga ukuthi lemidwebo ibizobukeka kanjani uma isiphelile.</p> <p>37. Uma isiphelile, imuphi umdwebo kulena engezansi obuzobukeka ufana nomdwebo ongehla?"</p> <p>38. "Asizame okunye futhi.</p> <p>39. Uma lemidwebo engezansi ibiphelile, imuphi obuzofana nomdwebo ongenhla?"</p>	<p>33. "Buka lom'dwebo ongenhla kwale khasi.</p> <p>34. Manje buka lom'dwebo ongezansi kwalo.</p> <p>35. Kunomuntu ongayi qedanga lemidwebo.</p> <p>36. Zama ukucabanga ukuthi ibizoba lemidwebo umangabe ibiqediwe.</p> <p>37. Uma ngabe ibiqediwe lemidwebo, imuphi umdwebo obuzo bukeka njeng'mdwebo ongenhla?"</p> <p>38. "Asizame omunye futhi.</p> <p>39. Uma lemidwebo engezansi ibiphelile, yimuphi umdwebo obuzo bukeka njeng'omdwebo ongenhla?"</p>	<p>33. Bheka lomdwebo ngaphezulu kwekhasi.</p> <p>34. Manje bheke imidwebo engaphansi.</p> <p>35. Umuntu othile akaqedanga ukudweba.</p> <p>36. Zama ukucabanga ukuthi bezizo bukeka kanjani uma beziqediwe, iyiphi yemidwebo engabukeka nje ngomdwebo ongaphezulu.</p> <p>37. (Translator accidentally omitted sentence 37)</p> <p>38. Masizame okunye.</p> <p>39. Uma imidwebo engaphansi iqediwe, iyiphi yemidwebo engabukeka nje ngale enga phezulu.</p>	<p>33. Buka umdwebo ophezulu kuleli khasi.</p> <p>34. Manje buka umdwebo ongezansi.</p> <p>35. Kunomuntu ongaqedanga ukudweba lemidwebo.</p> <p>36. Zama ukucabanga ukuthi lemidwebo ibizobukeka kanjani uma isiphelile.</p> <p>37. Uma isiphelile, imuphi umdwebo kulena engezansi obuzobukeka ufana nomdwebo ophezulu?"</p> <p>38. Asizame okunye futhi.</p> <p>39. Uma lemidwebo engezansi ibiphelile, imuphi obuzofana nomdwebo ophezulu?"</p>

Subtest 5: Form Constancy

Example:

Example B



a



b



c

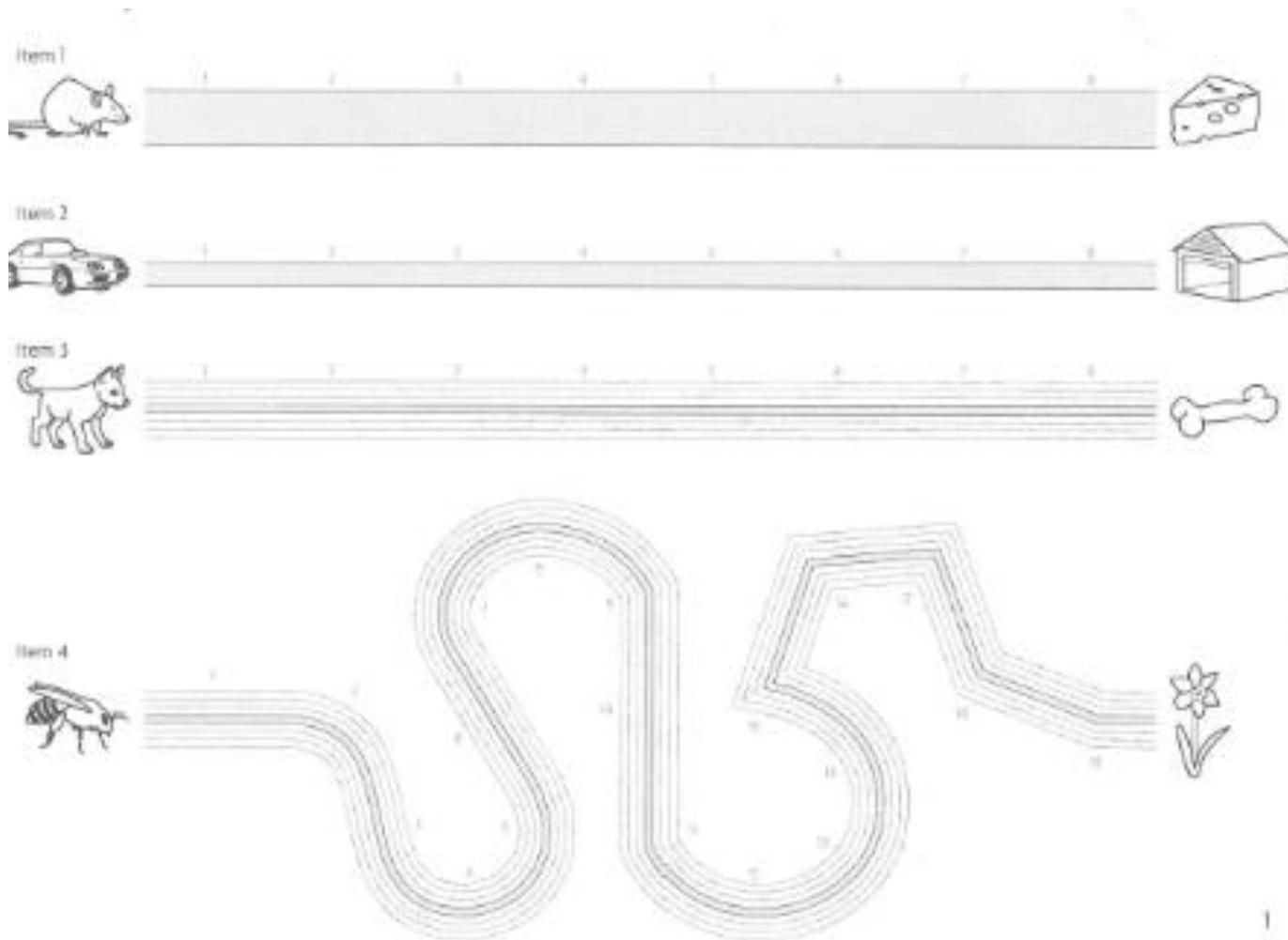
Subtest 5: Form Constancy 58

SL	TL1	TL2	TL3	PI-TL
<p>40. "Look at the page in front of you.</p> <p>41. You will see one drawing at the top of the page and three other drawings below it.</p> <p>42. Find the drawings down here that are like the drawing up here.</p> <p>43. The shapes that you are looking for down here might be bigger, smaller, darker, or lighter than the shape at the top; they might be turned on their sides or upside down; or they may be part of a drawing.</p> <p>44. There may be more than one shape like the one at the top.</p> <p>45. Which of the drawings at the bottom are like the drawing at the top?"</p> <p>46. "Let's try another one. Which of the drawings at the bottom are like the drawing at the top?"</p>	<p>40. "Buka leli khasi eliphambi kwakho.</p> <p>41. Uzobona umdwebo owodwa ongenhla kanye neminye emithathu ngezansi.</p> <p>42. Bheka imidwebo engezansi efana nodwebo engenhla.</p> <p>43. Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu; kungenzeka futhi ime ibheke phezulu noma eceleni; noma ibe ingxenye yeminye imidwebo.</p> <p>44. Kungenzeka futhi imidwebo efanayo ibe ngaphezulu kowodwa.</p> <p>45. Imuphi imidwebo engezansi efana nomdwebo ongenhla?'</p> <p>46. "Ake sizame okunye futhi. Imiphi imidwebo engezansi efana nomdwebo ongenhla kuleli khasi?"</p>	<p>40. "Buka lekhasi eliphambi kwakho.</p> <p>41. Uzobona umdwebo owodwa ngenhla keep khasi neminye imidwebo emithathu ngezansi kwawo.</p> <p>42. Thola imidwebo engizansi efana nemidwebo engenhla.</p> <p>43. Izimo ozobe uzibheka la ngezansi zingaba nkulu, ncane, mnyama noma zikhanye kunalezi ezingenhl; zinga hlapa ngohlangothi lwazo noma zibhekiswa phansi; noma zingaba yingxenye yomdwebo.</p> <p>44. Kungenzeka kube nezimo eziningi ezifana nomdwebo ongenhla.</p> <p>45. Iyiphi imidwebo engezansi efana nemidwebo engenhla?</p> <p>46. "Asizame enye futhi. Iyiphi imidwebo engezansi efana nemidwebo engenhla?"</p>	<p>40. Bheka ikhaisi elingaphambili kwakho.</p> <p>41. Uzobona umdwebo oyedwa ngaphezulu kwekhasi nemidwebo eminye emithathu ngezansi kwayo.</p> <p>42. Thola imidwebo ngaphansi efana nemidwebo ungaphezulu.</p> <p>43. Izimo obhekana nazo ngaphansi kungenzeka zibe nkudiwana, ncane, mnyama noma zibe lula kunezimo ezingaphezulu. Noma kungenzeka ziphenduke ngaphansi naphezulu, noma zibe yingxenye yizimo.</p> <p>44. Kungaba nezimo eziningi nje ngalezi eziphezulu.</p> <p>45. Yiziphi yezimo ezinge phansi ezifana nalezi enzinga phezulu?</p> <p>46. Asenzeni okunye. Ngifuna ungikhombise iyiphi yezimo ezinga phansi eziyi ngxenye yezimo ezinga phezulu kwekhasi.</p>	<p>40. Buka leli khasi eliphambi kwakho.</p> <p>41. Uzobona umdwebo owodwa ophezulu kanye neminye emithathu engezansi.</p> <p>42. Thola imidwebo engezansi efana nemidwebo engaphezulu.</p> <p>43. Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu. Kungenzeka futhi ime ibheke phezulu noma eceleni; noma ibe ingxenye yeminye imidwebo.</p> <p>44. Kungenzeka futhi imidwebo efanayo ibe ngaphezulu kowodwa.</p> <p>45. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?</p> <p>46. "Asizame enye futhi. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?"</p>

Appendix I: Committee-2 Comparison of Translated Versions

Subtest 1: Eye-Hand Coordination

Example:



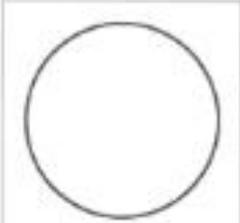
Subtest 1: Eye-Hand Coordination				
SL	PI-TL	BT1	BT2	P-FTL
1. "Look at this mouse.	1. Buka leli gundane.	1. Look at this mouse/rat.	1. Look at this rat.	1. Buka leli gundane.
2. You are going to draw a line from the mouse to this cheese over here.	2. Uzodweba ulayini usuka kuleli gundane kuya ku Cheese.	2. You will draw a line from this line to the cheese.	2. Draw a line from this rat to cheese.	2. Dweba ulayini usuka kuleli gundane kuya ku Cheese.
3. Be very careful when you draw your line; try to stay in the center of the gray path.	3. Qaphela uma udweba ulayini; zama ukungaphumeli ngaphandle kwalendlela emnyama.	3. Be careful when drawing the line; try not to draw outside of the black path.	3. Be careful when you draw a line, try not to draw outside black path.	3. Qaphela uma udweba ulayini; zama ukungaphumeli ngaphandle kwalendlela emnyama.
4. Once you start your line, do not lift your pencil from the paper until you get to the end.	4. Uma udweba, ungaliphakamisi ipeni uze uqede.	4. When drawing, do not lift the pen until you are finished/done.	4. When you draw do not lift up your pen until you finish drawing.	4. Uma udweba, ungaliphakamisi ipeni uze uqede.
5. Go."	5. Dweba.	5. Draw.		5. Dweba.
6. "Remember, do not lift your pencil until you reach the end of the grey path."	6. Khumbula, ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama.	6. Remember, do not lift the pen until you are finished/done drawing on the black path.	6. Remember, do not lift up your pen until you finish drawing in the black path.	6. Khumbula, ungaliphakamisi ipeni uze uqede ukudweba kulendlela emnyama.
7. "See the car? You are going to draw a line from the car over to the garage.	7. Buka imoto. Dweba ulayini usuka kwimoto kuya egaraji.	7. Look at the car. Draw a line from the car to the garage.	7. Look at the car. Draw a line from the car to the garage.	7. Buka imoto. Dweba ulayini usuka kwimoto kuya egaraji.
8. Remember, stay in the center of the gray path and don't lift your pencil."	8. Khumbula, uma udweba ungaphumeli ngaphandle kwalendlela emnyama futhi ungaphakamisi ipeni.	8. Remember, when drawing do not draw outside the black path and do not lift the pen.	8. Remember, when you draw do not draw outside the black path and do not lift up your pen.	8. Khumbula, uma udweba ungaphumeli ngaphandle kwalendlela emnyama futhi ungaphakamisi ipeni.
9. "See the dog? You are going to draw a line from the dog to this bone over here.	9. Bukainja. Dweba ulayini uyaku kwithambo.	9. Look at the dog. Draw a line to the bone.	9. Look at the dog. Draw a line to the bone.	9. Bukainja. Dweba ulayini uyaku kwithambo.
10. Be very careful when you draw your line.	10. Qaphela uma udweba ulayini.	10. Be careful when drawing the line.	10. Be careful when you draw a line.	10. Qaphela uma udweba ulayini.

Subtest 1: Eye-Hand Coordination				
SL	PI-TL	BT1	BT2	P-FTL
11. Try to stay in the center of the path. Stay in the gray part of the path.”	11. Zama ukuhlala kulendlela emnyama.	11. Try to stay within the black path.	11. Try to stay on the black path.	11. Zama ukuhlala kulendlela emnyama.
12. “Look, this time the path curves.	12. Buka, manje indlela iyajika.	12. Look, now the path is turning.	12. Look, now the path is turning.	12. Buka, manje indlela iyajika.
13. Draw a line from the bee to the flower.	13. Dweba ulayini ukuya enyosini.	13. Draw the line to the bee.	13. Draw a line to the beer.	13. Dweba ulayini osuka enyosini uye embalini
14. Keep your line in the center of the curved path. Stay I the gray part of the path.	14. Ulayini wakho ungaphumeli ngaphandle kwendlela emnyama.	14. Your line must not get out of the black path.	14. Your line must not be outside the black path.	14. Ulayini wakho ungaphumeli ngaphandle kwendlela emnyama.
15. Remember, don’t lift your pencil until you reach the flower.”	15. Khumbula ungaphakamisi ipeni lakho.	15. Remember do not lift the pen.	15. Remember not to lift up your pen.	15. Khumbula ungaphakamisi ipeni lakho.
16. “Look at this racetrack.	16. Buka indlela yemoto.	16. Look at the car’s path/road.	16. Look at the road.	16. Buka indlela yemoto.
17. Draw a line all the way around the racetrack.	17. Dweba ulayini kulendlela yemoto.	17. Draw a line on the car’s path/road.	17. Draw a line on the road.	17. Dweba ulayini kulendlela yemoto.
18. The car can go around the track in either direction.	18. Imoto ingahamba noma yikuphi.	18. The car can go anywhere.	18. A car can walk drive anywhere.	18. Imoto ingathatha noma ngabe iyiphi indlela.
19. Keep your line in the grey part of the track and don’t lift your pencil until you finish.”	19. Ulayini wakho ungaphumeli ngaphandle futhi ungaliphakamisi ipeni.	19. Your line must not go outside and do not lift your pen.	19. Your line must not be outside and do not lift up your pen.	19. Ulayini wakho ungaphumeli ngaphandle futhi ungaliphakamisi ipeni.

Subtest 2: Copying

Example:

Subtest 2: Copying

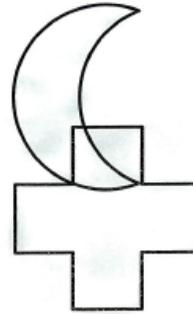
1 	2 	3 
		
4 	5 	6 
		

Subtest 2: Copying				
SL	PI-TL	BT1	BT2	P-FTL
20. "Look at this page. See all the boxes?"	20. Buka leli khasi. Uyawabona wonke amabhokisi?	20. Look at this page. Can you see all the boxes?	20. Look at this page, can you see all boxes?	20. Buka leli khasi. Uyawabona wonke amabhokisi?
21. Each box has a drawing in the top half and nothing in the bottom half.	21. Wonke ama bhokisi anemidwebo phezulu kodwa akukho lutho ezansi.	21. All the boxes have drawings on top but there is nothing at the bottom.	21. All boxes got drawings on top but there is nothing at the bottom.	21. Wonke ama bhokisi anemidwebo phezulu kodwa akukho lutho ezansi.
22. I want you to draw the figure that you see up here in the top part of this box down her in the blank space.	22. Ngifuna udwebe lokhu ozokubona ngenhla kulezikhala ezingezansi ezingenalutho.	22. I want you to draw what you will see at the top in the spaces at the bottom that has nothing.	22. I want you to draw what you see on top in the empty boxes below.	22. Ngifuna udwebe lokhu ozokubona ngenhla kulezikhala ezingezansi ezingenalutho.
23. When you draw your figure, make sure that it stays inside of the box and doesn't touch the sides of the box.	23. Uma udweba ungaphumeli ngaphandle kwebhokisi.	23. When drawing do not draw outside the box.	23. When you draw do not draw outside the box.	23. Uma udweba ungaphumeli ngaphandle kwebhokisi.
24. Do not erase.	24. Ungasuli.	24. Do not erase.	24. Do not erase.	24. Ungasuli.
25. Begin your drawings with the first one.	25. Qala udwebe ebhokisini lokuqala	25. Start to draw at the first box.	25. Start drawing from the first box.	25. Qala udwebe ebhokisini lokuqala
26. When you have completed the first row, move to the bottom row.	26. Uma usuqedile ngolayini wokuqala, qhubeka udwebe okulandelayo uze ufike ekugcineni.	26. When you are done with the first line, continue to draw the next line until the end.	26. When you are done with first line, continue draw the following line until you reach the end.	26. Uma usuqedile ngolayini wokuqala, qhubeka udwebe okulandelayo uze ufike ekugcineni.
27. There are more drawings on the next 2 pages.	27. Kuneminye imidwebo emabhokisini amabili alandelayo	27. There are other drawings in the next two boxes.	27. There are more drawings in the next two boxes.	27. Kuneminye imidwebo emakhasini amabili alandelayo
28. Continue drawing until I tell you to stop or you come to the end."	28. Qhubeka udwebe ngize ngithi ima noma ngithi usuqedile."	28. Continue drawing until I say stop or you are done.	28. Continue drawing until I say stop or you finish.	28. Qhubeka udwebe ngize ngithi ima noma ngithi usuqedile."

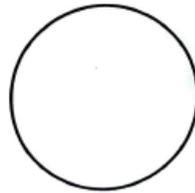
Subtest 3: Figure-Ground

Example:

Example A



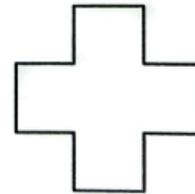
a



b



c



d



e

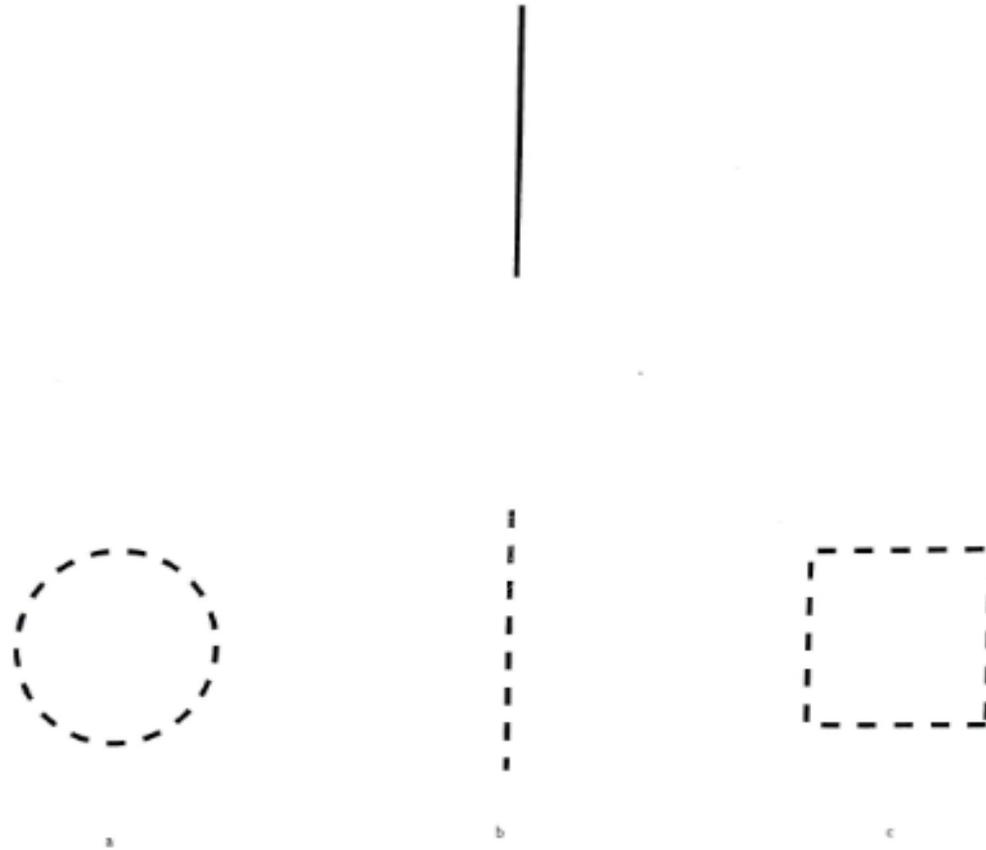
Subtest 3: Figure-Ground 2

Subtest 3: Figure-Ground				
SL	PI-TL	BT1	BT2	P-FTL
29. "Look at this page. See the drawing at the top of the page and the shapes at the bottom of the page?"	29. Buka leli khasi. Buka umdwebo ophezulu kuleli khasi Kanye nemidwebo engezansi kuleli khasi.	29. Look at this page. Look at the drawing at the top of this page and the drawings at the bottom of this page.	29. Look at this page. Look at the drawing on top of this page and drawing below this page.	29. Buka leli khasi. Buka umdwebo ophezulu kuleli khasi Kanye nemidwebo engezansi kuleli khasi.
30. I want you to show me which of these shapes down here are part of the drawing at the top of the page.	30. Ngifuna ungikhombise yonke imidwebo ephezulu efana nemidwebo engezansi kuleli khasi	30. I want you to show me all the drawings at the top that looks the same as the drawings at the bottom of the page	30. I want you to show me all drawings at the top that look the same as drawing below the page	30. Ngifuna ungikhombise yonke imidwebo engezansi ekhona phezulu.
31. "Let's do another one.	31. "Asenze okunye futhi.	31. Lets do another again.	31. Lets do it again.	31. "Asenze okunye futhi.
32. I want you to show me which of these shapes down here are part of the drawing at the top of the page."	32. Ngifuna ungikhombise yonke imidwebo engezansi efana nemidwebo ephezulu kuleli khasi."	32. I want you to show me all the drawings at the bottom that looks the same as the drawings at the top of this page.	32. I want you to show me all drawings below that look the same as drawings on top of the page.	32. Ngifuna ungikhombise yonke imidwebo engezansi ekhona phezulu.

Subtest 4: Visual Closure

Example:

Example A



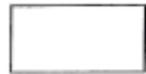
Subtest 4: Visual Closure 28

Subtest 4: Visual Closure				
SL	PI-TL	BT1	BT2	P-FTL
33. "Look at the drawing at the top of the page.	33. Buka umdwebo ophezulu kuleli khasi.	33. Look at the drawing at the top of this page.	33. Look at the drawing on the top of this page.	33. Buka umdwebo ophezulu kuleli khasi.
34. Now look at the drawings down her.	34. Manje buka umdwebo ongezansi.	34. Now look at the drawing at the bottom.	34. Now look at the drawing below.	34. Manje buka umdwebo ongezansi.
35. Someone did not finish these drawings.	35. Kunomuntu ongaqedanga ukudweba lemidwebo.	35. There is a person who did not finish drawing these drawings.	35. There is someone who did not finish drawing.	35. Kunomuntu ongaqedanga ukudweba lemidwebo.
36. Try to imagine what they would look like if they were finished.	36. Zama ukucabanga ukuthi lemidwebo ibizobukeka kanjani uma isiphelile.	36. Try and think how would the draws looked if it was finished.	36. Try and think how these drawings would have look like if it was finished.	36. Zama ukucabanga ukuthi lemidwebo ibizobukeka kanjani uma isiphelile.
37. If they were finished, which one of these drawings would look like the drawing at the top?"	37. Uma isiphelile, imuphi umdwebo kulena engezansi obuzobukeka ufana nomdwebo ophezulu?	37. When it is finished, which drawing from those at the bottom would have looked like the drawing at the top?	37. When it is finished, which drawing from the ones below would look like the drawing on top?	37. Uma isiphelile, imuphi umdwebo kulena engezansi obuzobukeka ufana nomdwebo ophezulu?
38. "Let's try another one.	38. Asizame okunye futhi.	38. Let's try another one again.	38. Let's try again.	38. Asizame okunye futhi.
39. If these drawings at the bottom were finished, which one would look like the drawing at the top?"	39. Uma lemidwebo engezansi ibiphelile, imuphi obuzofana nomdwebo ophezulu?	39. If the drawing at the bottom where finished, which drawing would look like the one at the top?	39. If these drawings below were finished, which one would have been the same as the drawing on top?	39. Uma lemidwebo engezansi ibiphelile, imuphi obuzofana nomdwebo ophezulu?

Subtest 5: Form Constancy

Example:

Example B



a



b



c

Subtest 5: Form Constancy 58

Subtest 5: Form Constancy				
SL	PI-TL	BT1	BT2	P-FTL
40. "Look at the page in front of you.	40. Buka leli khasi eliphambi kwakho.	40. Look at this page in front of you.	40. Look at this page in front of you.	40. Buka leli khasi eliphambi kwakho.
41. You will see one drawing at the top of the page and three other drawings below it.	41. Uzobona umdwebo owodwa ophezulu kanye neminye emithathu engezansi.	41. You will see one drawing at the top and three at the bottom.	41. You will see one drawing on top and other three drawing at the bottom.	41. Uzobona umdwebo owodwa ophezulu kanye neminye emithathu engezansi.
42. Find the drawings down here that are like the drawing up here.	42. Thola imidwebo engezansi efana nemidwebo engaphezulu.	42. Find drawings at the bottom that looks the same as the drawing on top.	42. Find drawing at the bottom that is the same as drawings at the top.	42. Thola imidwebo engezansi efana nemidwebo engaphezulu.
43. The shapes that you are looking for down here might be bigger, smaller, darker, or lighter than the shape at the top; they might be turned on their sides or upside down; or they may be part of a drawing.	43. Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu. Kungenzeka futhi ime ibheke phezulu noma eceleni; noma ibe ingxenye yeminye imidwebo.	43. Drawings at the bottom can be big, small, black, or lighter than the one on top. It can also be upright or at the side; or be part of other drawings.	43. Drawings at the bottom might be big, small, too dark or bright than the drawings at the top. It might face on top or side or be part of other drawings.	43. Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu. Kungenzeka futhi ime ibheke phezulu noma eceleni; noma ihlangane neminye imidwebo.
44. There may be more than one shape like the one at the top.	44. Kungenzeka futhi imidwebo efanayo ibe ngaphezulu kowodwa.	44. Same drawings can be on top of another one.	44. It might happen that same drawing be more than one.	44. Kungenzeka imidwebo ibe mningi efana nale ephezulu.
45. Which of the drawings at the bottom are like the drawing at the top?"	45. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?"	45. Which drawings at the bottom looks the same as the drawings at the top?"	45. Which drawings below is the same as drawings on top.	45. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?"
46. "Let's try another one. Which of the drawings at the bottom are like the drawing at the top?"	46. "Asizame enye futhi. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?"	46. Lets try another one again. Which drawings at the bottom looks the same as the drawings on top.	46. Let's try again. Which drawing below look the same as drawings on top?"	46. "Asizame enye futhi. Iyiphi imidwebo engezansi efana nemidwebo ephezulu?"

Appendix J: Detailed Analysis of Committee-2 Discourse

Sentence Number	Recording Timestamp	Functional Equivalence: Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language. ¹⁹ Note that functional equivalence is closely connected to cultural equivalence.	Cultural Equivalence: Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as was intended in the source language. ¹⁹ Culturally appropriate manner of speaking.	Conceptual Equivalence: The degree to which the concept occurs or is familiar in both the source and target language. ²¹ This affects whether the source language and target language are comparable in the degree of difficulty .	Comments
1	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
2	30:55		Yes. Use of dweba instead of uzodweba.	Yes. Committee-2 chose ulayini instead of umugqa.	Committee collaborated to produce P-FTL.
3	39:14		Yes. Emnyama is the best word for grey in isiZulu.	Yes. No word for centre in isiZulu.	Committee agreed to use the PI-TL as the P-FTL in conjunction with pointing when administering the assessment.
4	44:00			Yes. Ipeni was considered more familiar.	Committee agreed to use the PI-TL as the P-FTL.
5	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
6	45:05				Committee agreed to use the PI-TL as the P-FTL.
7	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
8	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
9	46:05		Yes. Committee-2 adapted to the most appropriate manner of speaking.		PI-TL was used as P-FTL.
10	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.

Sentence Number	Recording Timestamp	Functional Equivalence: Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language. ¹⁹ Note that functional equivalence is closely connected to cultural equivalence.	Cultural Equivalence: Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as was intended in the source language. ¹⁹ Culturally appropriate manner of speaking.	Conceptual Equivalence: The degree to which the concept occurs or is familiar in both the source and target language. ²¹ This affects whether the source language and target language are comparable in the degree of difficulty .	Comments
11	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
12	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
13	48:02				Corrected omission of “flower”. Committee collaborated to produce P-FTL.
14	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
15	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
16	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
17	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
18	55:44	Yes. The directionality of where the child is expected to draw had to be clarified.			Necessary for committee-2 to understand the task the child has to carry out. Committee-2 collaborated to produce P-FTL. Dependent on directional pointing by the administering therapist.
19	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.

Sentence Number	Recording Timestamp	Functional Equivalence: Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language. ¹⁹ Note that functional equivalence is closely connected to cultural equivalence.	Cultural Equivalence: Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as was intended in the source language. ¹⁹ Culturally appropriate manner of speaking.	Conceptual Equivalence: The degree to which the concept occurs or is familiar in both the source and target language. ²¹ This affects whether the source language and target language are comparable in the degree of difficulty .	Comments
20	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
21	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
22	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
23	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
24	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
25	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
26	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
27	1:00:31				Committee-2 collaborated to correct an error and produce P-FTL.
28	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
29	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.

Sentence Number	Recording Timestamp	Functional Equivalence: Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language. ¹⁹ Note that functional equivalence is closely connected to cultural equivalence.	Cultural Equivalence: Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as was intended in the source language. ¹⁹ Culturally appropriate manner of speaking.	Conceptual Equivalence: The degree to which the concept occurs or is familiar in both the source and target language. ²¹ This affects whether the source language and target language are comparable in the degree of difficulty .	Comments
30	1:02:39		Yes. There was no way of saying “part of” which the committee considered familiar for a young child.	Yes. Committee-2 concluded that ingxenyé is too difficult/unfamiliar for a young child.	Committee collaborated to produce P-FTL. Appropriate pointing by the administering therapist is paramount.
31	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
32	1:02:39 and 1:07:20		Yes. There was no way of saying “part of” which the committee considered familiar for a young child.	Yes. Committee-2 concluded that ingxenyé is too difficult/unfamiliar for a young child.	Same as sentence 30. Committee collaborated to produce P-FTL. Appropriate pointing by the administering therapist is paramount.
33	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
34	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
35	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
36	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
37	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
38	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.

Sentence Number	Recording Timestamp	<p>Functional Equivalence:</p> <p>Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language.¹⁹ Note that functional equivalence is closely connected to cultural equivalence.</p>	<p>Cultural Equivalence:</p> <p>Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as was intended in the source language.¹⁹ Culturally appropriate manner of speaking.</p>	<p>Conceptual Equivalence:</p> <p>The degree to which the concept occurs or is familiar in both the source and target language.²¹ This affects whether the source language and target language are comparable in the degree of difficulty.</p>	Comments
39	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
40	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
41	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
42	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
43	1:07:39			Yes. Committee-2 concluded that ingxenye is too difficult/unfamiliar for a young child. Committee-2 agreed to adapt to say combined with other drawings.	Committee collaborated to produce P-FTL.
44	1:12:25	Yes. To make sure the child understands to look for more than one shape.			Committee collaborated to produce P-FTL.
45	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.
46	No discrepancy between SL, BT1 and BT2.				PI-TL was used as P-FTL.

Appendix K: External Rater Report of Committee-2 Discourse

Instructions: Please indicate with an X whether the discussion of each respective sentence focussed on one or more of the equivalences below:

Sentence Number	Recording Timestamp	Functional Equivalence: Functional equivalence relates to whether the target language wording will elicit the same target behaviour as in the source language. ¹⁹ Example: "Sit down" and "sit on the chair" may not elicit the same target behaviour and therefore may not be functionally equivalent.	Cultural Equivalence: Cultural equivalence reflects whether members of the target population will interpret the underlying meaning after translation in a similar way as in the source language. ¹⁹ Culturally appropriate manner of speaking. Example: It is more appropriate to say "Go" rather than "You will go" when instructing Zulu; therefore "go" is more culturally equivalent.	Conceptual Equivalence: The degree to which the concept occurs or is familiar in both the source and target language. ²¹ This affects whether the source language and target language are comparable in the degree of difficulty . Example: The word "articulate" is not conceptually equivalent to "speak" for a young child since 'articulate' has a higher degree of difficulty and is unlikely to be familiar to young children.	Comments
2	30:55	x	x	x	
18	55:44	x			
30	1:02:39		x	x	
32	1:02:39 and 1:07:20	x	x	x	
44	1:12:25	x		x	

Comments:

The recordings provided evidence that all the sentences were discussed in detail and the six committee-2 members participated equally to obtain agreement on the target language. All three concepts of equivalence were addressed during the discussions. The researcher facilitated the discussions well and only progressed if agreement was reached.

Appendix L: Child Feedback Questionnaire Responses

	Question	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6	Child 7	Child 8	Child 9	Child 10	Positive responses
1	Was it easy to understand my isiZulu? Kube lula ukuzwisisa isiZulu sami?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	8/10
2	When I told you what to do, did you understand? Uma ngikutshelile okufanele ukwenze, uzwisisile na?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10/10
3	Was there any time when you felt unsure what to do? Bekunesikhathi lapho ungazwisisi okufanele ukwenze?	No	Yes. “Last part of test, not sure if it’s the right colour or not.”	Learner unsure how to respond.	No	8/10						

Appendix M: Equivalence Feedback Questionnaire Responses

	Question [§]	Administering therapist 1	Administering therapist 2	Administering therapist 3	Native language reviewer 3	Native language reviewer 4	Positive response
1	Do all the administration instructions have the same or highly similar meanings in the two languages?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
2	Is the language of the translated isiZulu administration instructions of comparable difficulty and commonality with respect to the words in the administration instructions in the original English version?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
3	Does the translation introduce changes in the text (omissions, substitutions, or additions) that might influence the difficulty of the administration instructions in the two language versions?	"No"	"No"	"No"	"Yes. The shapes that you are looking for down here might be bigger, smaller, darker, or lighter than the shape at the top; they might be turned on their sides or upside down; or they may be part of a drawing. (continued) <i>Imidwebo engezansi kungenzeka ibe mikhulu, ibe mincane, ibe mnyama kakhulu noma ikhanye kunale ephezulu. Kungenzeka futhi ime ibheke phezulu noma eceleni; noma ibe yingxenye yomdwebo."</i>	"No"	4/5

[§] Hambleton RK, Zenisky AL. Translating and Adapting Tests for Cross-Cultural Assessments. In: Matsumoto D, van de Vijver F, editors. Cross-cultural Research Methods. New York, NY: Cambridge University Press; 2010. p. 47-74. (Reproduced with permission)

	Question ^s	Administering therapist 1	Administering therapist 2	Administering therapist 3	Native language reviewer 3	Native language reviewer 4	Positive response
4	Are there differences between the translated isiZulu and original English versions of the administration instructions related to the use of metaphors, idioms, or colloquialisms ? If yes, please indicate which wording needs improvement and what would be your suggestion instead?	<i>"Yes. Subtest instructions "Kunomuntu ongaqedanga ukudweba lemidwebo". Instead I would say Ngikhombise umudwebo ofana nalo ophezulu kule engezansi uma iqediwe".</i>	"No"	"No"	"No"	"No"	4/5
5	Is the length of the administration instructions about the same in the two language versions?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
6	Is the format of the administration instructions equally familiar in the two language versions?	"Yes"	"Yes"	<i>"Yes. I just think because we used to administer the test in English I sometimes used both languages but both are the same."</i>	"Yes"	"Yes"	5/5
7	Are there any modifications of the administration instructions' structure , such as the placement of clauses or other word order changes that might make the administration instructions more or less complex in the translated isiZulu version?	<i>"Yes. If the child is too fast in visual closure or form constancy; to ask them to repeat or show the therapist image "Ngikombise futhi or ikhuphi?"</i>	"No"	"No"	"No"	"No"	4/5
8	Are there any grammatical clues that might make the administration instructions easier or harder in the translated isiZulu version?	"No"	"No"	"No"	"No"	"No"	5/5

	Question ^s	Administering therapist 1	Administering therapist 2	Administering therapist 3	Native language reviewer 3	Native language reviewer 4	Positive response
9	Are there any grammatical structures in the original English version of the administration instructions that do not have parallels in the translated isiZulu?	"No"	"No"	"No"	"No"	"No"	5/5
10	Are there any gender, number or other references that might make this item be cued in the translated isiZulu version?	"No"	"No"	"No"	"No"	"No"	5/5
11	Are there any words in the administration instructions that, when translated, change from having one meaning to having more than one common meaning?	"Yes. Subtest 5 – form constancy second part – This is a test error, translation is fine. However, it is too broad and confusing to the child. Rather put into 1 sentence: "Imidwebo engezansi ihlukile; khona emi khulu eminye incane, enye imunyama kakhulu eminye iyakhanya, eminye futhi ibhek phezulu noma eceleni; eminye futhi ihlangene neminye."	"No"	"No"	"No"	"No"	5/5
12	Have terms in the administration instructions in one language been suitably adapted to the cultural environment of the second language version?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
13	Are there cultural differences that would affect the likelihood of a response being chosen when the administration instructions are presented in the original English or translated isiZulu version?	"No"	"No"	"No"	"No"	"No"	5/5

	Question ^s	Administering therapist 1	Administering therapist 2	Administering therapist 3	Native language reviewer 3	Native language reviewer 4	Positive response
14	Are the concepts covered in the administration instructions at about the same level of abstraction in the two language versions?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
15	Do the concepts or constructs of the administration instructions have about the same familiarity and meaning in both the original English and translated isiZulu versions?	"Yes"	"Yes"	"Yes"	"Yes"	"Yes"	5/5
16	Comments	<i>"Translation is perfect; well done to the translators and primary researcher. It would be highly relevant tool to use within SA context of isiZulu speaking children."</i>	<i>"None. I found the isiZulu translation similar and almost equal in meaning to the English one. Due to training in English and being a third language Zulu speaker it was a bit challenging to conduct the test in isiZulu due to familiarity. Therefore one would have to practice saying the words and giving the isiZulu instructions at least three times before conducting it with clients."</i>	<i>"None"</i>	<i>"Instructions well translated, easy to administer-short to the point even where there is no direct translation, meaning remained the same."</i>	<i>"The two version sound and have more or less the same meaning when translated. The word grey (for colour) is not translated to 'mnyama' but it does make it clear for the one being assessed to understand. I usually use ulayini ogqamile instead of ulayini omnyama. Since omnyama is black."</i>	N/A

Appendix N: Declaration of Helsinki

A2 All Researchers

Please note that all researchers must from today, sign the attached declaration, when handing in a protocol at the Faculty of Health Sciences Research Ethics Committee - University of Pretoria.

<p style="text-align: center;">WORLD ASSOCIATION DECLARATION OF HELSINKI Ethical Principles For Medical Research Involving Human Subjects</p>

Adopted by the 18th WMA General Assembly

Helsinki, Finland, June 1964

And amended by the

29th WMA General Assembly, Tokyo, Japan, October 1975

35th WMA General Assembly, Venice, Italy, October 1983

41st WMA General Assembly, Hong Kong, September 1989

48th WMA General Assembly, Somerset West, Republic of South Africa, October 1996
and the

52nd WMA General Assembly, Edinburgh, Scotland, October 2000

A. INTRODUCTION

1. The World Medical Association has developed the Declaration of Helsinki as a statement of ethical principle to provide guidance to physicians and other participants in medical research involving human subjects. Medical research involving human subjects includes research on identifiable human material or identifiable data.
2. It is the duty of the physician to promote and safeguard the health of the people. The physician's knowledge and conscience are dedicated to the fulfilment of this duty.
3. The Declaration of the Geneva of the World Medical Association binds the physician with the words, "The health of my patient will be my first consideration," and the International Code Medical Ethics declares that, "A physician shall act only in the patient's interest when providing medical care which might have the effect of weakening the physical and mental condition of the patient."

4. Medical progress is based on research which ultimately must rest in part on experimentation involving human subjects.
5. In medical research on human subjects, considerations related to the wellbeing of the human subject should take precedence over the interests of science and society.
6. The primary purpose of the medical research involving human subjects is to improve prophylactic, diagnostic and therapeutic procedures and the understanding of the aetiology and pathogenesis of disease. Even the best proven prophylactic, diagnostic and therapeutic methods must continuously be challenged through research for their effectiveness, efficiency, accessibility and quality.
7. In the current medical practice and in medical research, most prophylactic, diagnostic and therapeutic procedures involve risks and burdens.
8. Medical research is subject to ethics standards that promote respect for all human beings and protect their health and rights. Some research population is vulnerable and need special protection. The particular needs of the economically and medically advantaged must be recognized. Special attention is also required for those who cannot give us or refuse consent for themselves, for those who may be subject to giving consent under duress, for those who will not benefit personally from the research and for those for whom the research is combined with care.
9. Research investigators should be aware of the ethical, legal and regulatory requirements for research on human subjects in their own countries as well as applicable international requirements. No national ethical, legal and regulatory requirements should be allowed to reduce or eliminate any of the protections for human subjects set forth in this Declaration.

B. BASIC PRINCIPLES FOR ALL MEDICAL RESEARCH

10. It is the duty of the physician in medical research to protect the life, health, privacy and dignity of the human subject.
11. Medical research involving human subject must conform to the general accepted scientific principles, be based on the thorough knowledge of the scientific literature, other relevant sources of information, and on adequate laboratory and, where appropriate, animal experimentation.
12. Appropriate caution must be exercised in the conduct of research which may affect the environment, and the welfare of animal used for research must be respected.

13. The design and performance of each experimental procedure involving human subjects should be clearly formulated in an experimental protocol. This protocol should be submitted for consideration, comment, guidance and where appropriate, approval to a specially appointed ethical review committee, which must be independent of the investigator, the sponsor or any other kind of undue influence. This independent committee should be in conformity with the laws and regulations of the country in which the research experiment is performed. The committee has the right to monitor ongoing trials. The researcher has the obligation to provide monitoring information to the committee, especially any serious adverse events. The researcher should also submit to the committee, for review, information regarding funding, sponsors, institutional affiliations, other potential conflicts of interest and incentives for subjects.
14. The research protocol should always contain a statement of the ethical considerations involved and should indicate that there is compliance with the principles enunciated in this Declaration.
15. Medical human research involving subjects should be conducted only by scientifically qualified persons and under the supervision of a clinically competent medical person. The responsibility for the human subject must always rest with a medically qualified person and never rest on the subject of the research, even though the subject has given consent.
16. Every medical research project involving human subject should be preceded by careful assessment of predictable risk and burdens in comparison with foreseeable benefits of the subject or to others. This does not preclude the participation of healthy volunteers in medical research. The design of all studies should be publicly available.
17. Physicians should abstain from engaging in research project involving human subjects unless they are confident that the risk involved have been adequately assessed and can be satisfactorily managed. Physicians should cease any investigations if the risks are found to outweigh the potential benefits or if there is conclusive proof of positive and beneficial results.
18. Medical research involving human subjects should only be conducted if the importance of the objective outweighs the inherent risks and burdens of the subject. This is especially important when the human subjects are healthy volunteers.

ICH GUIDELINE FOR GOOD CLINICAL PRACTICE

1. Clinical trials should be conducted in accordance with the ethical principles that have their origin in Declaration of Helsinki, and that are consistent with GCP and the applicable regulatory requirement(s).
2. Before a trial is initiated, foreseeable risk and inconvenience should be outweighed against the anticipated benefit for the individual trial subject and society. A trial should be initiated and continued if the anticipated benefits justify the risk.

3. The rights, safety and well being of the trial subjects are the most important considerations and should prevail over interest of science and society.
4. The available non-clinical and clinical information on an investigational product should be adequate to support the proposed clinical trials.
5. Clinical trials should be scientifically sound, and described in a clear, detailed protocol.
6. A trial should be conducted in compliance with the protocol that has received prior institutional review board (IRB)/independent ethics committee (IEC) approval/favourable opinion.
7. The medical care given to, and medical decisions made on behalf of, subjects should always be the responsibility of the qualified physician or, when appropriate, of a qualified dentist.
8. Each individual involved in conducting a trial should be qualified by education, training, and experience to perform his or her respective task(s).
9. Freely given informed consent should be obtained from every subject prior to clinical trial participant.
10. All clinical trial information should be recorded, handled and stored in a way that allows its accurate reporting, interpretation and verification.
11. The confidentiality of records that could identify subjects should be protected, respecting the privacy and confidentiality rules in accordance with the applicable regulatory requirement(s).
12. Investigational product should be manufactured, handled, and stored in accordance with applicable good manufacturing practice (GMP). They should be used in accordance with the approved protocol.
13. Systems with procedures that assure the quality of every aspect of the trial should be implemented.



Sumarié Naude

21/04/2022

Appendix O: Ethics Approval



Faculty of Health Sciences

Institution: The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with CH GCP guidelines and has US Federal wide Assurance.

- FWA 00000007, Approved dd 22 May 2012 and Expires 03/01/2023
- IORG #. IORG0001782 OMB No. 0990-0275 Approved for use through February 28, 2012 and Expires: 03/01/2023.

31 August 2020

Approval Certificate New Application

Ethics Reference No.: 459/2020

Title: CROSS CULTURAL ADAPTATION OF THE ADMINISTRATION INSTRUCTIONS OF THE DEVELOPMENTAL TEST OF VISUAL PERCEPTION 3RD EDITION FOR ISIZULU SPEAKING CHILDREN

Dear Mrs S Naude

The **New Application** as supported by documents received between 2020-07-09 and 2020-08-26 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2020-08-26 as resolved by its quorate meeting.

Please note the following about your ethics approval:

- Ethics Approval is valid for 1 year and needs to be renewed annually by 2021-08-31.
- Please remember to use your protocol number (459/2020) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers
MBChB MMed (Int) MPharmMed PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 46 and 45. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2016 (Department of Health)

Research Ethics Committee
Room 4-60, Level 4, Tarelopa Building
University of Pretoria, Private Bag 203
Bosaso 0031, South Africa
Tel +27 (0)12 356 3084
Email: @capfco.behan@up.ac.za
www.up.ac.za

Fakulteit Gesondheidswetenskappe
Letaphata Disaense eka Maphelo

Appendix P: Plagiarism Report

MOccTher NaudeS

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