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The Translation and Validation of the LittlEARS Auditory Questionnaire in isiZulu

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Abstract

Hearing loss is a significant contributor to years lived with disability worldwide, affecting approximately 34 million children whose daily lives are substantially impaired. To mitigate the detrimental effects of untreated hearing impairment, paediatric audiologists aim to identify hearing loss as early as possible. This proactive approach enables them to implement timely interventions, ensuring that infants and young children receive the support they need to develop communication skills and overall well-being. Early detection is crucial for optimizing developmental outcomes and enhancing quality of life for these individuals. However, most existing audiological diagnostic tools were developed for older children and are not suitable for assessing auditory development of infants and young children who are not yet verbal. In South Africa, the lack of contextually relevant assessment tools hinders the provision comprehensive audiological rehabilitation. The LittlEARS Auditory Questionnaire (LEAQ) is a parent/caregiver questionnaire that evaluates age-dependent auditory behaviours in the prelingual stage (0-2 years). It screens the auditory development of children with normal hearing as well as those with hearing loss who are fitted with hearing aids or cochlear implants. The responses obtained from the questionnaire are derived from observations made by caregivers or parents since assessing auditory behaviours in paediatric populations is often more complex than in adults. This reliance on caregiver insights is crucial, as formal testing methods may not capture the nuances of a child's auditory experiences. The LEAQ contains questions tailored to specific age groups with the auditory response complexity increasing as the child progresses through different developmental stages. Originally developed in Germany, the LEAQ has been translated into at least 21 languages. Therefore, translating and validating this tool for South Africa's multilingual and multicultural context is essential. This study aimed to (1) translate the English version of the LEAQ into isiZulu, and (2) validate the isiZulu translation.

Methods: The study aimed to (1) translate the English version of the LEAQ into isiZulu and (2) validate the isiZulu translation. *Translation Process*: (1) Forward translation from English to isiZulu, (2) back translation from isiZulu to English, and (3) an expert

committee review. *Validation process*: An expert panel (n=6) used a content validity questionnaire to evaluate the appropriateness and relevance of LEAQ items. 57 isiZulu-speaking parent/caregiver participants completed both the isiZulu version of the LEAQ and a face validity questionnaire. The reliability of the translated LEAQ was assessed through item and scale analysis.

Results: Item Content Validity Index (I-CVI) results (0.8-1) indicated relevance across all items of the LEAQ. Scale Content Validity Index (S-CVI) (0.914) indicated a high content validity of the isiZulu LEAQ. Face validity analysis indicated that all items on the LEAQ achieved an agreement score of ≥80%. The indices of difficulty (0.71-1), signifying that all items on the isiZulu LEAQ were easily comprehensible. All items presented with strong discrimination power ≥0.2. The Cronbach's alpha results indicated good internal consistency with $\alpha = 0.86$.

Conclusion: The findings indicated that following a rigorous translation procedure is useful, as it allows for the identification of any inaccuracies or discrepancies during the translation phases to attain the best quality translation. The statistical analysis indicated that the translated isiZulu LEAQ is valid. Therefore, the questionnaire is appropriate for the use amongst isiZulu speakers.

Keywords: LittlEARS Auditory Questionnaire, Auditory development, isiZulu, self-evaluation scale, translation, scale development, cochlear implants, hearing aids, infants and toddlers

List of Abbreviations

CVI	Content Validity Index
HPCSA	Health Professions Council of South Africa
HREC	Health Research Ethics Committee
I-CVI	Item Content Validity Index
LEAQ	LittlEARS Auditory Questionnaire
UCT	University of Cape Town
SA	South Africa
SAAA	South African Association of Audiologists
SASLHA	South African Speech Language and Hearing Association
S-CVI	Scale Content Validity Index
UA	Universal agreement
WHO	World Health Organization

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Glossary

Audiological rehabilitation: Aural rehabilitation (AR) covers a diverse set of approaches intended to enhance an individual's capacity to engage in activities that have been constrained by hearing loss. Aural rehabilitation sessions are tailored to each client's specific strengths and challenges. They address various aspects, including auditory training, lip-reading, communication tactics, and expressive communication and language aimed at equipping individuals with hearing impairments to communicate effectively (Rutherford & Petersen, 2019).

Audiometry: a conventional hearing assessment procedure performed by audiologists or other appropriately trained hearing healthcare professionals (Bagatto et al., 2011b).

Bilateral: hearing loss presenting in both ears (Bagatto et al., 2011b).

Cochlear implant: A cochlear implant is a small, intricate electronic device designed to offer a perception of sound to individuals who are profoundly deaf or severely hearing-impaired. It is made up of an external component positioned behind the ear and a surgically implanted component beneath the skin (Lieu et al., 2020).

Contextually relevant resources: refers to tools (such as assessments, guidelines, standards and intervention programmes) that speech therapists and audiologists can utilise for a particular population in a specific setting. These tools are cognisant of multiple factors associated with the context, including structural, healthcare, educational, and social systems within the country, and taking into account a particular population within a specific environment (Pascoe et al., 2013).

Hearing aids: Hearing aids are compact, wearable electronic devices that enhance an individual's ability to hear sounds more clearly and comprehend speech more effectively, resulting in an overall enhancement of communication capabilities.

Purposive sampling: A non-probability sampling method that entails selecting participants based on specific characteristics outlined in the inclusion criteria (Campbell et al., 2020)

Quality of life: The overall state of an individual's welfare, encompassing aspects like physical, material, social, and emotional well-being (Fiona Barker et al., 2015)

Sensorineural hearing loss: a type of permanent hearing loss resulting from dysfunction of the cochlea, auditory nerve or central nervous system. Sensorineural hearing loss (SNHL) can be present from birth (congenital), develop as a person ages (age-related), result from extended exposure to loud noises, or be triggered by specific medications and infections (Olusanya et al., 2019).

Snowball sampling: A non-probability sampling method in which initially identified participants recommend or refer additional participants for the study (Taherdoost, 2016).

Standardised measures: are tools or assessments that employ closed-ended questions or specific protocols to establish standardized scoring criteria, enabling a quantitative evaluation of an individual's abilities. These measures have been rigorously assessed for their psychometric properties .

Third-party disability: The impact of a condition, like hearing impairment, on individuals who are closely connected to the affected person, or on those involved in communication with them.

Unilateral hearing loss: hearing loss presenting in one ear (Korver et al., 2017).

Introduction

Over the years there has been an increase in the number of children with congenital and early onset of irreversible bilateral hearing loss due to environmental and prenatal factors (Kılıç et al., 2021; Korver et al., 2017). In South Africa, out of every 1000 live births occurring in the public healthcare sector, approximately four to six infants are born deaf or with a significant degree of hearing loss (Louw, Swanepoel, Eikelboom & Hugo, 2018).

The sense of hearing is essential for human communication and once hearing loss presents at any stage of life, the communication process can be compromised (Ramma & Sebothoma, 2016). Hearing loss presenting during early childhood can contribute to learning difficulties associated with issues such as low self-esteem, social isolation, and limited vocational opportunities. (Gondim et al., 2012; Khoza-Shangase & Michal, 2014). Families of children with hearing loss often experience heightened stress, particularly due to the increased demands for support and financial resources required to address their children's needs (Henderson et al., 2014). Unaddressed hearing loss causes educational disadvantage and financial hardship resulting in the lack of economical/social development of communities and countries (Ramma & Sebothoma, 2016).

To mitigate the adverse effects of untreated hearing loss, audiologists working with the paediatric population share a common objective of identifying hearing loss in children at an early stage and provide prompt intervention (Khoza-Shangase & Michal, 2014; Lieu et al., 2020). Additionally, audiologists are responsible for identification of the impact that hearing loss has on an individual as well as measuring the effectiveness of hearing aids and/or cochlear implants on improving the quality of life of children living with hearing loss (Bagatto, Moodie, et al., 2011; Kingsbury et al., 2022)

Research suggests that the use of rehabilitative devices such as cochlear implants and hearing aids, combined with audiological rehabilitation can have positive outcomes on the acquisition of language, speech production and communication performance

(Khoza-Shangase & Michal, 2014; Kingsbury et al., 2022). Although rehabilitative devices aid children in developing speech and language, some children still experience delays in their auditory development and spoken language skills (May-Mederake, 2012; Moodley & Storbeck, 2011).

Consequently, audiologists use objective (rehabilitative device focused) and subjective measures (patient focused) to validate clinical decisions regarding rehabilitative device selection and fitting practices. Outcome measures can also be used to quantify the results of intervention. Outcome measures should have reputable normative properties, validity and feasibility (Bovo et al., 2015).

The term *objective audiological outcome measures* refers to methods used to confirm that rehabilitative technology being used by patients meets the prescribed target, and empirical data is used to verify improvements in performance (Moodie et al., 2011). The main goal of objective outcome measures in audiology is to use standardized tests to assess the efficacy of treatment provided as intervention (Weinstein, 1997). The use of standardized measures is beneficial as it allows for the testing of the actual amplification device (Cox et al., 2014). However, these measures don't provide information regarding patient's understanding of speech in everyday listening situations while using the hearing aid (Cox et al., 2014; Gatehouse, 2003).

Majority of the objective methods utilized with adult patients are not appropriate for infants and toddlers. Advances made in the early identification of hearing loss have increased the need to provide early audiological management which can impact decisions about communication modes. The appropriate selection of amplification devices contributes to the acquisition of speech and language ((Bagatto, Moodie, et al., 2011; Bagatto et al., 2011b; Tomblin et al., 2014). Due to the limitations of objective

outcome measures, there has been a rise in the use of subjective measures to assess rehabilitation technologies benefit (Bagatto et al., 2011a).

Globally, a variety of subjective outcome measures are used in audiology to measure change in hearing-related problems following audiological intervention (F. Barker et al., 2015; Granberg et al., 2014; Hall et al., 2018). Unlike objective measures which focus on results obtained in highly controlled acoustic conditions, subjective measures provide an account of children's responses to different sounds in real-life situations, as narrated by a caregiver (Bagatto et al., 2011b). The combination of objective and subjective outcome evaluation tools provides a multifaceted approach to tracking the auditory related performance of a child over time (Kanji, 2018).

Reviews have shown that the majority of questionnaires used in clinical practice have been developed for English-speaking countries such as the United States, United Kingdom and Australia (Hall et al., 2018). Barriers often emerge during caregiver reports, when subjective outcome measure tools are not administered in the caregiver's native language (Hall et al., 2018). Such barriers are overcome through the use of questionnaires which are made up of close ended questions, presented in the caregiver's native language (Squires et al., 2020).

In South Africa there are limited subjective outcome measure tools which are linguistically and culturally appropriate (Southwood & Van Dulm, 2015). The cultural and linguistical diversity of South Africa places an increased demand on health professionals (including audiologists) to meet the needs of the population they serve (Matthews & Van Wyk, 2018). Equipping clinicians and patients with assessment tools which are valid and reliable in their own languages, will enhance the quality of hearing healthcare to patients.

Unlike most paediatric assessment tools, the LittleEARS Auditory questionnaire (LEAQ) was designed to provide a means of assessing the development of auditory behaviours of children aged 0-24 months, allowing for the early identification of possible delays in auditory development (Umashankar et al., 2021).The LEAQ is used to track age-appropriate auditory milestones including preverbal auditory behaviours, which aids in the early identification of children who may need audiological assessment and management. Additionally, the LEAQ can be used to assess children with normal hearing or those using rehabilitation technology (Leandro et al., 2016; Spitzer & Zavala, 2011).

The LEAQ is currently only translated into three of twelve South African official languages. These languages are English, Afrikaans and isiXhosa. IsiZulu accounts for the largest cultural group in South Africa and is spoken as a home language by over ten million South Africans (Seethal, 2023). Due to the large number of isiZulu speakers nationally, there is a need to translate and validate the LEAQ into isiZulu. This will ensure a contextually relevant tool to native speakers, allowing for a better understanding of the questions listed and accurate responses.

Literature review

Hearing impairment ranks as a prominent factor contributing to years lived with a disability (Graydon et al., 2019). It has been estimated that globally, 466 million individuals are living with a hearing loss that significantly impairs their daily life and 34 million are children (Haile et al., 2021; Olusanya et al., 2019). The prevalence of hearing loss is greater in developing countries, particularly in Sub-Saharan Africa where the majority of children with disabling hearing loss reside (Desalew et al., 2020; Wonkam Tingang et al., 2020)

Numerous studies have highlighted that the ability to hear plays an important role in the facilitation of communication and promoting social interaction. Particularly in children, disabling hearing loss can hinder the acquisition of speech and language, and have a lasting negative impact on their educational and vocational advancements (Desalew et al., 2020; Khairi Md Daud et al., 2010; Kingsbury et al., 2022; Lieu et al., 2020; Rashid et al., 2022). In the absence of appropriate management, hearing loss acts as an obstacle to education and social integration (Graydon et al., 2019; Lieu et al., 2020; Rashid et al., 2022).

Children who experience hearing loss at an early age, whether it's permanent or temporary, may miss crucial developmental phases which are vital for the establishment of advanced auditory functions (Graydon et al., 2019; Lang-Roth, 2014). These functions encompass sound discrimination, localization, lateralization, and speech perception in noisy environments (Graydon et al., 2019).

It is suggested that children born with hearing loss should be diagnosed within the first 6 months of life in order to reduce the possibilities of delayed speech and language

milestones leading to consequent cognitive difficulties (Bagatto, Moodie, et al., 2011; Bagatto et al., 2011b; Graydon et al., 2019). Additionally, hearing loss detected in infants after six months of age is linked to an anticipated language delay of 2 to 4 years (Swanepoel et al., 2009). Unaddressed hearing loss also has an economic impact on societal healthcare, education and productivity with the global estimated cost exceeding 750 billion United States dollars annually (Borre et al., 2021; Olusanya et al., 2019). This amount is expected to increase as the number of individuals with hearing loss continues to rise worldwide (Borre et al., 2021). Audiologists working with the paediatric population are therefore responsible for the early identification of hearing loss in order to provide early intervention (Bagatto, Moodie, et al., 2011; Bagatto et al., 2011b; Borre et al., 2021; Kanji, 2018; Khoza-Shangase & Michal, 2014).

In South Africa the typical age for a diagnosis of hearing loss ranges from 23 to 31 months, in contrast to the ideal recommendation of diagnosing by 3 months of age (Swanepoel et al., 2013). This delay poses significant challenges, especially in the context of the country's cultural and linguistic diversity (Kingsbury et al., 2022; Moodley & Storbeck, 2015). For a four-year-old child diagnosed late, the notion of hearing age emerges as a critical factor. Hearing age refers to the amount of time a person, typically a child, has had access to sound through the use of hearing aids, cochlear implants, or other assistive auditory devices. Unlike chronological age, which measures the time since birth, hearing age begins from the moment a child starts receiving consistent auditory input. It is a key concept in understanding and supporting language/ communication development in individuals with hearing loss, as it reflects their auditory exposure and experience rather than their biological age (Cole & Flexer, 2015).

Unfortunately, limited access to healthcare services, absence of routine newborn hearing screenings, and socio-economic inequalities worsen the situation (Moodley & Storbeck, 2015; Rutherford & Petersen, 2019). For children growing up in multilingual households, the challenge is even greater, as they need to learn both their home

language and other widely spoken languages, like English (Dowling & Whitelaw, 2018). By age four, these delays can significantly impact their ability to understand and express language, potentially affecting school readiness and cognitive growth (Fouché-Copley et al., 2016). To address these challenges, early detection programs and the use of culturally appropriate assessments tailored to South Africa's unique linguistic environment are essential (Matthews & Van Wyk, 2018).

The gap between recommended and actual diagnosis times underscores a systemic issue that necessitates urgent attention. Enhanced screening protocols and heightened public awareness are critical to bridging this divide. By fostering a culture that prioritizes early hearing assessments, we can better support children and their families, ensuring that they receive the necessary resources and interventions at the most opportune moments.

Different studies indicate that the use of rehabilitative devices like cochlear implants and hearing aids, in conjunction with audiological rehabilitation, can yield favourable results in terms of language acquisition, speech production, and overall communication (Khoza-Shangase & Michal, 2014; Kingsbury et al., 2022). However, the provision of holistic audiological intervention in children extends beyond the fitting of hearing aids and cochlear implants to enhance hearing (Pascoe et al., 2013; Rutherford & Petersen, 2019). In order to treat children with hearing loss holistically, management should also encompass counselling for patients and/or their families, understanding the implications of hearing impairment as well as taking measures to improve hearing-related quality of life and promote engagement in activities and social participation (Rutherford & Petersen, 2019).

Subjective outcome measures can therefore be utilised to provide audiologists and caregivers a means of measuring infants and toddlers' auditory performance, during the

early use of amplification and later years of amplification device usage (Muñoz et al., 2014). Additionally, subjective outcome measures can be used to quantify the results of intervention and highlight the implications of hearing loss on quality of life. Subjective outcome measures also serve as a means to emphasise expected outcomes of the patient/family regarding audiological management (Hall et al., 2018).

Patient/caregiver-reported measurement tools are a type of subjective outcome measure, referring to questionnaires used in clinical settings and trials. Responses regarding personal health aspects, functional status or quality of life are provided directly by patients (or proxy) and can be utilised alongside diagnostic assessments to evaluate the efficacy of intervention methods. (F. Barker et al., 2015; Granberg et al., 2014; Hall et al., 2018).

In South Africa a major challenge preventing the provision of holistic audiological rehabilitation is the absence of contextually relevant assessment tools (Pascoe et al., 2013).Currently, different assessment tools are currently being utilise, yet many of them have been developed for western countries and do not cater for South Africa's multilingual and multicultural population. Consequently, researchers and clinicians in non-native English-speaking countries often adapt these existing tools to confirm psychometric properties (Hall et al., 2018). However, any disparities in the cultural, linguistic and social elements of standardised tool can compromise the tools' psychometric properties which are inclusive of validity and internal consistency (Yang et al., 2023). Consequently, the aforementioned could lead to imprecise evaluation and misinterpretation of assessment findings.

A study conducted which outlined the aural rehabilitation practices and perspectives in South Africa indicated that majority of audiologists use hearing aids as the primary form of aural rehabilitation. Services like counselling, communication training and the utilisation of self-report outcome measures to support aural rehabilitation are less commonly provided (Makhoba & Joseph, 2016). Although there weren't any reasons cited, the researchers suggested that the aforementioned may be due to a lack of resources to carry out aural rehabilitation services such as time, appropriate tools and

sufficient audiologists (Makhoba & Joseph, 2016; Rutherford & Petersen, 2019). Notably, there is a gap in tools that are available in languages other than English which have been adapted to the local South African context. It is evident that employing assessments in English within the South African context is, at the very least, culturally and linguistically unsuitable, and at worst, fundamentally invalid (Panday et al., 2020). This mismatch raises significant concerns regarding the accuracy and relevance of such assessments. The implications of utilising standardised tests that do not align with the diverse linguistic and cultural landscape of South Africa can lead to misinterpretations of auditory capabilities, ultimately affecting diagnosis and intervention strategies for individuals within this population (Panday et al., 2018). Clinicians have an ethical responsibility to provide care in the primary language of each client. This responsibility makes it crucial to develop assessments and resources that are both culturally relevant and contextually appropriate. Such tools are essential for healthcare professionals working in South Africa (Dowling & Whitelaw, 2018).

Hence, it is recommended to create outcome measures that align with the language and cultural context of the specific country to ensure the validity and reliability of measurements. However, creating and standardising a new outcome measure demands a substantial amount of labour, time, financial and human resources, which may not be feasible in a multilingual and multicultural country such as South Africa (Pascoe & McLeod, 2016; Pascoe & Norman, 2011).

Therefore, it is recommended to create outcome measures that align with the language and cultural context of the specific country to ensure the validity and reliability of measurements (Rutherford & Petersen, 2019). A more practical and economical approach to cater to the diverse languages and contexts is to translate and modify existing standardised outcome measures (Pascoe & Norman, 2011). Presently, there are a limited number of audiological outcome measures that have been translated and adapted for individuals in South Africa (Rogers et al., 2011). Different researchers have focused on the development of speech audiometry materials in isiZulu, Setswana and

Afrikaans (Pascoe & McLeod, 2016; Pascoe & Norman, 2011). Therefore, this study will contribute value to South Africa by translating and validating a caregiver reported audiological outcome measure (particularly the LEAQ) which will be align with the language and cultural context of the isiZulu-speaking population in South Africa (Pascoe & McLeod, 2016; Pascoe & Norman, 2011).

The LEAQ is a questionnaire in which responses are based on parental observations, featuring 35 items structured in a close-ended 'yes' or 'no' format. The questionnaire can be completed independently by caregivers, or it can be administered by audiologists in an interview-style, when patients are not able to read or write (Leandro et al., 2016). The last two questions on the LEAQ are open ended questions, to aid audiologists in obtaining additional information and guide the counselling process. Information gathered from the LEAQ can be valuable for follow up testing and help identify the need for additional intervention programs (May-Mederake et al., 2010).

There is a need for audiologists to have access to tools which are valid and reliable in order to assess the auditory-verbal behaviour of children, post hearing aid and cochlear implantation fitting, as this is a critical period for the development of optimal auditory and verbal skills (Coninx et al., 2009). Auditory stimulation is required during a child's critical period for maximal receptiveness, because congenital or early onset hearing loss can result in changes to the auditory system causing disruptions to cortical development (Butler & Lomber, 2013).

Initially the LEAQ was validated amongst children using cochlear implants living in Germany and Austria, thereafter it was found to be reliable with a good internal consistency (Coninx et al., 2009; Leandro et al., 2016). Shortly afterwards, an English version of the LEAQ was validated by researchers in Canada among families of children with normal hearing, which led to research regarding the categorisation of scores for

infants and children using hearing aids (Bagatto, Brown, et al., 2011). Coninx et al. (2009) produced more results from two different studies regarding the validation of the LEAQ among the parents of children with normal hearing.

Table 1

Comparative Analysis of Study Designs and Limitations in LittlEARS® Auditory Questionnaire Validation Studies

Aspect	**Study 1**	**Study 2**
Objective	To validate the LittlEARS® Auditory Questionnaire for children with normal hearing in a specific population.	To externally validate the LittlEARS® Auditory Questionnaire among English-speaking Canadian families with children having normal hearing.
Study Design	Cross-sectional	Cross-sectional
Limitations of study design	The cross sectional study design was used to collect quantitative data at a single point in time. Relying on quantitative data can result in an incomplete understanding of the findings. Quantitative measures, might fail to capture the underlying reasons for participants' behaviours or responses, which can lead to potential misinterpretations about the true meaning of the data.	Qualitative data could have participants can highlighted areas where the study design or tools could be improved. Without these insights, researchers may miss practical adjustments that could strengthen the tool's validity, reliability, or ease of use.

The first of these two studies involved the validation of the LEAQ among 218 children with normal hearing from Germany and Austria. The questionnaire's ability to measure

the age- dependent auditory behaviour was determined by calculating the age and the total score. The results obtained indicated a correlation coefficient of 0.91 which indicates a very strong positive relationship between the total scores and age therefore confirming the LEAQ's ability to measure age dependent auditory behaviour. The split-half reliability indicated a coefficient of r=0.88 indicating good internal consistency suggesting that the LEAQ is a reliable questionnaire. A Cronbach's alpha of α=0.96 was obtained indicating that the scale has very good internal consistency (Coninx et al., 2009).

The second study focused on the validation of results, gathered after the adaptation and administration of the LEAQ among children with normal hearing in 15 different languages (Coninx et al., 2009). Scale analysis of language specific data indicated a strong correlation between age and score within each language, with coefficients falling between 0.80 and 0.93. The Cronbach's alpha for both overall and individual samples was higher than 0.9 indicating excellent internal consistency (Coninx et al., 2009).

Results yielded from both studies suggest that the LEAQ is a reliable and statistically validated age-dependent and language-independent tool, that can be used for rapid and easy assessment of age-dependent auditory behaviours (Coninx et al., 2009). Additionally, the LEAQ has been in use clinically for the past 16 years and has been translated into 26 different languages globally which suggests that clinicians trust its results (Coninx et al., 2009).

Recent evidence suggests that once a reliable and valid outcome measure has been selected for translation, it is crucial to utilise a translation method which will result in a high-quality translation (Hall et al., 2018; Kaspar et al., 2021; Pascoe & Norman, 2011). Outcome measures that have been poorly translated negatively affect the tools' reliability and validity as it may result in imprecise interpretation of the result findings (Krach et al., 2017).

The translation guidelines utilised are similar to those utilised in other LEAQ studies such as the translation of LEAQ to Polish, Turkish, Persian, Korean, Yoruba, Mandarin, Spanish, Hebrew and Arabic. According to the guidelines established by Hall et al. (2017), it is advised that during both the forward and back translation stages, one translator should possess professional translation credentials. The other should be a health professional, specifically an audiologist, who has relevant experience related to the condition being studied (hearing loss) (Acquadro et al., 2008). Individual biases are reduced by this, which promotes translations fit for the purpose. Additionally, the guidelines recommended the inclusion of a synthesis stage during forward translation in which the two forward translations are reviewed to identify any discrepancies between the translations before combining the two translations into one single tool for the back translation (Acquadro et al., 2008; Beaton et al., 2000). Incorporating the synthesis stage enhances the translation process, leading to a more robust and comprehensive approach to attain a high-quality translation (Acquadro et al., 2008; Beaton et al., 2000; Hall et al., 2018)

Methodology

Research question

Does the isiZulu version of the LittlEARS have content validity and face validity?

Aims and objectives

The study aimed to:

Aim 1*:* Translate the original English version of the LEAQ into isiZulu

Objectives:

1.1 To forward-translate the original English version of the LEAQ into isiZulu.

1.2 To review the forward translated versions of the LEAQ and create a reconciled version.

1.3 To back-translate the reconciled version of the LEAQ of isiZulu to English.

1.4 To assess if the items on the reconciled translated version of the LEAQ reflects the content of the original English version accurately through an independent translator.

Aim 2: Validate the translated isiZulu version of the LEAQ

Objectives:

2.1 To assess the content validity of the translated isiZulu version

2.2 To assess the face validity of the translated isiZulu version of the LEAQ

2.3 To determine the reliability (internal consistency) of the translated isiZulu version of the LEAQ

Research design

A descriptive mixed methods research design was utilised to translate and validate the LEAQ into isiZulu. A descriptive design was utilised, as no variables were controlled or manipulated. Guidelines recommend utilising both quantitative and qualitative research methods when translating tools (Tsang et al., 2017). A quantitative methodology was employed to objectively evaluate the reliability and validity of the translated LEAQ, facilitating comparisons with findings from previous studies. Additionally, by quantifying data researchers can determine which methods yield better translation accuracy and readability or acceptability among target audience (Mellinger & Hanson, 2016). A qualitative methodology was employed by gathering the opinions of both the target population and experts to enhance the translation of the LEAQ. Qualitative methods allow for a deeper understanding of translators' choices, processes, and underlying motivations. This approach helps uncover nuances and complexities in translation that quantitative methods may overlook, such as the influence of culture, context, and personal interpretation (Tsang et al., 2017). Therefore, qualitative research helps uncover how cultural nuances and societal influences impact translation, offering invaluable insights for understanding translations that must be culturally sensitive and contextually appropriate. The Delphi technique was utilised to enable the expert committee members to achieve consensus on each item, facilitating necessary changes (Klassen et al., 2012). This method helped the committee reach a well-informed agreement on key issues while ensuring that all members' views were considered equally. Moreover, a facilitator guided the process to keep discussions focused and productive, ultimately aiding in the achievement of specific objectives (Taghipoorreyneh, 2023).

Participants

Inclusion criteria

Members of the forward translation team had to be:

- One Certified English-isiZulu translators or
- One English-isiZulu bilingual audiologist (self-identified isiZulu home language speaker)
- Reside in South Africa

Members of the back translation team had to be:

- One Certified English-isiZulu translators or
- One English-isiZulu bilingual audiologist (isiZulu home language speaker)
- Reside in South Africa

The expert panel included:

- The translators listed in forward and back translation phases.
- isiZulu speaking parent/caregiver raising a child 24 months or younger.
- isiZulu-English bilingual Speech therapist (self-identified isiZulu home language speakers)

The parent/caregiver participants in the validation phase had to be:

- ≥ 18 years old
- IsiZulu speaker (self-identified isiZulu first language speakers)
- A parent/caregiver of a child 24 months or younger with normal hearing/ undiagnosed with any degree of hearing loss
- Able to read and write isiZulu to independently complete the questionnaire.

- Those that completed the questionnaire online had to have access to a smartphone, computer, tablet, or laptop.

Participant description

Translation procedure

The forward and back translation procedures included a total number of four participants comprising of one certified English-isiZulu bilingual translator and one English-isiZulu bilingual audiologist for each phase. The expert committee comprised of six participants, including the translators involved in the forward and back translation procedures, along with one English-isiZulu bilingual speech therapist and a native isiZulu speaking parent.

Validation procedure

The validation procedure included 57 parent/caregiver participants who were 18 years and older. These parents/caregivers had children between the ages 0-24 months. All 57 children were not diagnosed with any degree of hearing loss. There was no indication from the results obtained that any of the children needed to be referred for further audiological testing.

Recruitment

Recruitment commenced post ethics approval from the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (HREC REF: 480/2022) (See appendix J). Certified isiZulu translators from Risuna language translation services were recruited (see appendix C). A social media advertisement was utilised to reach out to isiZulu-English bilingual audiologists, who were provided with detailed documentation outlining the study's objectives, their role, and a timeline of the translation phase (see appendix B)

Native isiZulu speaking parents were recruited on social media and via health professionals working with patients that met the selection criteria (see appendix A). Participants were also asked to share the link to the questionnaire, consent forms and

face validity questionnaire with other potential participants who met the criteria of the study.

An informational letter was sent with the link to the isiZulu LEAQ across social media platforms like Facebook, WhatsApp and Instagram. Facebook pages like the South African Association of Audiologists (SAAA), Speech-Language Therapists and Audiologists, National Black South African Speech language and Hearing society and Allied Health South Africa were approached to share the research link on their page to collect data from isiZulu speaking audiologists, speech therapists, occupational therapists, physiotherapists, and parents/caregivers.

Sample size

Forward and back translation included a total of four participants. Each translation involved one certified isiZulu translator and one isiZulu speaking audiologist. The expert panel consisted of all four translators from the translation phases, one isiZulu speaking parent/caregiver with a child between 0-24 months and one English-isiZulu bilingual speech therapist.

A sample size of 30 participants for the validation phase was deemed appropriate, based on similar research (Leandro et al., 2016). However, this study encompassed a total of 57 participants. The participants were made up of parents/caregivers with children between the ages 0-24 months presenting with normal hearing. 32 parent/caregiver participants completed the questionnaires online and 25 participants completed physical copies of the questionnaire.

Sampling

The study used purposive sampling which entails identifying and selecting participants who possess knowledge about or experience with a phenomenon of interest (Creswell & Clark, 2011; Klassen et al., 2012). Research suggests that purposive sampling is a

cost and time effective method for selecting a sample. However, it is important to note that it can be susceptible to researcher bias (Campbell et al., 2020).

Pilot study

A pilot study was conducted after the expert committee review with a sample size of five participants (Taherdoost, 2016). One of the participants had a child hearing loss fitted with hearing aids bilaterally and four of the participants had children with normal hearing. All the data obtained from the pilot study was not incorporated into the main study. Pilot testing was utilised to evaluate the final version of the isiZulu LEAQ with individuals who meet the inclusion criteria. The administration of the translated tool during pilot testing obtains both qualitative and quantitative data (Farnik & Pierzchała, 2012). Participants were asked to share their feedback identifying any ambiguities or questions they found difficult to answer.

Aims:

1. To assess the feasibility of the full-scale study

Objectives:

1. To determine how long it takes parent/caregiver participants to complete the questionnaire

2. To determine whether the questions are clear and comprehendible

3. To identify any additional adjustments that can be made to enhance the understanding of the questionnaire

The average completion time was 14 minutes. There were no reports of any ambiguities or proposed changes by the pilot study respondents. However, all the participants reported that the items on the isiZulu LEAQ were easy to understand. There was no indication from the results obtained that any of the children needed to be referred for further audiological testing. Results obtained from the pilot study were not included in the main study.

Data collection

Instrumentation

Forward translation instrumentation included the original version of the LEAQ and for the back translation, the instrumentation included the forward translated isiZulu version of the LEAQ. The expert panel were provided with the original English version of the LEAQ, the final translated isiZulu version and a content validity evaluation form, which were all shared via email. The content validity evaluation questionnaire was used to enable committee members to assess the relevance of each item in the isiZulu LEAQ.

Two data collection methods were utilised, participants completed the forms online and others completed physical copies of the forms. For online submission, a Microsoft form was created and shared with all parent/caregiver participants during the validation phase. It was compatible with smartphones, tablets, computers and laptops. The form was made up of the consent form, isiZulu version of the LEAQ and the face validity questionnaire. The face validity questionnaire was made up of a five-point Likert scale, ranging from strongly agree to strongly disagree. This scale enabled participants to evaluate each item on the isiZulu-translated LEAQ based on: a) clarity of wording and sentence structure b) ease of completion for other isiZulu native speakers and c) the overall format and layout. Analysing the responses highlighted items that could benefit from adjustments in wording, sentence structure, or format, as well as modifications to enhance cultural relevance. The primary purpose of a consent form was to ensure participants were fully aware of the study's objectives, procedures, and expectations before they agreed to take part. It provided transparency, allowing participants to make an informed, voluntary decision about their involvement, thereby upholding their autonomy.

Physical copies of the consent form, isiZulu version of the LEAQ and the face validity questionnaire were sent to different health professionals. Paper-based questionnaires were also used because they are more accessible to participants who may lack reliable internet access, technological devices, or experience with digital platforms, particularly in rural or underserved regions.

An informational letter with a link to the LEAQ was shared via direct messages and social media statuses across platforms such as Facebook, Instagram, and WhatsApp. Additionally, Facebook pages, including the South African Association of Audiologists (SAAA), were approached to post the research link to facilitate data collection from isiZulu-speaking parents. All group members were encouraged to distribute the questionnaire to their social media contacts, and friends were asked to further share the link with eligible participants. Those who provided consent completed the isiZulu version of the LEAQ and the face validity questionnaire.

After receiving approval from the National Department of Health and various hospitals within the Gauteng region for data collection, participants were given an informational letter outlining the study's purpose and objectives. Participants were then provided with a consent form, the isiZulu LEAQ, and the face validity questionnaire for completion.

Procedure

The study utilised the forward-back translation guidelines recommended by Hall et al. (2017) to translate the English version of the LEAQ into isiZulu.

After receiving permission to proceed with research was granted by the Faculty of Health Sciences Human Ethics Committee at the University of Cape Town (see appendix J), recruitment letters (see appendix C) and consent forms (see appendix D) were provided and signed by translators that were involved in the translation procedures.

Forward translation

The forward translation was conducted to ensure clinical conceptual equivalence, promote linguistic relevance and cultural representation, enhance translation quality, and maintain diverse perspectives within a transparent process. This method also seeks to address inconsistencies between independent translations, harmonise individual stylistic preferences, and generate a unified, coherent version for back translation (Hall et al., 2018). Each translator independently translated the English version of the LEAQ

into isiZulu which was be done ensure that the range of viewpoints is not compromised and to provide detailed information of the process (Hall et al., 2018). Once the translators independently translated the LEAQ, the translators met on Microsoft Teams and reconciled the two forward translations to create a single forward translated tool, with written comments where necessary. The researcher was present and facilitated the meeting. The aim of this step was to harmonise the forward translations. All discrepancies written and noted among the two forward translations, were discussed by the translators during a virtual meeting and the necessary adjustments were made in order synthesize a single isiZulu version of the LEAQ which both translators were satisfied with. Where there was no literal translation for a word/phrase from English to isiZulu, attempts were made to consider the closest possible meaning by utilising the concept definition as a guide.

Back translation

The back-translators were provided with the forward-translated isiZulu version of the LEAQ which they independently translated back to English. Both translators were advised to make notes/comments on any items which they found to be difficult. The primary aim of the back translation was to maintain the original meaning and intent of the source material in the translated version, ensuring that both versions convey the same concepts (Hall et al., 2018). Once both translators had independently translated the isiZulu version LEAQ back into English, they both reviewed each other's translated versions and compiled written notes regarding any discrepancies between the two back-translations. A meeting took place with both translators over Microsoft Teams in which the notes made were discussed and the necessary adjustments were made in order to produce one final synthesized version of the isiZulu LEAQ. The researcher was present and facilitated the meeting over Microsoft Teams.

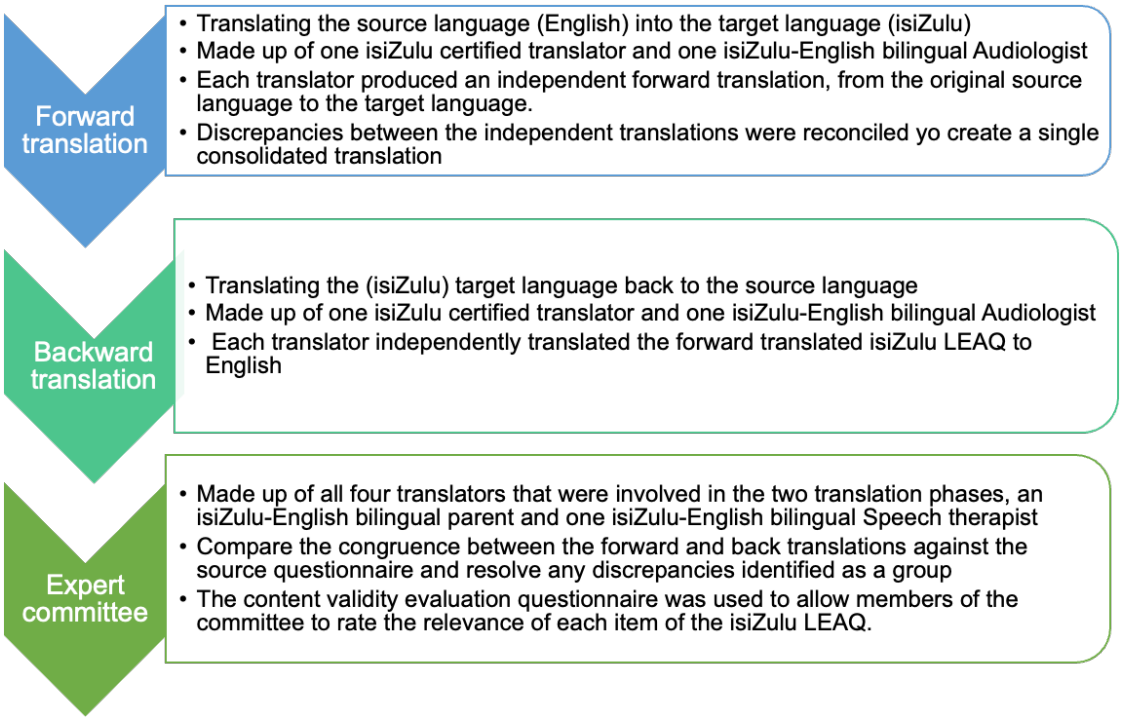
Expert Committee

The content validity evaluation questionnaire was used to allow members of the committee to rate the relevance of each item of the isiZulu LEAQ. A meeting took place with all members of the expert committee over WhatsApp once all members had

completed the questionnaire. The expert committee compared the congruence between the forward and back translations against the source questionnaire and resolved any discrepancies identified as a group. During this meeting members discussed all changes that were proposed. For each item members had to arrive to an 80% consensus of each item in order for the relevant changes to be made. All items were rated individually by the members of the panel independently comparing it to the original English version of the LEAQ. Comparisons between the two were made in order to ensure that all items on the isiZulu LEAQ reflected the same content as the original English version. The researcher facilitated the committee review. Once the necessary changes are made to the isiZulu LEAQ (where necessary), the questionnaire was administered to the isiZulu target population.

Figure 1

Illustration of flow of translation procedure



Validation Procedure with Parent/Caregiver Participants online

Participants were approached via social media. A letter with all information about the research was shared across social media platforms i.e. Facebook, Instagram, LinkedIn and WhatsApp. Facebook pages such as South African Association of Audiologists (SAAA) and Allied Health South Africa were approached to share the research link on their page to collect data from isiZulu-English speaking parent/caregivers. The link led participants to a Microsoft form page which had the (i) consent form, (ii) isiZulu version of the LEAQ and the third consisting of the face validity questionnaire. Friends and colleagues were requested to share the link with to other people who meet the research criteria. The Microsoft form was compatible with smartphones, tablets, computers and laptops.

Validation Procedure with Parent/Caregiver Participants (use of pen and paper)

Prior to collecting data from government hospitals, approval was requested from the National Department of Health via the National Research Database. Institutional permission was also requested and granted before collecting data from various institutions in the Gauteng and KwaZulu-Natal provinces. Healthcare professionals were also approached via social media. A flyer providing information about the research was shared across social media platforms i.e. Facebook, Instagram, LinkedIn and WhatsApp. Healthcare professionals and institutions that agreed to take part in the study were sent physical copies of the (i) consent form, (ii) isiZulu version of the LEAQ and the third consisting of the face validity questionnaire. The health professionals were requested to share this with participants that fit the inclusion criteria of the study. Those that agreed to take part in the study were requested to each complete all three forms while awaiting to be seen by the health professional. Two weeks after sending the documents to the different sites, the completed forms were sent back to the researcher.

Data management

All consent forms, translations, the final version of the translated tools and data collected from parent/caregiver participants were stored on Microsoft OneDrive as a

single word document which was password protected. Data will be stored for five years according to the UCT data management policy.

The subsequent steps were adhered to during the transfer and capturing of data collected from the expert review committee:

1. All responses obtained from the content validity index questionnaires were manually transferred to a spreadsheet on Microsoft Excel

2. The raw data obtained was compared with the data which was entered on the spreadsheet to guarantee that accurate data capturing took place. No discrepancies were identified.

3. Before capturing all the responses which were obtained from completed LEAQ forms and face validity questionnaires each caregiver/parent participant was assigned with a participant number to protect their anonymity. Thereafter all caregiver/parent participant responses obtained online were imported from Microsoft Forms onto a spreadsheet on Microsoft Excel which was then stored on Microsoft OneDrive.

Data analysis

The same data analysis procedure was followed for the forward and back translation of the questionnaire. Translators made notes of the discrepancies found in each other's translations during the translation processes. Once they all collectively synthesized translated version of the LEAQ the final version of the questionnaire was forwarded to and reviewed by the expert panel.

Expert committee review

On a WhatsApp group chat, the committee members expressed their agreement or disagreement regarding the adequacy of the translation of items in the isiZulu LEAQ when compared to the original English version of the questionnaire. They did so by using a 'thumbs up' or 'thumbs down' icon. The researcher was also present and played

a facilitative role by determining whether an item achieved an 80% consensus among the committee members or not.

Pilot testing ensures that the content of the study is valid, and the administration procedures are reliable. The use of web-based questionnaires ensured that all questions were answered. Online data capturing processes gather and arrange data collected thus reducing the chances of human error, missing data sets and rater bias (Klieve et al., 2010). The use of online questionnaires has been proven to increase the response rate, increase the sample size and variation allowing for valid and authentic responses (Klieve et al., 2010). Collecting data online ensured that participants could not complete a questionnaire more than once because the IP address was identified (Alessi, 2010). The aforementioned is advantageous as it helps prevent participants from submitting multiple responses as it could potentially impact the validity of the study's findings.

Content validity

The content validity evaluation questionnaire was used to allow the members of the expert panel to rate the relevance of each item of the isiZulu LEAQ. The content validity evaluation questionnaire was used to determine the degree to which the isiZulu LEAQ has appropriate items for the construct which was being measured. Content validity includes different aspects such as the representativeness of the definition of the construct, the linguistic aspects of the items such as grammar and content, how clear the instructions are, the representativeness of the items and the appropriateness of the response format. The higher the content validity of a test is, the higher the accuracy of the measurement of the target construct (DeVon et al., 2007). The Content Validity Index (CVI) was calculated in order to examine the relevance and appropriateness of each item on the isiZulu version of the LEAQ based on the responses of the content validity evaluation questionnaire which was completed by the expert panel. The

questionnaire was made up of a four-point Likert scale which ranges from "*irrelevant*", "*moderately relevant*," *"relevant*" to "*very relevant*." The Likert scale is beneficial as it measures the features of a construct, or an opinion and it increases content validity by providing an accurate quantitative measure of a person's opinion (Heale & Twycross, 2015). Once the evaluation questionnaire is completed, the expert panel will discuss proposed changes in order to reach a consensus of 80% on each item on the final translated isiZulu LEAQ (The Delphi technique). An 80% consensus represents the majority and enables participants to collectively take control of the decision-making process (Hardy, 2004).

Face Validity

Face validity is a manner of assessing validity, in which a subjective or superficial assessment can applied in order to determine whether a questionnaire appears to be measuring what it is meant to measure (Zamanzadeh et al., 2015). Although face validity is considered the weakest form of validity, it should be used as an additional form of validity alongside the different types of validity (Hall et al., 2018). The Likert scale enabled participants to assess each item on the translated isiZulu LEAQ based on the ease of comprehension of the phrasing and sentence structure, ability to be completed by other isiZulu native speakers and lastly format and structure. The analysis of all responses allows for the detection of items which require adjusting phrasing, sentence structure or the format, and cultural appropriateness.

Parent/caregiver participants were provided with a face validity questionnaire consisting of a five-point Likert scale, ranging from *strongly agree, agree, neutral, disagree or strongly disagree* (see Appendix E). The strongly agree and agree results were combined to create a single "agree" category. The strongly disagree and disagree results were also combined to create a single "disagree" category. The two categories were created to calculate the overall percentage of participants that agreed that the translated isiZulu LEAQ can be completed by other isiZulu native speakers based on the ease of understanding the phrasing and sentence structure.

A scale's reliability is an important part of developing a valid instrument (Herbert, 2006) and in order to objectively determine the reliability of the isiZulu LEAQ, item analysis and scale analysis was conducted.

Item Analysis

Index of difficulty was calculated to determine the proportion of participants who responded "yes" to items on the isiZulu LEAQ to the overall number of participants. The ratio was calculated by dividing the overall number of participants who responded "yes" to items on the isiZulu LEAQ by the overall number of participants. Scores with range between 0-0.3 indicate that an item is difficult and scores with a difficulty index above 0.61 indicates that an item is easy (Güngör & Önder, 2023; Hassan & Hod, 2017).

The Discrimination index was calculated in order to determine the effect each item had on the overall score and to differentiate between good and poor auditory performance. Discrimination index was measured by taking the scores in the upper or lower 25% and dividing them by the overall number of participants in the respective upper or lower 25% (Tredoux & Durrheim, 2013). Items with a discrimination index of ≥0.2 indicates good discriminatory power of differentiating between children with auditory behaviour which is relatively well developed and those with less developed auditory behaviours (McCowan & McCowan, 1999). A high correlation coefficient suggests that the item significantly contributes to the total score and shows distinctions between individuals who perform well and those who perform poorly. Indices of discrimination indices were measured by taking the scores in the upper or lower 25% and dividing them by the overall number of participants in the respective upper or lower 25% (Güngör & Önder, 2023; Hassan & Hod, 2017). Items with a discrimination index of ≥0.25 indicates good discriminatory power of differentiating between children with auditory behaviour which is relatively well developed and those with less developed auditory behaviours (Backhoff et al., 2000).

Scale Analysis

Cronbach's alpha is the most frequently used measure of internal consistency reliability coefficient. The higher the Cronbach's alpha is the greater the measurement's reliability

(Geal-Dor et al., 2011b). Cronbach's alpha was calculated to assess the correlation of the observed scale across all possible split halves measuring the identical construct. A score between 0.70 to 0.95 indicates good internal consistency of the isiZulu LEAQ and consistency of participant responses on all items of the questionnaire (Tavakol & Dennick, 2011)

Ethical considerations

When conducting research, it is important to abide by the Declaration of Helsinki which has ethical principles to guide research involving human participants ("World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects," 2013)

Anonymity

Research frequently requires gathering sensitive information, such as health conditions and genetic data. The Helsinki Declaration advises that, whenever feasible, data should be anonymised to safeguard participant privacy ("World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects," 2013). It is essential to ensure the anonymity of participants and maintain the confidentiality of data (Mirza et al., 2023). Prior to any data collection, this ethical consideration was communicated to participants. All participants received a letter outlining the study's objectives, what is required from participants, the potential risks and benefits, and ensures participants' confidentiality and voluntary involvement. It provides detailed contact information for any queries or concerns. Ensuring the anonymity of information gathered from research participants means that either no identifying details (such as names, addresses, email addresses, etc.) are collected, or there is no way to connect participants' identities to their responses.

Autonomy and respect for the dignity of persons

Autonomy dictates that participants should make informed decisions. It entails that the researcher should provide the participants with all information, so they decide on whether to participate in a study or not (Connelly, 2014). Information included in the consent forms was written using language that is understandable for the participants (Hansen et al., 2012). Consent forms were presented in both English and isiZulu. The Standard Operating Procedure of the University of Cape Town's Human Research Ethics Committee requires that the language used in Informed consent forms should be directed at a reading level of grade 7 and that common every day words be used instead of complex language. The researcher explained the purpose of the study before the participants could grant consent. Parents/caregivers may have felt coerced to participate in the study and may easily have been influenced by peer pressure to participate or not. To address this all participants received an electronic briefing via email regarding the purpose of the study and were informed that confidentiality would have been maintained throughout the research process. Participants were required to complete informed consent forms, prior to participating in the study. Opportunities to ask questions were provided as the researcher's email address and contact number were included in all documents. Participants were encouraged to contact the researcher should they have any questions. It was made clear that participants can withdraw from the study at any stage, without any consequences.

Confidentiality

A number was allocated to each questionnaire to de-identify the participants. The signed consent forms and questionnaires were kept in a password-protected site that only researcher has access to. All devices used to store the collected data are password-protected. A confidentiality agreement was signed by the researcher working on the research project to commit them to keep any and all information from the study confidential (Harriss & Atkinson, 2011). Any breach of confidentiality will result in it being reported to the UCT Faculty of Health Sciences Human Research Ethics Committee.

Non-maleficence

This principle ensures that no direct harm will befall research participants. The research did not harm any participants (Connelly, 2014).

Beneficence

Researchers are required to maximize the benefit and minimize the harm that can befall research participants (Wassenaar, 2006). Although the research did not have any direct benefit to the participants, it offers South African audiologists a reliable and valid auditory development questionnaire, specifically designed for the isiZulu speaking population. When working with human participants in research, the potential benefits must outweigh the probable risk or harm ("World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects," 2013). Parent/caregiver participants were supplied with R50 worth of data to complete the questionnaire online. The certified translators were compensated for their services. There was a Pick ‘n Pay voucher lucky draw prize for the caregiver participants. Audiologists in the translation phases were each compensated R500 for their services. Parent/caregiver participants were given an option to provide their details if they had any concerns about their child’s hearing. Thereafter the researcher was to contact them, provide them with informational counselling and refer them to the relevant practitioner.

Justice

The participants were treated with fairness and equity by the researcher during all stages of the research project (Terre Blanche et al., 2006). Potential participants were not discriminated against and all those who met the inclusion criteria were allowed to participate in the study.

Results

The results will be presented in accordance with the aims of the study.

Translation process

Forward translation

During the forward translation process, the translators reached consensus to change the words “iyakwazi ukulandela imithetho elula” on item 22, which directly translates “able to follow simple rules” to ““iyathumeka?” which translates to “follow instructions” as it better conveys the intended meaning of the original item (see Appendix K).

Consensus was then reached to change item number 26 from “Ngabe ingane yakho iyakwazi ukukhanda imisindo ehambisana netoyizi?” to “Ngabe ingane yakho iyakwazi ukulingisela imisindo ehambisana namathoyizi edlala ngawo?” (see Appendix K).

Consensus was reached to change item number 28 from “imisindo yemvela” (translated as "natural sounds") to “imisindo ejwayelekile” (translated as "familiar sounds"). The term “imisindo ejwayelekile” was chosen because it better matched the original meaning, conveying the idea of commonly recognized sounds. The translators with clinical knowledge also believed that the inclusion of examples in the questionnaire would help participants clearly understand the intended meaning (see Appendix K).

The wording on item number 30 was changed “*ukukhetha ama-object”* as it was described as too informal to “*ukukhetha into oyibizile”.* Item number 34 “*Ngabe ingane yakho iyakwazi ukuthumeka izinto eziningi?”* literal translation: “Is your child able to follow multiple instructions” *to* “Ngabe ingane yakho iyakwazi ukulandela imithetho enzima” was changed, literal translation: “Is your child able to follow difficult instructions” which seemed more appropriate in describing the intended meaning of the original item (see appendix K).

Back translation

During the back translation process, the translators reached consensus to change the words on item 11 “engasesandle sasxhele, sokudla noma emuva” which is described as a formal description of “to the right” and “to the left” to “kwa-right, kwa-left nangemuva” as it is more commonly used in day-to-day conversations(see Table 2.) . Additionally, during the forward translation, it was found that the word “ethukuthelo” which is a literal translation of “irritated voice” on item 9 seemed the most appropriate term to accurately convey the intended meaning. However, during the back translation the translators did not feel that it correctly conveyed the intended meaning, and it was too literal. An alternative was suggested, namely “lokucasuka” (direct translation is “angry voice”) (see Table 2.). These replacement words were believed to be simpler while still maintaining semantic equivalence to the original phrases in comparison to the previously proposed translations. Furthermore, the back translators collectively decided to not make any further changes to the remaining items from forward translation, as they were deemed to accurately convey the same meaning as the original English version of the LEAQ.

Table 2

*Back translation revised item*s

	Forward translation	Final translation
9.	Ngabe ingane yakho iyaphendula ukuzwa kwe-alarm ngezwi ethukuthelo?	Iyakhombisa ukuthuka uma ukhuluma ngezwi lokucasuka
11.	Ngabe ingane yakho iyabheka lapho okuqamuka khona umsindo ongaba sesandleni sokudla, sesinxele noma ngemuva?	Ngabe ingane yakho iyabheka lapho okuqhamuka khona umsindo ongaba kwa-right, kwa-left nangemuva?

Expert committee review

Members of the expert committee individually reviewed and rated each item on the isiZulu LEAQ. For items to be included without modification in the final isiZulu version of the LEAQ all members of the expert committee had to reach 80% consensus. All items were rated individually and ten items on the isiZulu LEAQ didn't achieve 80% consensus. The items that did not achieve 80% consensus were item number 1, 3, 16, 20, 21, 24, 25, 26, 29 and 32. The items were then revised by the committee until 80% consensus was reached (see table 3.).

Table 3

Expert committee revised items

Item	Initial	Final translation
1.	Ingabe ingane yakho iyaphendula uma izwa izwi elijwayelekile?	Ingabe ingane yakho iyaphendula uma izwa izwi elaziyo?
3.	Mangabe kukhona okhulumayo, iyalijikisa yini ikhanda ingane yakho ibheke kuyena lona okhulumayo?	Iyalijikisa yini ikhanda ingane yakho ibheke kumuntu okhulumayo?
16.	Ngabe ingane yakho iyaphendula kumculo ngeminyakazo yomculo?	Ngabe ingane yakho iyadansa yin uma izwa umculo?
20.	Ngabe ingane yakho iyawazi amalunga omdeni wakho?	Ngabe ingane yakho iyawazi amagama abantu bakini?
21.	Ngabe ingane yakho iyakwazi ukulingisela imisindo nayibuziwe?	Ngabe ingane yakho iyakwazi ukulingisela imisindo uma ibuziwe.
24.	Ngabe ingane yakho iyakwazi ukuletha izinto mangabe uyithuma?	Ngabe ingane yakho iyakwazi ukuletha izinto mangabe uyithuma?

Item	Initial	Final translation
25.	Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?	Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?
26.	Ngabe ingane yakho iyakwazi ukukhanda imisindo ehambisana netoyizi?	Ngabe ingane yakho iyakwazi ukulingisela imisindo ehambisana namathoyizi edlala ngawo?
29.	Ngabe ingane yakho iyakwazi ukulingisela ama-syllable amade namafishane owezwayo?	Ngabe ingane yakho iyakwazi ukulingisela imisindo emide noma emifishane?
32.	Ngabe ingane yakho iyakwazi ukuphinda amagama mangabe ibuziwe?	Ngabe ingane yakho iyakwazi ukuphinda amagama mangabe itsheliwe?

Validation phase with caregiver participants

Content validity

Empirical techniques which including item-content validity index (I-CVI) and scale-level content validity index (S-CVI) were used to calculate the CVI. The item-content validity index (I-CVI) was calculated, and the results ranged from 0.8-1 indicating relevance across all items of the isiZulu LEAQ (see appendix L). The scale content validity/ universal agreement was 0.914 suggesting high content validity of the isiZulu LEAQ (Shrotryia & Dhanda, 2019). The results obtained suggest that the items of the translated isiZulu version of the LEAQ reflects the content of the original English version accurately. It can be concluded from the results that the expert committee found the isiZulu LEAQ to be relevant and translated appropriately.

Face validity

Once analysed, the face validity indicated that all items on the LEAQ achieved an agreement score of ≥80% (see appendix M). The agreement score suggests that participants have similar views regarding the comprehensibility of all items (Lau et al., 2018; Yusoff, 2019).

Reliability

Item analysis

Parent/caregiver responses from the isiZulu LEAQ were used to calculate the indices of difficulty. The indices of difficulty ranged from 0.71-1, signifying that all items on the isiZulu LEAQ were easy to understand (see appendix N).

The discrimination index was calculated to determine the effect each item had on the overall score and to differentiate between good and poor auditory performance. Parental responses from the isiZulu LEAQ were used to calculate the indices of discrimination. All the items of the isiZulu LEAQ achieved an index of discrimination of ≥0.2 which suggests good discriminatory power of distinguishing between children with well-developed auditory behaviours and those displaying less developed auditory behaviours (Backhoff et al., 2000).

Internal consistency

Fifty-seven participants completed the isiZulu LEAQ, consisting of 35 yes/no questions. The Cronbach's alpha results indicated good internal consistency with ɒ = 0.86. It implies that the isiZulu LEAQ consistently measures the target construct of interest, the auditory development and behaviour of children aged 0 to 24 months.

Discussion

The primary focus of this study was to translate and validate the original English version of the LEAQ to isiZulu. In this chapter the two aims of the study will be discussed separately, and within each aim's discussion, the clinical implications, study limitations, recommendations for future research will be explored. The discussion begins with an overview of the primary findings of the study's aims. It then delves into an examination of the issues and challenges encountered during the translation process.

Aim 1: To translate the original version of the LEAQ to isiZulu.

Main study findings

The translation processes rely on the initial forward translations by the forward translators, which serves as a foundation for the subsequent modifications throughout the process. Therefore, the selection of two forward translators, one with clinical knowledge of the condition of interest and one with certified linguistic competency, was advantageous as this mix in skill sets ensures that individual biases are minimized which promotes a translation suitable for its intended purpose (Hall et al., 2018). For instance, in audiological terms, "environmental sounds" item number 28 typically refers to different sounds caused by various objects within our environment. Therefore, forward translation with clinical knowledge translated the term as "imisindo ejwayelekile" (literal translation: familiar sounds) whereas the forward translation without clinical knowledge translated the term as "imisindo yemvela" (literal translation: natural sounds). The former was chosen as it has the equivalent meaning to the original items and the forward translators believed that the inclusion of the items within examples column would enable participants to grasp the intended meaning of the question.

Two English-isiZulu bilingual translators whose first language is isiZulu and reside in South Africa were recruited for both forward and back translation as they have a dialect representative of the target population. This selection ensured that the translations produced are linguistically relevant and display cultural appropriateness.

Following the forward translation, the back-translation method was utilised to identify, correct, and reconcile any discrepancies between the two forward translations of the LEAQ. After undergoing a forward-back translation process, an expert committee examined the translations to produce a pre-final version, which was then utilised for pilot testing. The expert committee also provided an additional quality control step in detecting/addressing any translation discrepancies between the original English version of the LEAQ and the translated isiZulu version of the LEAQ. Different authors who have translated and validated the LEAQ into different languages have followed similar methodologies and achieved similar findings to the current study (Bagatto, Brown, et al., 2011; Bagatto, Moodie, et al., 2011; Bagatto et al., 2011b; García Negro et al., 2016; Geal-Dor et al., 2011a; Umashankar et al., 2021; Wang et al., 2013).

Challenges faced during the translation procedure

WhatsApp groups were created to facilitate scheduled translation meetings, however due to loadshedding power cuts, certain members were not available during the agreed upon times and rescheduling had to take place which delayed the research timeline.

Research implications

The study followed the forward-back translation guidelines recommended by Hall et al. (2017). During the forward translation the researcher noted that the recruitment of an audiologist was a vital step in translating majority of the items which were specific to their in-depth knowledge of the Audiology field, linguistic competence, and experiential understanding of the isiZulu culture (Hall et al., 2018). Back-translation also allowed for the alignment of personal writing styles and preferences. The procedures followed maintain translation accuracy and avoid potential biases. Future researchers can repeat the translation procedure to obtain similar results.

Limitations

Despite employing a rigorous and thorough translation procedure, research recommends taking into account language dialects as there is a strong correlation between lexical

variation and geographical factors. Historically, two rural isiZulu dialects have been recognised as the most notable: the Lala and Qwabe dialects (Spiegler et al., 2009). These dialects are widely spread throughout rural areas of the KwaZulu-Natal province. In contrast to the rural areas, there are numerous variants of isiZulu centred around the urban areas of South Africa (Lafon & Webb, 2008). The most notable contrast among urban forms of isiZulu is observed between Johannesburg and Durban, with the Johannesburg variant exhibiting lexical, phonetic, and morpho-syntactic differences from the standard isiZulu (Lafon & Webb, 2008). According to Thammaiah et al. (2016), it is suggested that researchers not only recruit several translators with varying dialects but also recruit research participants with different dialects to bridge the linguistic differences between dialects. Considering the variations in dialects will enhance the applicability and usability of the translated measurement tool across all regions of South Africa (Thammaiah et al., 2016).

Aim 2: To validate the translated isiZulu version of the LEAQ.

The face validity results acquired from this study suggests that parent/caregiver participants found that the isiZulu version of the LEAQ was appropriate in terms of phrasing, sentence structure, format, and cultural appropriateness. Results obtained from the study indicate that the isiZulu version of the LEAQ is an appropriate tool for assessing age-dependent auditory behaviours. Additionally, from the face validity of the isiZulu LEAQ, it can be anticipated that isiZulu speakers will be able to independently complete the questionnaire.

The scale analysis from the study indicates adequate reliability, good internal consistency, and validity. The study's I-CVI results gathered from the expert committee indicated relevance across all items of the LEAQ and the S-CVI/UA results obtained suggested a high content validity of the isiZulu LEAQ. The results obtained suggest that the items of the translated isiZulu version of the LEAQ reflects the content of the original English version accurately. It can be concluded from the results that the expert committee found the isiZulu LEAQ to be relevant and translated appropriately.

The Cronbach's alpha displayed high correlation between the total score and the ages of children, suggesting that the isiZulu LEAQ is able to yield reliable estimates of the auditory development of isiZulu children aged 0-24 months. The index of difficulty was notably high among all the items in the translated isiZulu version of the LEAQ, indicating that the items on the isiZulu LEAQ were easily understood. These results are consistent with the face validity evaluation questionnaires completed by parent/caregiver participants which are based on the ease of understanding.

The high scores obtained on all items for the index of difficulty indicate that parent/caregiver participants are likely to find the translated isiZulu version of LEAQ easy to understand. The index of difficulty scores are similar to those of the original English version of the LEAQ (Coninx et al., 2009). All items on the isiZulu LEAQ presented with strong discrimination power ≥0.2. Therefore, the items of the isiZulu LEAQ are able to distinguish between children exhibiting well-developed auditory behaviours and those with less developed auditory behaviours. The Cronbach's alpha (α=0.86) revealed significant correlation between the children's ages and the total score, suggesting that reliable estimates can be provided by the isiZulu LEAQ regarding the auditory development in the isiZulu paediatric population.

A study focusing on the validation of the LEAQ in 122 cochlear implanted infants and toddlers presented with a Cronbach's alpha above 0.80 (Obrycka et al., 2017). Additionally, the validation of the LEAQ with English-speaking families of Canadian children with normal hearing presented with a Cronbach's alpha of α =0.885 which indicates good internal consistency (Bagatto, Moodie, et al., 2011; Bagatto et al., 2011b). Although the current study had a small sample size, its findings were similar to the findings obtained from studies with greater sample sizes. Thus suggesting that the isiZulu LEAQ is a reliable and statistically validated tool.

In contrast to the current study, three different studies focusing on the validation of the LEAQ in Mandarin, Persian and Maltese obtained significantly higher Cronbach's alphas

(between 0.92 and 0.96) (Miggiani et al., 2022; Wang et al., 2013; Zarifian et al., 2019). However, it is important to note that a high alpha value (> 0.90) might be an indication of redundancies suggesting that the test length should be shortened (Tavakol & Dennick, 2011).

Research implications

The isiZulu version of the LEAQ is a new reliable and valid subjective outcome measure that can be used by clinicians to assess the auditory development of the isiZulu paediatric population between 0-24 months, allowing for the early identification of possible delays in auditory development, expressive and receptive language (Umashankar et al., 2021). While subjective outcome measures largely depend on an individual's subjective assessment of their child's hearing abilities, they have been found to be a useful way in quantifying an individual's benefit from rehabilitation technology (Cox et al., 2014; Gatehouse, 2003). The availability of the isiZulu version LEAQ allows for the tracking of age-appropriate auditory milestones including preverbal auditory behaviours, which aids in the early identification of children within the isiZulu paediatric population who may need audiological assessment and management. Additionally, the isiZulu LEAQ can be used to in clinical practice by audiologists to quantify the results of intervention. The availability of a valid and contextually relevant tool allows for better understanding of the questions listed yielding accurate responses. The completion of the assessment tools in patients' native tongue will result in the reduction of inequalities caused by language barriers in the healthcare sector as well as overall costs incurred from misdiagnosis (Lundin et al., 2018).

Limitations

There are limitations to this research study which consequently impacts the questionnaire's generalisability to the broader isiZulu-speaking population. After receiving HREC approval, the researcher had to obtain permission from the National Health Research Database to conduct any research at government hospitals and clinics within the Gauteng, Mpumalanga, and KwaZulu-Natal provinces where majority of isiZulu speakers reside. However, responses and permissions for the collection of physical data were only obtained from the Gauteng Department of Health which means that there was

limited consideration of linguistic dialects. Dialects vary due to differing cultural practices and linguistic dialects (Thammaiah et al., 2016). It is recommended that future studies make use of a larger participant sample to establish correlations between age, sex, and isiZulu LEAQ scores. It is also recommended that future studies present the translated tool to different parts of South Africa in order to ascertain if dialectal variations exert an influence on the validity and reliability of the isiZulu LEAQ. It is recommended that with regards to future studies that researchers carry out a pilot study to determine whether the variations in dialect affect the validity and reliability of the isiZulu LEAQ. Taking into consideration the variations in dialects will enable the applicability and usability of the translated measure tool in all areas of South Africa (Thammaiah et al., 2016).

Furthermore, it is recommended that future South African studies explore the translation and validation of the LEAQ into additional South African languages to create more contextually relevant tools. Lastly, future studies can further evaluate the validity and reliability of the isiZulu LEAQ by presenting it to parent/caregiver participants with normal hearing or different degrees of hearing loss.

Conclusion

In South Africa there are limited contextually relevant audiological outcome measures that are translated and validated for the isiZulu speaking population due to limited resources. The isiZulu version of the LEAQ provides the isiZulu-speaking population access to a contextually relevant auditory development questionnaire allowing for a better understanding of the questions listed and more accurate responses. The study implemented the use of a thorough and comprehensive translation procedure of the English version of the LEAQ to isiZulu and the data obtained was examined using psychometric properties.

The study's findings confirmed that the translated isiZulu version of the LEAQ is a reliable and valid instrument for assessing the auditory development of children between 0-24 months (those presenting with normal hearing or hearing loss). Therefore, the isiZulu

LEAQ can be used in clinical settings to quickly identify possible delays in auditory development, to monitor children's receptive and expressive language as well as to track age-appropriate auditory milestones including preverbal auditory behaviours. The isiZulu LEAQ will assist clinicians to better understand the individual hearing needs from the viewpoint of the caregiver/parent of the child with hearing loss and so suitable aural rehabilitation can be provided. The availability of the isiZulu LEAQ and its utilisation can contribute to broader accessibility resulting in timely audiological management.

Given that translated measures are intended for national use, it is recommended that further research is done involving more translators and research participants with varying dialects. This aforementioned approach would enhance the applicability and usability of the isiZulu LEAQ across all regions of South Africa.

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Appendixes

Appendix A: Informational Letter to participants

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Telephone: 021 406-6401

Fax: 021 406 6323

Good day,

I am a master's student from the University of Cape Town, and I am conducting research that is looking to translate a questionnaire from English to isiZulu. The questionnaire is called LittlEARS Auditory Questionnaire (LEAQ). The questionnaire measures the hearing and listening development of children between the age of 0-24 months.

Why is the study being done?

The questionnaire has been translated in many languages across the world. However, it is only available in three South African languages, which are English, isiXhosa and Afrikaans. Translating the LEAQ into isiZulu will allow isiZulu speakers to answer the questionnaire in their home language. Therefore, children with delays in their hearing development will be identified at an early age and receive help sooner.

Why are you being asked to take part in this study?

- We need parents or caregivers who are 18 years or older with a child between the age of 0-24 months.
- An adult who can speak, write, and read isiZulu and English.
- Your participation will be on a voluntary basis, and you will be allowed to withdraw from the study at any given time, without any consequences. The information you provided in the questionnaires will remain anonymous. It will only be used for the purpose of this study.

How many participants in the study and how long will it last?

At least 30 participants are needed to take part in this study. The research study is supposed to last until December 2022.

What will happen if you decide to take part in this study?

You will have to complete the isiZulu version of the LEAQ and an evaluation form. This will take you about 1 hour to 90 minutes to complete. You will report on your child's hearing development. If your child has shown the behaviour in question, indicate by choosing "yes". If you have not seen the behaviour in question, choose "no".

You will also be asked to complete an evaluation form. The form will ask you if each of the questions on the LEAQ were easy to understand in terms of its wording, including sentence structure or if you think your fellow isiZulu speakers will be able to use it.

You will receive R50 worth of data which will be used to complete the questionnaire online.

What are the other choices that you have?

You can withdraw from the study anytime if you like. You will suffer no consequences if you make this decision. You do not have to give reasons for withdrawing.

What are the risks of being in this study?

As a parent you may find out that your child has delayed hearing development. It may stress you. To deal with this issue, counselling will be done. You will also be referred to an appropriate health professional.

What are the benefits of this study?

Filling out this questionnaire gives an indication of your child's hearing behaviour. If the results indicate a delay in hearing development, they can then be referred to a suitable hospital for a hearing test. Your child can therefore get help sooner. Your role in the study will also help other isiZulu speaking children in South Africa.

You can choose to participate in a lucky draw to win a R500 Pick 'n Pay voucher. Your email address or cell phone number which will be used to contact you will be required.

What will happen after the study?

Once you are done completing all the documents, the researcher will receive this information. If you indicated that you want to know about the results of the study, the results will be shared with you.

Participant confidentiality.

Your information will remain confidential. Each participant will be allocated a number. Real names will not be used. Results obtained will be seen by the researcher and the

university research supervisors. If you are not sure about anything, please feel free to ask the researcher at any stage. The researcher's contact details are provided below.

What is a Research Ethics Committee?

Human Research Ethics Committees (HRECs) review all research proposals involving human participants. The committee ensures that they are ethically acceptable. Should you have any questions or any concerns about participant's rights or welfare, please feel free to contact us using the contact details provided below.

Should you have any further queries regarding your role in the study, please do not hesitate to contact us on the information provided below.

Student name: Faith Nefolovhodwe

Student email: NFLTHE001@myuct.ac.za
Research Supervisor: Lucretia Petersen
Email: Lucretia.petersen@uct.ac.za

UCT Faculty of Health Sciences Human Research Ethics Committee Contact Details:
Contact person: Prof. M. Blockman
Address: E52.24 Old Main Building, Groote Schuur Hospital

Tel: 021 406 6492 Prof. M. Blockman Fax: 021 406 6411

"Our Mission is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society"[1]

[1] Flesch-Kincaid Grade Level: 8.0

Appendix B: Recruitment letter to Audiologists and Speech therapists

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Telephone: 021 406-6401

Fax: 021 406 6323

RE: BILINGUAL ISIZULU-ENGLISH SPEAKING AUDOLOGIST/ SPEECH THERAPIST NEEDED FOR TRANSLATION STUDY.

I am a master's student from University of Cape Town and I am conducting a research study that focuses on translating and validating the LittlEARS Auditory Questionnaire (LEAQ) into isiZulu, a South African native language. The questionnaire is a self-administered scale that is used to track auditory behaviour and development among children up to the age of 24 months.

The study will use the forward-back translation guidelines in translating the LEAQ into isiZulu. Once the translation phase has been completed, the translated isiZulu version of the LEAQ will be distributed to isiZulu-English bilingual parents older than 18 years, with isiZulu being their home language. It is a requirement that parents/caregiver participants are able to read and write for them to be able to administer the questionnaire. The purpose of giving the translated version of the LEAQ is to ensure that the content is culturally appropriate and that it can be distributed out to beneficiaries (isiZulu speaking).

I am looking for a team of translators to translate the questionnaire from English to isiZulu and to back-translate. The process of translating will include validating the content of the translated version of the questionnaire. The questionnaire consists of two pages: the first with patient details, an explanation of how to complete the questionnaire, additional questions of interest and the second with the 35 questions that are mainly about the child's auditory development. This in total tallies to approximately 1083 words.

The inclusion criteria for the translation team are as follows:
Translation team: Four isiZulu-English bilingual translators who are over the 18 years, with isiZulu as their home language. Of these:

- Two qualified isiZulu translators.
- Two isiZulu-English bilingual audiologists
- One Speech therapist
- Expert panel: Five members made up of each of the translators listed above

The translators are expected to:

- To forward-translate the original English version of the LEAQ into isiZulu.
- To review forward translated versions of the LEAQ and develop one reconciled version.
- To back-translate the reconciled version of the LEAQ from isiZulu to English.

- To assess whether the items in the reconciled translated version of the LEAQ accurately reflects the content of the original English version, through a translation committee review.
- To present the finalised version of the isiZulu LEAQ to target population, in order to acquire feedback based on their understanding and acceptance of the items on translated questionnaire.

The whole process will not take more than 3 hours. Participants have the right to withdraw anytime should they not want to continue participating in the process. This study received approval from the ethics board (reference number). For further questions or concerns, if there are any people who fulfil the above-mentioned inclusion criteria, please do not hesitate to send us the information to the following contact information.

Should you have any questions or any concerns about participant's rights or welfare, please feel free to contact us using the contact details provided below.

email: NFLTHE001@myuct.ac.za

Supervisor: Lucretia Petersen Email: Lucretia.petersen@uct.ac.za [2]

UCT Faculty of Health Sciences Human Research Ethics Committee [3]

Contact person: Prof. M. Blockman

Tel:0214066492

Address: E52.24, Old Main Building, Groote Schuur Hospital

Fax: 021 406 6411

Yours sincerely,

Faith Nefolovhodwe (NFLTHE001)

[2] [2] Flesch-Kincaid Grade Level: 8.0

Appendix C: Recruitment letter for professional translators

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Telephone: 021 406-6401

Fax: 021 406 6323

Dear Sir/Madam

UNIVERSITY OF CAPE TOWN Faculty of Health Sciences

Division of Communication Science and Disorders

RE: PROFESSIONAL TRANSLATORS NEEDED FOR TRANSLATION STUDY

I am a master's student from University of Cape Town, and I am conducting a research study that focuses on translating and validating the LittlEARS Auditory Questionnaire (LEAQ) into isiZulu, a South African indigenous language. The questionnaire is a self-

administered scale that is used to track auditory behaviour and development among children up to the age of 24 months.

I am looking for a team of translators to forward-translate the LEAQ from English to isiZulu and to thereafter back-translate the LEAQ from isiZulu to English.
The translation process will require translating two 35 questions in the LEAQ, a consent form and face validity questionnaire into isiZulu. The word count of the LEAQ is approximately 1083 words.

Translation team requirements:
• isiZulu-English bilingual translators over the age of 18 years, with isiZulu as their home language.

Translators are required to:
• To forward-translate the original English version of the LEAQ into isiZulu.
• To review forward translated versions of the LEAQ and develop one reconciled version.
• To assess whether the items in the reconciled translated version of the LEAQ accurately reflects the content of the original English version, through an expert committee review.

OR

To back-translate the reconciled version of the LEAQ from isiZulu to English.
• To review forward translated versions of the LEAQ and develop one reconciled version.
• To assess whether the items in the reconciled translated version of the LEAQ accurately reflects the content of the original English version, through an expert committee review.

This study has received approval from the ethics board (reference number).

Should you have any further queries regarding your role in the study, please do not hesitate to contact us on the information provided below.

Student email: NFLTHE001@myuct.ac.za
Research Supervisor: Lucretia Petersen
Email: Lucretia.petersen@uct.ac.za

UCT Faculty of Health Sciences Human Research Ethics Committee Contact Details:

Contact person: Prof. M. Blockman
Address: E52.24 Old Main Building, Groote Schuur Hospital

Tel: 021 406 6492 Prof. M. Blockman Fax: 021 406 6411

Appendix D: Consent form

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Department of Health and Rehabilitation Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Telephone: 021 406-6401

Fax: 021 406 6323

Consent form:

- I understand the purpose of the study.
- I understand my role and what I must do in all study events.
- I understand that I can drop out of this study at any given time, with no consequences.
- I have been provided with the contact details of the UCT Faculty of Health Sciences Human Research Ethics Committee.
- I have been given an opportunity to ask questions.

Please specify below whether you agree/disagree to be a participant in this study:

I, _____(Participant/Member)

Give my consent / Do not give my consent (Please circle your repose), to participate in the study.

I, _____(Participant/Member)

Give my consent / Do not give my consent (Please circle your repose), to participate in the lucky draw for a R500 Pick ‘n Pay voucher.

I, _____(Participant/Member)

Give my consent / Do not give my consent (Please circle your repose), to be contacted and referred for a recommended hearing assessment should the questionnaire I complete suggest any delays in my child’s hearing behaviour.

Participants signature: _____ Date: _____

Contact number: _____

Appendix E: Face Validity Likert Scale

On this evaluation questionnaire, you are required to independently rate each item on the isiZulu translated LEAQ based on a) ease of understanding the wording and sentence structure b) ability to be completed by their fellow isiZulu native speakers and c) questionnaire format and structure. (Please circle your answers)

Item number	Question A	Question B
Item 1	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 2	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 3	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 4	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree

Item 5	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 6	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 7	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 8	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 9	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 10	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?

	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 11	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 12	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 13	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 14	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 15	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree

Item 16	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 17	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 18	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 19	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 20	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 21	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?

	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 22	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 23	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 24	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 25	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 26	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree

Item 27	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 28	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 29	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 30	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 31	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 32	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?

	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 33	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 34	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree
Item 35	It is easy to understand the wording and sentence structure.	Will other isiZulu speakers be able to answer the question?
	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree	1= Strongly agree 2=Agree 3=Neutral 4=Disagree 5=Strongly disagree

Appendix F: English version of the LEAQ

MED EL

LittlEars®

Auditory Questionnaire

Parents questionnaire to assess auditory behaviour

F. Coninx, V. Weichbold, L. Tsiakpini

Code: ..... Date: ...../...../.....

Gender: F / M Date of birth: ...../...../.....

This auditory questionnaire is designed to assess the auditory development in children with normal hearing and in children with hearing loss who have received a cochlear implant(s) (CI) or hearing aid(s) (HA). It covers auditory development in the first 2 years after CI or HA fitting (up to 2 years of hearing age.) or in hearing children up to 2 years of age. The questionnaire includes age-dependent questions with increasing complexity of the auditory responses. Therefore, with a younger child, fewer questions will be answered "yes".

How to complete the questionnaire?

All questions are to be answered by checking either YES or NO.
Please mark:

yes: if you have already observed the behaviour in your child at least once.

no: if you have never observed the behaviour in your child, or if you are not sure how to answer the question.

If you answer 6 questions with "no" for children with normal hearing, you do not need to continue the questionnaire. Further questions will then be regarded as "no" answers.
For children fitted with a CI(s) or HA(s), all questions should be answered, since they may show auditory behaviour covered by later questions.

hearLIFE

	Auditory Response	Answer	Example
1	Does your child respond to a familiar voice?	☐Yes ☐No	Smiles; looks towards source; talks animatedly.
2	Does your child listen to somebody speaking?	☐Yes ☐No	Listens; waits and listens; looks at the speaker for a longer time.
3	When somebody is speaking, does your child turn his/her head towards the speaker?	☐Yes ☐No	
4	Is your child interested in toys producing sounds or music?	☐Yes ☐No	Rattle, squeezing toy.
5	Does your child look for a speaker he/she cannot see?	☐Yes ☐No	
6	Does your child listen when the radio/CD/tape player is turned on?	☐Yes ☐No	Listening: turns towards the sound, is attentive, laughs or sings/talks "along."
7	Does your child respond to distant sounds?	☐Yes ☐No	When being called from another room.
8	Does your child stop crying when you speak to him/her without him/her seeing you?	☐Yes ☐No	You try to comfort the child with a soft voice or song without eye contact.
9	Does your child respond with alarm when hearing an angry voice?	☐Yes ☐No	The child becomes sad and starts crying.
10	Does your child "recognise" acoustic rituals?	☐Yes ☐No	Musical box by bed; lullaby; water running into the tub.
11	Does your child look for sound sources located at the left, right or back?	☐Yes ☐No	You call or say something, the dog barks, etc. and the child looks and finds the sources.
12	Does your child react to his/her name?	☐Yes ☐No	
13	Does your child look for sound sources located above or below?	☐Yes ☐No	A clock on the wall, or something falling on the floor.
14	When your child is sad or moody, can he/she be calmed down or influenced by music?	☐Yes ☐No	
15	Does your child listen on the telephone and does he/she seem to recognise that somebody is talking?	☐Yes ☐No	When grandma or daddy calls, the child takes the receiver and "listens."
16	Does your child respond to music with rhythmical movements?	☐Yes ☐No	The child moves arms/legs to the music.
17	Does your child know that a certain sound is related to a certain object or event?	☐Yes ☐No	The child hears the sound of an aeroplane and looks towards the sky, or hears a car and looks towards the street.

	Auditory Response	Answer	Example
18	Does your child appropriately respond to short and simple remarks?	☐Yes ☐No	"Stop!" "Yuck!" "Don't!"
19	Does your child respond to "No" by typically interrupting his/her current activity?	☐Yes ☐No	A strongly pronounced "no, no!" – although the child does not see you (!) – is effective.
20	Does your child know family members' names?	☐Yes ☐No	Where is ...: Daddy, Jane, Mark, ...
21	Does your child imitate sounds when asked?	☐Yes ☐No	"Aaa", "ooo", "iii"
22	Does your child follow simple commands?	☐Yes ☐No	"Come here!"; "Take off your shoes!"
23	Does your child understand simple questions?	☐Yes ☐No	"Where is your tummy?"; "Where is daddy?"
24	Does your child bring items when asked?	☐Yes ☐No	"Bring me the ball!" etc.
25	Does your child imitate sound or words you say?	☐Yes ☐No	"Say: woof woof"; "Say: c-a-r"
26	Does your child produce the right sound to a toy?	☐Yes ☐No	"Vurrm" with car, "moo" with cow
27	Does your child know that certain sounds go with certain animals?	☐Yes ☐No	Woof woof = dog; meow = cat; cock-a-doodle-do = cockerel/rooster
28	Does your child try to imitate environmental sounds?	☐Yes ☐No	Animal sounds, sounds of household appliances, police car siren.
29	Does your child correctly repeat a sequence of short and long syllables you have said?	☐Yes ☐No	"La-la-laaa"
30	Does your child select the right object from a number of objects when asked?	☐Yes ☐No	You are playing with toy animals and ask for the "horse"; you are playing with coloured balls and ask for the "red ball."
31	Does your child try to sing along when hearing a song?	☐Yes ☐No	Nursery rhymes
32	Does your child repeat certain words when asked?	☐Yes ☐No	"Say 'Bye - Bye' to grandma"
33	Does your child like being read to?	☐Yes ☐No	From book or picture book
34	Does your child follow complex commands?	☐Yes ☐No	"Take off your shoes and come here."
35	Does your child try to sing with familiar songs?	☐Yes ☐No	Lullaby
	Total score = all questions checked with "yes"		

To be filled out by the examiner

Clinic/Institution: ..... Age: .....

For children with cochlear implants or hearing aids

First hearing aids fitting: side: R: ...../...../..... side: L: ...../...../.....

Date of CI surgery: ...../...../..... side: R / L

Date of 1st CI fitting: ...../...../.....

Date of 2nd CI surgery: ...../...../..... side: R / L

Date of 2nd CI fitting: ...../...../.....Hearing age*: .....

* Calculation of hearing age:

children with normal hearing: hearing age is equivalent to actual age

children with CI(s): time period since first fitting of processor;
if first fitting is not known: time period since implantation minus 1 month

children with HA(s): time period since hearing aid fitting

Additional questions of interest:

1. Have you observed any responses to sound or voices in your child that are not included in this questionnaire?

2. Have you noticed any surprising responses to sound or voices in your child recently or in the last 1-2 weeks (i.e. can he/she do this already?)

Thank You for completing the LittlEARS® Auditory Questionnaire!

20205 2.0

Appendix G: Content validity index

CVI will be used to analyse validity of each item separately, and thereafter be used to determine the content validity of the entire tool. The CVI of the LEAQ will be calculated by recording and analysing the response from experts using the table below.

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	# in agreement	Item CVI
Item 1								
Item 2								
Item 3								
Item 4								
Item 5								
Item 6								
Item 7								
Item 8								
Item 9								
Item 10								
Item 11								
Item 12								
Item 13								
Item 14								
Item 15								
Item 16								
Item 17								
Item 18								

Appendix H Confidentiality agreement for researchers

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Telephone: 021 406-6401

Fax: 021 406 6323

Confidentiality agreement

I, _____ [name of researcher], agree to:

1. Not sharing any research information with anyone except the individuals involved in the project. I may not make copies.
2. Ensure that all collected data that consists of the participants information, remains confidential by protecting the data using a password that only the participating researchers will have access to. All devices used to store the data will be password-protected and as well as protected from any possible hacking attempt. At the conclusion of the research project all data will be given back to the supervisor.
3. Read the Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research (go to http://ohsr.od.nih.gov/guidelines/belmont.html),
4. Accept the responsibility and comply with the standards and requirements stated in the approved UCT Faculty of Health Sciences Human Research Ethics (UCT HREC) application for this project to ensure that participants' rights and welfare are protected.
5. Not initiate changes in the implementation of the protocol without prior UCT HREC review.

6. Report any unexpected problems in the research that involve risks to the participants or others promptly and immediately report these problems to the UCT HREC.

7. Seek, document, and maintain records of informed consent from the participants as stipulated by the UCT HREC

8. Not enrol subjects in this research project prior to its review and approval by UCT HREC.

9. The understanding that it is my primary responsibility to safeguard the rights and welfare of research participants, and that the participants' rights and welfare must take priority over the goals and requirements of the research.

Name of researcher: _____

Telephone numbers: _____

Signature of researcher:_____Date:_____

Name of supervisor: _____

Signature of supervisor: _____

Appendix I: Flyer to healthcare professionals

Appendix J: HREC approval letter

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room 45 E-52-E-Floor- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: hrec-submissions@uct.ac.za
Website: https://health.uct.ac.za/home/human-research-ethics

31 October 2022

HREC REF: 480/2022

Ms L Petersen
Division of CSD
F-45, OMB
Email: Lucretia.petersen@uct.ac.za
Student: NFLTHE001@myuct.ac.za

Dear Ms Petersen

PROJECT TITLE: THE TRANSLATION AND VALIDATION OF THE LITTLEARS AUDITORY QUESTIONNAIRSE IN ISIZULU
(MASTERS - MISS THENDO NEFOLOVHODWE)

Thank you for your response letter, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 October 2023.

Please submit a progress form, using the standardised Annual Report Form (FHS016) if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Miss Thendo Nefolovhodwe will also be involved in this study.

Please quote the HREC REF 480/2022 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

HREC/ref 480.2022

Appendix K: Forward translations and final translation from expert committee

	Translator 1	Translator 2	Final translation
1.	Ngabe ingane yakho iyaphendula a izwi elijwayelekile?	Ingabe ingane yakho iyaphendula uma izwa izwi elijwayelekile?	Ingabe ingane yakho iyaphendula uma izwa izwi elijwayelekile?
2.	Ingabe ingane yakho iyalalela ubani okhulumayo	Ingabe ingane yakho iyalalela uma kukhona okhulumayo?	Ingabe ingane yakho iyalalela ubani okhulumayo
3.	Nangabe kukhona okhulumayo, iyanjikisa yini ikhanda ingane yakho kuyena kulowo okhulumayo?	Mangabe kukhona okhulumayo, iyalijikisa yini ikhanda ingane yakho ibheke kuyena lona okhulumayo?	Mangabe kukhona okhulumayo, iyalijikisa yini ikhanda ingane yakho ibheke kuyena lona okhulumayo?
4.	Ngabe ingane yakho thando ukudlala kamatoyisi umsindo noma omculo	Ingabe ingane yakho iyathanda ukudlala ngamatoyizi abanga umsindo noma akhala umculo?	Ingabe ingane yakho iyathanda ukudlala ngamathoyizi abanga umsindo noma akhala umculo?
5.	Ngabe ingane uyambheka okhulumayo he/she ongakhoni ukubona?	Ingabe ingane yakho iyamcinga okhulumayo uma ingamuboni?	Ingabe ingane yakho iyamucinga okhulumayo uma ingamuboni?

6.	Ngabe ingane yakho iyalalela umsakazo/CD/ tape player idlala?	Ngabe ingane yakho iyalalela umsakazo/CD/ tape player idlala?	Ngabe ingane yakho iyawulalela umsakazo/iCD/itape player uma udlala?
7.	Ngabe ingane yakho iphendula emsindweni ekude?	Ngabe ingane yakho iyaphendula emsindweni ekude?	Ngabe ingane yakho iyayizwa imsindo ekude?
8.	Ngabe ingane yakho iyayeka ukukhala ngaphandle kokhuluma naye	Ngabe ingane yakho iyayeka ukukhala uma ukhuluma nayo kodwa ingakuboni?	Ngabe ingane yakho iyayeka ukukhala uma ukhuluma nayo ingakuboni?
9.	Ngabe ingane yakho iyaphendula ukuzwa kwe-alarm ngezwi ethukuthelo?	Ngabe ingane yakho iyaphendula ukuzwa kwe-alarm ngezwi ethukuthelo?	Iyakhombisa ukuthuka uma ukhuluma ngezwi lokucasuka
10.	Ngabe ingane yakho ibhekisisa” Amasiko acoustic?	Ngabe ingane yakho ibhekisisa”?	Ngabe ingane yakho iyakwazi ukuzwa imsindo ejwayelekile?
11.	Ngabe ingane yakho ibheka imisindo emthonjeni engasesandle sasxhele, sokudla noma emuva	Ngabe ingane yakho iyabheka lapho okuqamuka khona umsindo ongaba sesandleni sokudla,	Ngabe ingane yakho iyabheka lapho okuqhamuka khona umsindo ongaba kwa-right, kwa-left nangemuva?

		sesinxele noma ngemuva?	
12.	Ngabe ingane yakho iphendula kuyena?	Ingabe ingane yakho iyaphendula makubizwa igama layo?	Ngabe ingane yakho iyaphendula makubizwa igama layo?
13.	Ngabe ingane yakho ibhekisisa imisindo ephezulu noma ephansi?	Ngabe ingane yakho ibhekisisa imisindo ephezulu noma ephansi?	Ngabe ingane yakho iyawubheka umsindo oqhamuka phezulu noma phansi?
14.	Nangabe ingane yakho ithukuthele noma ikwatile, iyakhuzwa Nangabe iyehlisa	Mangabe ingane yakho icasukile noma ithukuthele ngabe lokho kungalawuleka yini ngokuthi kudlalwe umculo?	Ingabe umculo uyayiduduza yini ingane yakho uma icasukile noma ithukuthele?
15.	Ngabe ingane yakho ilalelisisa oncingweni futhi uyakwazi ukubhekisisa lomuntu okhulumayo?	Ngabe ingane yakho iyawulalela yini umakhalekhukhwini futhi ikwazi ukubona ukuthi kukhona okhulumayo?	Ngabe ingane yakho iyayilalela yini i-phone futhi ikwazi ukubona ukuthi kukhona okhulumayo?
16.	Ngabe ingane yakho iyaphendula kumculo ngeminyakazo yomculo?	Ngabe ingane yakho iyaphendula kumculo ngeminyakazo yomculo?	Ngabe ingane yakho iyadansa yin uma izwa umculo?
17.	Ngabe ingane yakho iyakwazi ukuzwa	Ngabe ingane yakho iyakwazi ukuzwa imisindo	Ngabe ingane yakho iyakwazi ukubona ukuthi

	imisindo ithize ehlobene omanomcibi?nama-object kanye nomcibi.	ethize ehlobene omanomcibi?nama-object kanye nomcibi.	umsindo othile ubangwe yinto ethile noma ngesikhathi esithile
18.	Ngabe ingane yakho ikwazi uwuphendula kulemisho emfishane kanye nelula?	Ngabe ingane yakho iyakwazi ukuphendula kwimisho emifishane futhi elula?	Ngabe ingane yakho iyakwazi ukuphendula kwimisho emifishane futhi elula?
19.	Ngabe ingane yakho iyaphendula “cha”ngokuphazamisa uhlobo lomsebenzi owenzayo?	Ngabe ingane yakho iyaphendula “cha”ngokuphazamisa uhlobo lomsebenzi owenzayo?	Ngabe ingane yakho iyayeka into ayenzayo uma uyikhuza?
20.	Ngabe ingane yakho iyawazi amalunga omdeni wakho?	Ngabe ingane yakho iyawazi amalunga omdeni wakho?	Ngabe ingane yakho iyawazi amagama abantu bakini?
21.	Ngabe ingane yakho iyakwazi ukulingisela imisindo nayibuziwe?	Ngabe ingane yakho iyakwazi ukulingisela imisindo nayibuziwe?	Ngabe ingane yakho iyakwazi ukulingisela imisindo uma ibuziwe.
22.	Ngabe ingane yakho iyakwazi ukulandela imithetho elula?	Ngabe ingane yakho iyakwazi ukulandela imithetho elula?	Ngabe ingane yakho iyathumeka?
23.	Ngabe ingane yakho iyanqodanisa imibuzo elula?	Ngabe ingane yakho iyayizwa iphinde iyiqonde imibuzo elula?	Ngabe ingane yakho iyayizwa iphinde iyiqonde imibuzo elula?

24.	Ngabe ingane yakho iyakwazi ukuletha izinto nangabe uyithuma?	Ngabe ingane yakho iyakwazi ukuletha izinto mangabe uyithuma?	Ngabe ingane yakho iyakwazi ukuletha izinto mangabe uyithuma?
25.	Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?	Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?	Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?
26.	Ngabe ingane yakho iyakwazi ukukhada imisindo etoyizini?	Ngabe ingane yakho iyakwazi ukukhanda imisindo ehambisana netoyizi?	Ngabe ingane yakho iyakwazi ukulingisela imisindo ehambisana namathoyizi edlala ngawo?
27.	Ngabe ingane yakho iyakwazi ukuhlukanisa yezilwane imisindo ethize?	Ngabe ingane yakho iyakwazi ukuhlukanisa imisindo yezilwane ezithize?	Ngabe ingane yakho iyakwazi ukuhlukanisa imisindo yezilwane ezithize?
28.	Ngabe ingane yakho iyazama ukulingisela imisindo yemvela?	Ngabe ingane yakho iyazama ukulingisela imisindo yemvelo?	Ngabe ingane yakho iyazama ukulingisela imisindo ejwayelekile?
29.	Ngabe ingane yakho iyakwazi ukulingisela ama-syllable Amade nafishane owezwayo?	Ngabe ingane yakho iyakwazi ukulingisela ama-syllable amade namafishane owezwayo?	Ngabe ingane yakho iyakwazi ukulingisela imisindo emide noma emifishane?
30.	Ngabe ingane yakho ukukwazi ukukhetha	Ngabe ingane yakho iyakwazi ukukhetha ama-object aqidile nayibuzile?	Ngabe ingane yakho iyakwazi ukukhetha into

	ama-object aqidile nayibuzile?		oyibizile Phakathi kwezinye izinto?
31.	Ngabe ingane yakho iyakwazi ukucula ndawonye?	Ngabe ingane yakho iyazama ukucula ihambisane neculo uma ilizwa?	Ngabe ingane yakho iyazama ukucula ihambisane neculo uma ilizwa?
32.	Ngabe ingane yakho iyakwazi ukuphinda amagama nangabe ibuziwe?	Ngabe ingane yakho iyakwazi ukuphinda amagama mangabe ibuziwe?	Ngabe ingane yakho iyakwazi ukuphinda amagama mangabe itsheliwe?
33.	Ngabe ingane yakho iyathanda ukufundelwa?	Ngabe ingane yakho iyathanda ukufundelwa?	Ngabe ingane yakho iyathanda ukufundelwa?
34.	Ngabe ingane yakho iyakwazi ukulandela imithetho enzima?	Ngabe ingane yakho iyakwazi ukulandela imithetho enzima?	Ngabe ingane yakho iyakwazi ukuthumeka izinto eziningi?
35.	Ngabe ingane yakho iyazama ukucula ndawonye namaculo ewaziyo?	Ngabe ingane yakho iyazama ukucula ndawonye namaculo ewaziyo?	Ngabe ingane yakho iyazama ukucula ndawonye namaculo ewaziyo?

Appendix L: Content validity index responses by the expert committee.

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	# in agreement	Item CVI
Item 1	3	4	4	4	4	5	1
Item 2	4	4	4	4	4	5	1
Item 3	4	4	4	4	4	5	1
Item 4	4	4	4	4	4	5	1
Item 5	4	4	4	4	4	5	1
Item 6	4	4	4	4	3	5	1
Item 7	3	4	4	4	4	5	1
Item 8	4	4	4	4	4	5	1
Item 9	3	4	4	4	4	5	1
Item 10	4	3	4	4	2	4	0.8
Item 11	4	4	4	4	2	4	0.8
Item 12	4	4	4	4	4	5	1
Item 13	4	4	4	4	4	5	1
Item 14	4	4	4	4	4	5	1
Item 15	4	4	4	4	4	5	1
Item 16	3	4	4	4	4	5	1
Item 17	4	4	3	4	2	4	0.8
Item 18	4	4	4	4	4	5	1

Item 19	4	4	4	4	4	5	1
Item 20	4	3	4	4	4	5	1
Item 21	4	4	4	4	4	5	1
Item 22	3	4	4	4	4	5	1
Item 23	4	4	4	4	4	5	1
Item 24	4	4	4	4	4	5	1
Item 25	4	4	4	4	4	5	1
Item 26	4	4	4	4	4	5	1
Item 27	4	4	4	4	4	5	1
Item 28	3	4	4	4	4	5	1
Item 29	4	4	4	4	4	5	1
Item 30	3	4	4	4	4	5	1
Item 31	4	4	4	4	4	5	1
Item 32	4	4	4	4	4	5	1
Item 33	4	4	4	4	4	5	1
Item 34	4	4	4	4	4	5	1
Item 35	4	4	4	4	4	5	1
Proport-ion relevant:	35	35	35	35	32	Mean I-CVI proportion:	0.9828

Appendix M: Results from face validity evaluation questionnaire

No.	number of participants that agreed	% Agree	% Neutral	% Disagree
1.	54	94	2	4
	53	93	4	4
2.	52	91	5	4
	54	95	4	2
3.	55	97	0	4
	55	96	0	4
4.	52	92	4	6
	53	93	4	6
5.	54	95	4	2
	54	94	4	2
6.	54	94	2	4
	52	91	4	5
7.	53	93	4	4
	53	93	4	4
8.	52	92	2	6
	54	94	2	4
9.	55	97	0	4
	55	97	0	4
10.	52	91	4	4
	54	94	2	4
11.	53	93	5	4
	52	92	5	4
12.	54	94	0	6
	55	96	0	4

13.	56	98	0	2
	57	100	0	0
14.	54	94	2	4
	55	96	2	2
15.	53	93	4	4
	54	95	2	4
16.	54	94	2	4
	54	95	4	2
17.	54	95	2	4
	55	96	4	0
18.	56	98	0	2
	55	96	2	2
19.	56	98	0	2
	56	98	0	2
20.	55	96	2	2
	56	98	2	0
21.	53	93	2	6
	53	92	4	4
22.	53	93	4	4
	54	95	4	2
23.	54	94	0	6
	55	99	0	4
24.	53	92	4	4
	51	90	2	9
25.	51	90	5	6
	53	93	2	6
26.	52	91	0	9
	53	93	2	6
27.	53	93	4	4
	52	90	5	4

28.	51	90	4	7
	52	92	2	7
29.	51	89	4	8
	50	87	5	8
30.	52	91	4	8
	52	91	2	7
31.	53	93	2	5
	53	93	4	4
32.	54	95	0	5
	55	96	0	4
33.	54	95	2	4
	56	98	2	0
34.	52	91	0	9
	51	89	0	10
35.	55	96	0	4
	55	96	2	2

Appendix N: Indices of difficulty

Items	Yes	No	index difficulty	Difficulty index %	Discrimination index
1	57	0	1,00	100	0,86
2	53	4	0,93	93	0,92
3	55	2	0,96	96	0,89
4	50	7	0,88	88	0,98
5	52	5	0,91	91	0,94
6	49	8	0,86	86	1,00
7	51	6	0,89	89	0,96
8	49	8	0,86	86	1,00
9	49	8	0,86	86	1,00
10	52	5	0,91	91	0,94
11	49	8	0,86	86	1,00
12	48	9	0,84	84	0,95
13	47	10	0,82	82	0,97
14	49	8	0,86	86	1,00
15	48	9	0,84	84	0,95
16	44	13	0,77	77	1,03
17	47	10	0,82	82	0,97
18	46	11	0,81	81	0,99
19	48	9	0,84	84	0,95
20	47	10	0,82	82	0,97
21	47	10	0,82	82	1,00
22	46	11	0,81	81	0,99
23	42	15	0,74	74	1,08
24	45	12	0,79	79	1,01
25	50	7	0,88	88	0,98
26	47	10	0,82	82	0,97
27	42	15	0,74	74	1,08

28	46	11	0,81	81	0,99
29	44	13	0,77	77	1,03
30	43	14	0,75	75	1,06
31	46	11	0,81	81	0,99
32	46	11	0,81	81	0,99
33	43	14	0,75	75	1,06
34	41	16	0,72	72	1,11
35	45	12	0,79	79	1,01

Appendix O: isiZulu informational letter

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

inombolo yocingo: 021 406-6401

inombolo yefeksi: 021 406 6323

Ngiyakubingelela

Ngiyumfundi wakwi Yunivesithi yase Kapa owenza isiqu seMasters, ngenza ucwaningo olubheka ukutolikwa kohlu lwemibuzo olubizwa nge LittlEARS Auditory Questionnaire (LEAQ), lususwa kwisiNgisi luyiswa kwisiZulu. Uhlu lwemibuzo luhlola ukukhula kokuzwa nokulalela kwi zingane eziphakathi kweminyaka esukela ku 0 kuya kwizinyanga eziwu 24.

Kungani lolucwaningo lwenziwa?

Uhlu lwemibuzo selutolikelwe kwizilimi eziningi ezahlukene kumhlaba wonke. Kepha lutholakala ngezilimi ezimbili kuphela lapha eNingizimi Africa, lezizilimi olwesiNgisi nolwesiBhunu. Ukutolika iLEAQ ibe isiZulu kuzosiza ngokuthi labo abakhuluma isiZulu bakwazi

ukuphendula lemibuzo ngo lwimi lwabo. Ngakhoke izingane ezininkinga yokuzwa zizokwazi ukuthi zisheshe zithole usizo.

Kungani uceliwe ukuthi ube ingxenye yalolucwaningo?

- Sidinga abazali noma abanakekeli abaneminyaka engango 18 kuyaphezulu, abanezingane ezinezinyanga eziphakathi kwa 0 kuya ku 24.
- Umuntu omdala okwazi ukukhuluma, ukubhala nokufunda isiZulu kanye nesiNgisi.
- Uma uyingxenye yalolucwaningo, kuzobe kungukuzikhethela kwakho ngakho ke uvumelekile ukuthi uhoxe noma ingasiphi isikhathi ngaphandle kokuba kubenemithelela emibi. Imininingwane ozoyidalula kuhlu lwemibuzo izohlala njalo iyimfihlo futhi izosetshenziselwa lolucwaningo kuphela.

Bangaki abantu abazoba ingxenye yalolucwaningo futhi luzoba yisikhathi esingakanani?

Kudingakala abantu noma abangu 30 ukuthi babe yingxenye yalolucwaningo. Lolucwaningo lufanele ukuqhuba kuze kushaye uZibandlela (December) 2023.

Kuzokwenzakalani uma ngikhetha ukuba ingxenye yalolucwaningo?

Kuzomele uphendule uhlu lwemibuzo ye LEAQ etolikiwe kwaba yisiZulu, bese ugcwalisa ne fomu lokuhlola iLEAQ etolikelwe kwisiZulu. Konke loku kuzothatha isikhathi esisuka kwi hora elilodwa kuya kwimizuzu engu 90. Uzophendula imibuzo emayelana nendlela ingane yakho ezwa ngayo. Uma ngabe ingane yakho inazo izenzo ezibhaliwe kuhlu lwemibuzo uzokhetha “yebo”, uma ngabe ingenazo izenzo ezibhaliwe kuhlu lwemibuzo uzokhetha “cha.”

Uzobe usucelwa ukuba ugcwalise iform lokuhlola ukusebenza kwe LEAQ etolikelwe kwisiZulu. Lelifomu lindinga uphawule ngokuthi bekulula kangakanani ukuqonda imibuzo ebhaliwe. Loku kubhekise ikakhulukazi kumagama asetshenzisiwe futhi nemvumelwano phakwathi kwamagama ukuze kwenzeke imisho. Uzobe usuqhuba uphawula ngokuthi kungalula kangakanani ukuthi nomunye umuntu okhuluma isiZulu asheshe ayiqonde le LEAQ etolikelwe kwisiZulu.

Uzothola idatha elilingene uR50 ukuze ukuwazi ukugcwalisa lelifomu kwi kwiphone yakho ku inthanethi.

Kwenzakalani uma ngikhetha ukungabi ingxenye yocwaningo?

Ungakwazi ukuyeka ukuba ingxenye yalolucwaningo uma ufisa, angeke kuze kube khona imiphumela emibi emva kokuthatha lesosinqumo. Futhi angeke kuzekudingeke ukuthi ubeke izazutha zakho zokuhoxa.

Ngabe bukhona na ubungozi obuphathelene nokuba ingxenye yalolucwaningo?

Njengomzali ungangcina usuthola ukuthi ingane yakho kungenzeka kube inenkinga yokuzwa. Lokukungaholela ekutheni ukhathazeke ube nengcindezi futhi. Ukuze ukwaze ukumelana nalesimo usizo lwezokululekwa luzohlale lukhona. Ngaphezulu kwaloko uyobe usuthunyelwa kulowo wezempilo ozokwazi ukuthi qhubeka akusize kancono.

Imiphi imivuzo yokuba yingxenye yalolucwaningo?

Ukugcwalisa loluhlu lwemibuzo luzokwazisa ngendlela ingane yakho ezwa ngayo. Uma kungenzeka uthola ukuthi ingane inezimpawu zokuba nenkinga yokuzwa uyobe usuthunyelwa esibhedlela ukuze ukuhlolwa okufanele kwenzeke. Loku kusho ukuthi ingane yakho iyobe isishesha ithola usizo eludingayo. Iqhaza olidlalayo kulolucwaningo lizokwazi futhi ukusiza ezinye izingane ezikhuluma isiZulu khona leningizimu Africa.

Uvumelekile futhi ukuba ingxenye yomcintiswano wokuwina uvawucha yase Pick ‘n’ Pay yemali engango R500. Ikheli lakho le email kanye nenombolo yocingo iyona ezosetshenziswa ukukuthinta, ngakhoke iyadingeka.

Kuzokwenzakalani uma seluphelile ucwaningo?

Uma uqeda ukugcwalisa wonke amafomu, azobe esethunyelwa kulowo owenza lolucwaningo. Uma ushilo ukuthi ungakuthokozela ukwazi imiphumela yocwaningo, uzobe usuthunyelelwa yona imiphumela.

Ukuvikeleka kwemininingwane ebucayi yalabo abayingxenye yocwaningo

Imininingwane yakho ebalulekile izohlala njalo iyimfihlo. Ilowo nalowo ozoba yingxenye yalolu cwaningo uzonikwa inombolo khona igama lakhe langempela lingeke lize lisetshenziswe. Imiphumela yocwaningo izobonwa ilowo owenza ucwaningo naloyo onguthisha waloyo owenza ucwaningo. Umangabe khona ongakuqondisisi, uvumelekile ukuba ubuze noma inini. Imininingwane ongathola kuyone loyo owenza ucwaningo uzonikezwa yona.

What is a Research Ethics Committee?

Human Research Ethics Committees (HRECs) review all research proposals involving human participants. The committee ensures that they are ethically acceptable. Should you have any questions or any concerns about participant’s rights or welfare, please feel free to contact us using the contact details provided below.

Should you have any further queries regarding your role in the study, please do not hesitate to contact us on the information provided below.

Yini iHuman Research Ethics Committee

IHuman Research Ethics Committees (HRECS) iyona ebheka zonke izicelo zokwenza ucwaningo oludinga ukuba abantu bangempela kube ibona ingxenye yocwaningo. Lelikomidi libhekelela ukuthi ucwaningo lwenzeke ngendlela okuyiyona. Uma kukhona imibuzo noma ukungabaza okuvukayo ngokuhlukumezeka kwamalungelo nempatho yalabo abayingxenye, ungakubika loku kulemininingwane enikiziwe ngezansi.

Uma unayo eminye imibuzo ephathelene neqhaza olindeleke ukuba ulidlale kulolucwaningo nakhona ungasishayela kule minininingwane ebhaliwe ngezansi.

Igama lomfundi: Faith Nefolovhodwe

I emeyili yomfundi: NFLTHE001@myuct.ac.za
Uthisha womfundi: Lucretia Petersen
I emeyili yathisha womfundi: Lucretia.petersen@uct.ac.za

Imininingwane ye Human Research Ethics Committee ya UCT ngaphathi kwezimpilo (health Science):

Ongaxhumana naye: Prof. M. Blockman
Ikheli lakhe: E52.24 Old Main Building, Groote Schuur Hospital

Inombolo yocingo: 021 406 6492 Prof. M. Blockman inombolo ye fax: 021 406 6411

“Isifiso sethu ukuthi sibe iYunivesithi engochwepheshe kwezokufundisa nokwenza ucwaningo, ukufundisa ngokwenmpilo kanye nokulwa nezinkinga ezimbekwe imiphakathi yethu”. [4]

[4] Flesch-Kincaid Grade Level: 8.0

Appendix P: isiZulu consent form

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences

Department of Health and Rehabilitation Sciences

Division of Communication Science and Disorders

F46 Old Main Building. Groote Schuur Hospital, Observatory, 7925

Inombolo yocingo: 021 406-6401

Inombolo yefeksi: 021 406 6323

Ifomu lokunika imvume yokuba ingxenye yocwaningo:

- Ngiyayiqonda inhloso yalolucwaningo
- Ngiyayiqonda indima yami nokuthi yini okumele ngiyenze ephathelene nalolonke uhlelo locwaningo.
- Ngiyaqonda ukuthi ngingakwazi ukuyeka ukuba ungxenye yocwaningo noma ingasiphi isikhathi, ngaphandle kokulandelwa imiphumela emibi.
- Nginikiwe imininingwane yokuxhumana ne UCT Faculty of Health Sciences Human Research Ethics Committee
- Nginikiwe ithuba lukubuza imibuzo.

Ngiyacela ucacise lapha ukuthi uyavuma noma uyanqaba ukuba ingxenye yalolucwaningo:

Mina, _____(ngxenye/lunga)

Ngiyavuma/ ngiyanqaba (kokolozela okuyikona impendulo yakho) ukuba ingxenye yalolucwaningo.

Mina,_____(ngxenye/lunga)

Ngiyavuma/ ngiyanqaba (kokolozela okuyikona impendulo yakho) ukuba ingxenye yomncintiswano wokuwina ivawucha engango uR500 yaka Pick ‘n’ Pay.

Mina,_____(ngxenye/lunga)

Ngiyavuma/ ngiyanqaba (kokolozela okuyikona impendulo yakho) ukuthi kuxhunywane nami futhi ngidluliselwe ukuyohlola ngokuphelele indlela ingane yami ezwa ngayo, uma kutholakela izimpawu zokungezwa kahle kwengane kwimibuzo engizoyiphendula..

Kusayinda loyo oyingxenye: _____Usuku: _____

Inombolo yocingo: _____

Appendix Q: isiZulu LEAQ

Auditory response		
1. Ingabe ingane yakho iyaphendula uma izwa izwi elaziyo?	□Yebo □cha	Uyamoziyela; uya uqhamuka khona; ngokudlala
2. Ingabe ingane yakho iyalalela uma kukhona okhulumayo?	□Yebo □cha	Uyalalela; uyalin ubheka okhulum aqede
3. Iyalijikisa yini ikhanda ingane yakho ibheke kumuntu okhulumayo?	□Yebo □cha	
4. Ingabe ingane yakho iyathanda ukudlala ngamathoyizi abanga umsindo noma akhala umculo?	□Yebo □cha	Ukukhehlezisa,uk
5. Ingabe ingane yakho iyamucinga okhulumayo uma ingamuboni?	□Yebo □cha	
6. Ngabe ingane yakho iyawulalela umsakazo/iCD/itape player uma udlala?	□Yebo □cha	Uyalalela: uyason komsindo, uyaleli uyacula/khulume
7. Ngabe ingane yakho iyayizwa imsindo ekude?	□Yebo □cha	Uma ebizwa ekam
8. Ngabe ingane yakho iyayeka ukukhala uma ukhuluma nayo ingakuboni?	□Yebo □cha	Uyazama ukudud eliphansi noma ng
9. Iyakhombisa ukuthuka uma ukhuluma ngezwi lokucasuka	□Yebo □cha	Ingane iba nokuph iqale ukukhala
10. Ngabe ingane yakho iyakwazi ukuzwa imsindo ejwayelekile?	□Yebo □cha	Ithoyizi eliculayo n amaculo; amanzi

11. Ngabe ingane yakho iyabheka lapho okuqhamuka khona umsindo ongaba kwa-right, kwa-left nangemuva?	□Yebo □cha	Uma ubiza noma kukhonkotha inja, ukuqalaza ibuke la uqhamuka khona
12. Ngabe ingane yakho iyaphendula makubizwa igama layo?	□Yebo □cha	
13. Ngabe ingane yakho iyawubheka umsindo oqhamuka phezulu noma phansi?	□Yebo □cha	Ukukhala kwewas ukuqathaka kwent
14. Ingabe umculo uyayiduduza yini ingane yakho uma icasukile noma ithukuthele ?	□Yebo □cha	
15. Ngabe ingane yakho iyayilalela yini i-phone futhi ikwazi ukubona ukuthi kukhona okhulumayo?	□Yebo □cha	Uma kufone umkh ingane iyakhuluma iyalalela.”
16. Ngabe ingane yakho iyadansa yin uma izwa umculo?	□Yebo □cha	Ingane iyanyakazi nezinyawo uma iw
17. Ngabe ingane yakho iyakwazi ukubona ukuthi umsindo othile ubangwe yinto ethile noma ngesikhathi esithile	□Yebo □cha	Ingane iyawuzwa futhi ibheke esibha uma izwa owemot emgwaqweni.
18. Ngabe ingane yakho iyakwazi ukuphendula kwimisho emifishane futhi elula?	□Yebo □cha	“Yekela!” “Sies!” “
19. Ngabe ingane yakho iyayeka into ayenzayo uma uyikhuza?	□Yebo □cha	Ukugcizelela uthi kwingane noma in
20. Ngabe ingane yakho iyawazi amagama abantu bakini?	□Yebo □cha	Uphi ..:uBaba, uJa
21. Ngabe ingane yakho iyakwazi ukulingisela imisindo uma ibuziwe.	□Yebo □cha	Ithi “Aaa”, “ooo”, “
22. Ngabe ingane yakho iyathumeka?	□Yebo □cha	“Woza la!”; “Khum
23. Ngabe ingane yakho iyayizwa iphinde iyiqonde imibuzo elula?	□Yebo □cha	“Sikhuphi isisu?”; “Khomba isisu sak
24. Ngabe ingane yakho iyakwazi ukuletha izinto mangabe uyithuma?	□Yebo □cha	“Ngilethele ibhola!

25. Ngabe ingane yakho iyayilandela imisindo noma amagama mawusho?	□Yebo □cha	“ithi; woof woof”; “
26. Ngabe ingane yakho iyakwazi ukulingisela imisindo ehambisana namathoyizi edlala ngawo?	□Yebo □cha	“Vurrm” ngemoto,
27. Ngabe ingane yakho iyakwazi ukuhlukanisa imisindo yezilwane ezithize?	□Yebo □cha	-Woof woof = inja; kikilikiki = iqhude
28. Ngabe ingane yakho iyazama ukulingisela imisindo ejwayelekile?	□Yebo □cha	Imsindo yezilwane izinto zasendlini, u yamaphoyisa
29. Ngabe ingane yakho iyakwazi ukulingisela imisindo emide noma emifishane?	□Yebo □cha	“La-la-laaa”
30. Ngabe ingane yakho iyakwazi ukukhetha into oyibizile Phakathi kwezinye izinto?	□Yebo □cha	Uma udlala ngama mese uyitshela uk ihhashi, iyakwazi y nidlala ngamabho uma umcela ukuth elimbomvu uyakw
31. Ngabe ingane yakho iyazama ukucula ihambisane neculo uma ilizwa?	□Yebo □cha	Iculo lasekresh/cr
32. Ngabe ingane yakho iyakwazi ukuphinda amagama mangabe itsheliwe?	□Yebo □cha	Valelisa kugogo w
33. Ngabe ingane yakho iyathanda ukufundelwa?	□Yebo □cha	Ebhukini noma es
34. Ngabe ingane yakho iyakwazi ukuthumeka izinto eziningi?	□Yebo □cha	“Khumula izicathu
35. Ngabe ingane yakho iyazama ukucula ndawonye namaculo ewaziyo?	□Yebo □cha	Amaculo okulala