

Selective auditory attention and listening comprehension in English additional language learners

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Declaration of originality

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DECLARATION

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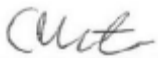
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I, Chanté Venter, hereby declare that the development of this research report is my own original work and has not been previously submitted at another tertiary institution. Where secondary material is used, this has been carefully acknowledged and referenced in accordance with the University of Pretoria's requirements.

I understand what plagiarism is and I am aware of the University of Pretoria's policy in this regard.



SIGNATURE

05/02/2019

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Abstract

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Abstract

Background: Auditory attention and listening comprehension are key skills required by school-aged children for the development of academic skills that will ensure overall learning success in a school context. These skills are particularly indispensable for EAL learners to achieve successful academic learning, as their learning takes place through an additional language. As yet no studies have investigated the listening comprehension and selective auditory attention abilities of young EAL learners.

Aim: To compare the selective auditory attention and listening comprehension skills of EAL learners aged seven to eight years.

Method: A descriptive comparative cross-sectional design was used to obtain data from learners, aged 84 to 102 months ($SD= 0.45$), at two independent urban schools. A static two-group comparison design was applied to compare the results of the research group (20 EAL participants) and the control group (20 EFL participants). Four outcome measures, namely the Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R), Digits-In-Noise Hearing Test (DIN), Selective Auditory Attention Test (SAAT) and Listening Comprehension Test 2 (LCT-2), were used.

Results: Although more EAL than EFL participants were scored as being at an academic risk on the S.I.F.T.E.R., no significant difference between the two groups was found. No significant difference was found on the DIN between the results for the EAL and EFL groups, although the EAL group obtained poorer scores. The EAL group scored significantly lower on the SAAT when the speech stimuli were presented together with a competing signal. A significant difference was found between the EAL and EFL groups in all the categories of the LCT-2.

Conclusion: These findings indicate the difficulty EAL learners experience with linguistically dependent tasks. This knowledge can be utilized to improve intervention and educational support aimed at developing their auditory attention and listening comprehension skills as a basis for literacy and academic learning.

Keywords: English additional language; English first language; auditory attention; listening comprehension; Screening Instrument for Targeting Educational Risk; Digits in Noise Hearing Test; Selective Auditory Attention Test; Listening Comprehension Test-2; South African context.

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List of abbreviations

EAL	English additional language
EFL	English first language
SES	Socio-economic status
DIN	Digits-In-Noise Test
SAAT	Selective Auditory Attention Test
SNR	Signal-to-noise ratio
APD	Auditory Processing Disorder
SRT	Speech Reception Threshold
S.I.F.T.E.R	Screening Instrument for Targeting Educational Risk
LoLT	Language of learning and teaching
LCT-2	Listening Comprehension Test 2

Chapter 1: Introduction and rationale

The aim of this chapter is to introduce this study's research topic as well as its relevance. A critical discussion of literature on the selective auditory attention and listening comprehension of English additional language (EAL) learners is provided. There is a need for research focusing on the selective auditory attention and listening comprehension in EAL learners aged seven to eight years in the South African context.

1.1 Introduction

The majority of children in South Africa are exposed to multiple languages from an early age, both in the home and in the community environment (Moonsamy & Kathard, 2015). Many young children acquire their first language at home, while being simultaneously exposed to a number of the other official languages of South Africa at their preschool. When children in South Africa enter formal schooling, the majority of them are not able to attend a school where they will receive instruction in their first language (Moonsamy & Kathard, 2015). In most cases the language of learning and teaching is English, which is their second or third language.

In African countries, a European language such as English is often regarded as the most important medium for higher functions in society (and accordingly for education), whereas indigenous languages fill a subordinate position or are only used in education to a certain extent, as is the case in South Africa (Kotzé & Hibbert, 2010; Taylor & von Fintel, 2016). Ndimande-Hlongwa and Wildsmith-Cromarty (2010) cited Alexander (2009) in describing a student's mother tongue as the language that a child knows best when they first come into contact with a school environment. They affirm the importance of teaching a learner through his or her mother tongue to afford the child the benefit of learning through the language that he/she understands best, to expand cognitive skills, and be provided with a better opportunity to apply the skills gained. Students' cognitive development and academic achievement have been reported as being markedly superior in schools where the medium of instruction was their home language (Henning, 2012; Kotzé & Hibbert, 2010).

English additional language (EAL) learners can be classified as learners whose learning of the English language succeeds that of their first language (Saville-Troike, 2016). Research has indicated that the majority of children in South Africa are learning in English, which is not their first language (Brock-Utne & Skuttum, 2009; Heugh, 2009; Spaul, 2016). Kotzé and Hibbert (2010) identified the decision to use English as the language of instruction and learning in schools, especially primary schools, as a contributing factor to the underdevelopment of academic skills in South Africa. Kotzé and Hibbert (2010) cited Pandor (2006), stating that a correlation has been found between the decreased usage of the mother tongue and the educational difficulties experienced by learners using another language for learning.

Despite evidence from research both in Africa and across the world that the mother tongue is crucial for true learning to occur at a deep level, English remains the chosen

medium of education in many countries (Ndimande-Hlongwa & Wildsmith-Cromarty, 2010). In low-income countries, including South Africa, when EAL learners enter formal schooling, they have seldom developed the necessary language proficiency to cope with formal or academic situations, where language is often used without previous context, and therefore cannot achieve successful academic learning (Taylor & von Fintel, 2016). To achieve success in an academic setting, learners should be able to understand and use classroom discourse that includes written text and the teacher's verbal instructions and lessons (Sert, 2015; van Rooyen & Jordaan, 2009). Learners therefore have to develop sufficient language skills in listening, speaking, reading, and writing, in the medium of instruction in order to progress academically.

It has been proposed by Borodkin and Faust (2014) that a learner's first language proficiency is possibly the most prominent predictor of their second language skills. First language phonological skills have been linked to second language phonological skills, oral competence, literacy skills, listening comprehension, and overall second language proficiency (Branum-Martin, Tao, & Garnaat, 2015; Kahn-Horwitz, Shimron, & Sparks, 2005; Lindsey, Manis, & Bailey, 2003; O'Brien, Segalowitz, Freed, & Collentine, 2007). The age at which learners are exposed to a second language also plays a very influential role on the overall success of second language acquisition (Flege, Schirru, & MacKay, 2003; Paradis, Rusk, Duncan, & Govindarajan, 2017).

The process whereby second language acquisition occurs is obviously a complex process with various factors influencing its progression (Vandergrift, 2004; Vandergrift & Goh, 2018). One of these aspects is listening comprehension. It is important for learners to learn to listen, especially when learning a second language (Gilakjani & Sabouri, 2016; Vandergrift, 2004). Listening has been identified as a fundamental skill to acquire a second language (Yilmaz & Yavuz, 2015). EAL learners often experience listening problems which may be due to reduced auditory attention (Moore, Ferguson, Edmondson-Jones, Ratib, & Riley, 2010; Saville-Troike & Barto, 2016). The process of listening requires neurological, linguistic, pragmatic, and semantic processes that simultaneously draw on the individual's knowledge about linguistics, communicative context, and world knowledge (Rost, 2011; Vandergrift & Goh, 2018). EAL learners with limited second language knowledge experience listening as a taxing rather than an automated process (Brunfaut & Révész, 2015). The listening abilities of EAL learners should be a focus area for educators and language therapists, not only to ensure successful learning of English as Additional Language, but also to enable learners to listen better in order to learn and comprehend information.

The auditory skills required to integrate, interpret, and comprehend auditory information include the ability to detect and attend to auditory information, localization, discrimination, identifying, categorizing and associating the target information with related items through memory and retrieval (Cole & Flexer, 2015). Along with these auditory skills, the balanced operation of top-down and bottom-up processes are needed for successful second language listening comprehension (Vandergrift, 2004; Vandergrift & Goh, 2018).

Previous research investigated the cognitive procedures that take place at various stages of comprehension and identified processing problems that arise as a result of the inability of listeners to process information due to a lack of prior knowledge or the

inappropriate application of prior knowledge (Nguyen & Abbott, 2016). EAL learners often experience difficulties such as not being able to recognize words, missing portions of a text, and problems arising due to unclear pronunciation, that is associated with bottom-up processing (Vandergrift & Goh, 2018). Comprehension of verbal information occurs when listeners are able to deduce what is said based on their contextual knowledge and linguistic background (Chang, Wu, & Pang, 2013). Therefore, if EAL learners do not have the required contextual knowledge, or do not apply their knowledge appropriately, they may experience difficulties with listening and with the comprehension of verbal information.

Both the development of listening skills and an improved control over the process of listening are essential. It is required especially to enhance EAL learners' comprehension and thereby to ensure the overall success of EAL learning (Vandergrift, 2007; Vandergrift & Goh, 2018). The essence of EAL learning lies in listening comprehension, which is the interactive and complex task of converting spoken language to meaning in the mind (Schafer et al., 2013; Vandergrift, 2007). The skills to listen effectively are seldom taught in the classroom. Listening comprehension is a key language skill required by school-aged children to develop their academic skills (Dias, Montiel, & Seabra, 2015; Vandergrift, 2007; Vandergrift & Goh, 2018). When EAL learners' listening difficulties are better understood and the areas in cognitive processing where problems with comprehension can arise are identified, more informed decisions can be made to guide learners in ways to manage or overcome some of their listening difficulties in an educational setting (Gilakjani, & Sabouri, 2016).

Selective auditory attention also has a significant impact on the academic foundations of language, literacy, and mathematics (Stevens & Bavelier, 2012). Through the process of selective attention, a specific input is selected from a range of sound inputs, and the individual focuses on this input for further processing, whilst irrelevant or distracting information is simultaneously being suppressed (Isbell, Wray, & Neville 2016; Stevens & Bavelier, 2012). Selective auditory attention provides a mechanism for determining which section of the sound input will be brought to the level of awareness (Rämä et al., 2018; Strait & Kraus, 2011). Above and beyond the fact that they have to perform academically in a second language, EAL learners are bombarded with auditory and visual distractions in the typical classroom environment, all of which impact their auditory performance (Schafer et al., 2013).

A primary concern for teachers and clinicians is a child's ability to attend to a target signal and suppress any competing noise, precisely because this is so important for learning and communication (Isbell et al., 2016; Strait & Kraus, 2011). Learners are generally faced with adverse classroom conditions which make it challenging for a child to focus on the teacher's instructions or the task at hand (Davidson & Wilson, 2016; Stevens, Lauinger, & Neville, 2009).

The American Speech-Language Hearing Association has laid out recommendations for classroom acoustics in terms of the unoccupied noise levels and reverberation levels (ASHA, 2005). The main components that influence the acoustic conditions of classrooms are the internal and external classroom noise, reverberation effect, signal-to-noise ratio, and the distance between the listener and the primary signal (Johnson

& Seaton, 2012; Puglisi, Warzybok, Kollmeier, & Astolfi, 2017). EAL learners have more trouble perceiving speech in the presence of reverberation and noise than EFL learners (Tabri, Chacra, & Pring, 2011). All of the preceding factors may impact the effectiveness of EAL learners' learning abilities.

Pure tone threshold audiometry or speech threshold audiometry that is performed in a quiet environment is therefore inadequate for obtaining an accurate depiction of a child's hearing abilities in a classroom situation where noise and reverberation are present. It has been suggested by Schafer et al. (2013) that while threshold and supra-threshold testing provides an indication of a child's threshold of hearing, it does not provide an accurate indication of a child's listening abilities in a classroom situation. If speech recognition testing is not performed in the learner's mother tongue, a true indication of the child's speech reception threshold may not be obtained, as the child may not have the required contextual knowledge and linguistic background to perform optimally.

Valente, Plevinsky, Franco, Heinrichs-Graham, and Lewis (2012) reported that in conditions with a poor signal-to-noise ratio, the participants' performance on listening comprehension tasks was significantly poorer than their speech recognition performance, and children of a younger age's performance was affected more in comparison to older children and adults (Valente et al., 2012). The evaluation of learners' listening comprehension as well as their selective auditory attention is required to determine if any listening difficulties are experienced, as the presence of normal hearing results alone is not sufficient. The inclusion of these methods of evaluation are needed as EAL learners may not be able to comprehend auditory information, especially in a classroom where the acoustics are not in compliance with guidelines as set out by the American Speech-Language Hearing Association (2005).

Effective listening in the classroom enables learners to process multiple incoming signals, and to establish which signals require immediate attention in order to comprehend the input and to plan a suitable response. Academic skills that require listening comprehension include the ability to determine the main idea and details of information, answering questions, following instructions, and taking part in classroom discussions (Schafer et al., 2013).

1.2 Problem statement and rationale

The fact that English is used as the language of instruction and learning in the majority of schools in SA, especially primary schools, has been designated a contributing factor to the underdevelopment of learners' academic skills in SA (Henning, 2012; Kotzé & Hibbert, 2010; Taylor & von Fintel, 2016). EAL learners experience great difficulty understanding educational material in their additional language (Kathard & Moonsamy, 2015) as EAL learners have seldom developed the necessary language proficiency to achieve successful academic learning (Taylor & von Fintel, 2016). Research specific to EAL learners is therefore important to assist in developing suitable principles of instruction and education for these learners (Kotzé & Hibbert, 2010; Saville-Troike & Barto, 2016; Vandergrift, 2007).

In order for EAL learners to comprehend a verbal message in a classroom setting, they are required to attend to a signal whilst suppressing the competing noise. The

ability to attend to a target signal, whilst suppressing competing noise, is of key importance for learning and communication (Isbell et al., 2016; Strait & Kraus, 2011). This process of selective auditory attention occurs whilst the EAL learners are being educated in a language of which they may not possess the required contextual knowledge. Speech recognition in noise is a challenging task, but even more so when it is done in a second language (Warzybok, Brand, Wagener, & Kollmeier, 2015). An EAL learner's ability to recognise speech in noise can be assessed through the Digits-In-Noise Hearing Test (Smits, Goverts, & Festen, 2013). Digits are known by children from a young age and are typically amongst the first words that are learned in a second language, and therefore digit pairs are ideal for testing the speech recognition in noise abilities of non-native speakers of English (Smits et al., 2013). It is necessary to determine how EAL learners use their listening skills to transfer what they have learned in a classroom setting, into their daily lives (Bowers, Huisingsh, & LoGiudice, 2006; Dias, Montiel, & Seabra, 2015; Schafer et al., 2013). Their listening comprehension can be determined by evaluating their strengths and weaknesses in certain listening comprehension skill areas (Bowers, Huisingsh, & LoGiudice, 2006; Vandergrift & Goh, 2018) that represent the type of listening required by EAL learners in a typical classroom setting in SA. Since auditory skills, listening comprehension, and selective auditory attention all consist of integrated, layered components, difficulties experienced by an EAL learner may go undetected or may only be identified at a later stage in his/her academic career.

To date very few studies have investigated the listening comprehension and selective auditory attention abilities of young EAL learners. Given the range of auditory demands with which children are faced in typical classrooms, along with the importance of listening comprehension and selective auditory attention to achieve academic success, additional research is warranted to determine how EAL learners in South Africa perform on the Listening Comprehension Test 2, the Selective Auditory Attention Test, and the Digits-In-Noise Hearing Test. An improved understanding of the listening comprehension and selective auditory attention abilities of EAL learners may lead to the development of intervention strategies that will be effective in addressing the challenges these learners face in the South African context. Considering that learners are required to develop proficiency in their language of learning for formal or academic situations at a young age, further research for this population is warranted. If the appropriate intervention is not provided to ensure successful development of listening comprehension and selective auditory attention, the academic progress and achievement of EAL learners may be adversely affected. The aim of this study, therefore, is to compare the auditory attention and listening comprehension abilities of EAL learners.

Chapter 2: Methodology

The aim of this chapter is to outline the system and methods that were used in this study. The chapter will provide a comprehensive description of the research design that was utilized in the study in order to determine the selective auditory attention and listening comprehension in English additional language (EAL) learners aged seven to eight years. The ethical considerations, study participants, data collection, and analysis procedures will be discussed and justified in this chapter.

2.1 Research aim

The aim of the study was to compare the selective auditory attention and listening comprehension skills of EAL learners aged seven to eight years.

2.2 Research design

Descriptive research aims at describing a group of people, a phenomenon, or an event (Nassaji, 2015; Salkind, 2010). Descriptive research is one of the first steps in understanding social issues and problems as it describes who is experiencing the problem, the extent of the problem, and the duration of the problem (Blaikie & Priest, 2019; Salkind, 2010).

The research employed a descriptive comparative cross-sectional design as the selected participants were assigned to either the control group (EFL learners) or the research group (EAL learners) (Leedy & Ormrod, 2014). A static two-group comparison design was therefore applied in this research study to determine the influence of a specific variable, namely EAL learning, on the dependent variables namely selective auditory attention and listening comprehension (Leedy & Ormrod, 2014). A cross-sectional design is typically used to describe patterns of variables within a population and all the data is collected at one specific point in time (Maxwell & Satake, 2006; Salkind, 2010).

A quantitative research approach was used for this study. The goal of quantitative research is to quantify data so that it can be statistically analysed (Salkind, 2010). The quantitative research model involves using formalized tests and instruments to accurately and objectively specify the characteristics of data in numerical terms (Maxwell & Satake, 2006). The Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R) (Anderson, 2014), Digits-In-Noise test (DIN) (Potgieter, Swanepoel, Myburgh, Hopper, & Smits, 2016), the Selective Auditory Attention Test (SAAT) (Auditec, 2015) and the Listening Comprehension Test 2 (LCT-2) (Bowers, Huisingsh, & LoGiudice, 2006) provide numerical values for the participants' scores, allowing for their auditory attention and listening comprehension abilities to be quantified.

2.3 Ethical considerations

In order to safeguard the participants in a variety of research contexts certain ethical principles should be taken into consideration (Leedy & Ormrod, 2014). It is expected of researchers to abide by these principles in order to ensure ethical and responsible

research. Ethical clearance was obtained from the Research and Ethics Committee (RESCOM) of the Department of Speech-Language Pathology and Audiology and the Research Ethics Committee of the Faculty of Humanities (Appendix A) at the University of Pretoria. Written approval was also obtained from the two schools that were approached to conduct the study at the school (Appendix B).

The ethical considerations that were considered, in accordance with the South African National Health Act No 61 (National Health Act, 2004), were as follows:

2.3.1 Informed consent

The principals of two private schools were provided with an information letter (Appendix B) and informed consent was obtained from the principals. The teacher participants of the schools were also provided with an information letter and had to provide informed consent prior to completing the S.I.F.T.E.R for each participant (Appendix C).

Relevant information regarding the study was provided to the learner participants' parents or guardians in the participant information letter (Appendix D). A written consent form (Appendix E) was completed and signed by the participants' parents before commencement of the study.

Assent also had to be obtained from the under aged participants. Information was provided to them through the use of pictures as well as a verbal explanation (Appendix F). Assent was then obtained from them by indicating 'Yes' if they wanted to participate, and 'No' if they did not provide assent (Appendix G). Participants were given the right to withdraw at any time during the study without any negative consequences.

2.3.2 Beneficence and non-maleficence

The researcher ensured maximum benefit, with minimal harm or risk whilst conducting the research study. The deliberate infliction of harm on participants is forbidden by the University of Pretoria's code of ethics for research (University of Pretoria, 2018). It was explained in the written consent form that the participants would be protected from any physical or psychological harm, the comfort and safety of the participants would be ensured, and participants were to be treated in a respectful manner. No dangerous or harmful procedures were used by the researcher, as indicated (Appendix D).

2.3.3 Confidentiality

Confidentiality refers to the appropriate measures implemented to prevent the disclosure of identifying information regarding the participants, during or after the research study (University of Pretoria, 2018). Confidentiality of each participant's identity, personal information, and results was assured by the researcher by assigning each participant a unique code to ensure that no identifying information about the participant was disclosed during the data analysis.

2.4 Setting

The research study was conducted at two private schools in the Tshwane district, in the Gauteng province of South Africa. The two schools were selected based on convenience sampling, as well as their willingness to participate in the research study. Private schools were selected as it was expected that the participants would have been exposed to similar SES backgrounds, in order to reduce variables in their language exposure (Landsberg, Krüger, & Swart, 2016). The majority of the learners at the first school were EAL learners and the majority at the second school were EFL learners.

2.5 Sampling method

A non-random, purposive convenience sampling method was used to select the participants. Participants were selected for the specific purposes of the study (Leedy & Ormrod, 2005; Setia, 2016). In purposive sampling, a smaller group of key individuals are selected to represent a larger group (Maxwell & Satake, 2006). Participants were selected for the aim of the study according to the inclusion criteria.

Participants were purposively sampled from a group of learners, based on the inclusion criteria of either the experimental group or the control group. The participants' teachers assisted in providing information on the learners' home language, in order to identify learners that would possibly fall within the inclusion criteria. In accordance with previous research (Anderson, 2014; Morrow, Jordaan, & Fridjhon, 2005), further information was obtained from the case history questionnaires (Appendix H), which was used to determine which of the learners met the inclusion criteria. If the inclusion criteria were not met, the participant was excluded from the study.

Matching samples is a control procedure designed to restrict the degree to which the participants differ, by pairing them according to particular characteristics (Maxwell & Satake, 2006). This was done to ensure that there were minimal differences between the EAL and EFL participant groups. The EAL participants were paired with the EFL participants according to their age, parents' level of education and family income, which are associated with children's language learning (Owens, 2012).

Convenience sampling implies that participants who were available at the schools and were willing to participate in the research were included (Salkind, 2010). The teachers who were participants in the study were also selected according to the classes in which the participants had been placed.

2.6 Participants

Participants were assigned either to the experimental group (EAL learners) or the control group (EFL learners). All of the participants of both the EAL and the EFL group had to meet the selection criteria (see below). All of the participants (EAL and EFL groups) had to have been formally exposed to English in school for 12 to 18 months (they needed to have been enrolled in a school/ pre-school where English was the medium of instruction). This was specified to ensure that the participants had been sufficiently exposed to English as the assessments were conducted in English.

Participants were classified as belonging in either the EAL or the EFL participant group based on their first language (their mother tongue). If the participant's first language was English (i.e. they spoke English at home), they were categorized in the EFL group. If the participant's first language (language used at home) was a language other than English, the participant was classified as an EAL participant. The selection criteria for the participants were as follows:

2.6.1 Participant selection criteria

The forty research participants, including both males and females, had to adhere to the following inclusion criteria:

- Participants between the ages of seven and eight years (84-102 months) were selected for the research study. This age category requires optimal listening skills and listening comprehension in order to develop academically (Schafer et al., 2013). It was used to ensure that sufficient maturation had occurred and that the participants were capable of providing reliable responses. Learners of this age are also in a foundation phase, which forms the basis for the development of their literacy skills.
- All participants needed to present with normal peripheral hearing and normal middle ear functioning in order to ensure the reliability of the assessment.
 - The pure tone average thresholds of the participants had to be 25 dB or less at 1000, 2000, and 4000 Hz (Swanepoel et al., 2014).
 - Normal acoustic immittance results had to be obtained. Type A tympanograms with a tympanic pressure of -150 to 150 daPa; static compliance of 0.3 ml to 1.75 ml; and an ear canal volume of 0.8 to 1 ml had to be obtained (Katz, 2014). Acoustic reflex thresholds between 70 and 95 dB SP at 1000 Hz were required.

Participants were excluded from the research study if they presented with the following characteristics:

- Pure tone average thresholds of more than 25 dB at 1000, 2000, and 4000 Hz.
- A history of recurrent otitis media, as research has indicated that chronic otitis media may be linked to central auditory processing deficits even after the otitis media has been resolved and hearing has returned to normal hearing levels (Chermak, Hall, & Musiek, 1999; Khavarghazalani, Farahani, Emadi, & Hosseni Dastgerdi, 2016). The case history questionnaire (Appendix H) was used to determine if a history of otitis media existed.
- No indication of conditions that might influence listening responses. Participants were excluded from the research study if they presented with learning disabilities and Attention Deficit Hyperactivity Disorder (ADHD) or head trauma, as confirmed by their teachers as well as their parents/ guardians on the case history questionnaire (Appendix H), since any of these conditions might influence the results that were obtained (Auditec, 2015).

2.6.2 Material and apparatus for participant selection

The materials and apparatus outlined in Table 1 were utilized for participant selection in this study.

Table 1: Material and apparatus for participant selection

Material and apparatus	Motivation
Case history questionnaire (Appendix H).	Information on the participant's history of middle ear infections, hearing loss, medication use and academic performance was obtained. Information supplied by the parents was also used as an indication of the level of exposure to the English language.
WelchAllyn PocketScope Otoscope with reusable specula.	The otoscope was used to visually examine the external ear canal and tympanic membrane to ensure that no abnormalities or excessive cerumen was present.
GSI 39 Auto Tymp: Comprehensive middle ear tympanometry. <i>(GSI 39 Auto Tymp is calibrated annually, according to protocol. Ref. ANSI S3.6 / ISO 389).</i>	Acoustic immittance testing was performed to examine participants' middle ear functioning and participants with middle ear pathologies were excluded from the study and referred for further management of the condition.
HearScreen™ application (Swanepoel, Myburgh, Howe, Mahomed, & Eikelboom, 2014) installed on a smartphone device.	Participants' hearing thresholds were determined by using pure tone screening at 1000, 2000 and 4000Hz.

2.6.3 Participant selection procedure

Following ethical clearance, and permission obtained from the schools' principals, potential participants were identified by the researcher. All potential participants were assessed to ensure that the selection criteria were met. In order to establish the participants' outer and middle ear functioning, otoscopic examinations and tympanometry were performed. Behavioural pure tone hearing screening was conducted by the researcher, according to the child protocol for hearing screening (Yousuf Hussein et al., 2016). Participants were provided with a letter to their parents/guardians, stating that the participant had passed the hearing screening (Appendix I). Alternatively a referral letter for further assessment was provided to the parents/guardians if the participant failed the screening (Appendix J).

The participants were purposively selected according to the inclusion and exclusion criteria and divided into the experimental group (EAL learners) or the control group (EFL learners). The teachers who participated in the research study were the teachers of the respective participants.

2.6.4 Participant description

- **Learner participants**

A description of the participants is provided in Table 2.

Table 2: Participant characteristics (n=40)

Participant characteristics	EAL group (n = 20)	EFL group (n = 20)
<i>Age in months</i>		
Mean	90,50	92,65
Standard deviation	5,57	5,34
Minimum	84	85
Maximum	100	100
<i>Gender</i>		
Female	n=14 (70%)	n=9 (45%)
Male	n=6 (30%)	n=11 (55%)
<i>Home language</i>		
English		n=20 (100%)
Afrikaans	n=1 (5%)	
Isi Ndebele	n=1 (5%)	
Isi Khoza	n=2 (10%)	
Isi Zulu	n=4 (20%)	
Sepedi	n=4 (20%)	
SeSotho	n=2 (10%)	
Setswana	n=4 (20%)	
Other (Shona)	n=1 (5%)	
Other (Swahili)	n=1 (5%)	
<i>Exposure to English</i>		
Caregivers	n=7 (35%)	n = 12 (60%)
Television	n=17 (85%)	n=20 (100%)
Books	n=17 (85%)	n=20 (100%)
Radio	n=12 (60%)	n=16 (80%)
Play with friends or family members	n=16 (80%)	n=19 (95%)
Nursery school	n=18 (90%)	n=18 (90%)
Grade R	n=20 (100%)	n=20 (100%)

This table describes the characteristics of the participants used in this study.

Each group consisted of 20 participants. There was no statistical difference between the ages in the research group and the control group ($p= 0.48$). The primary home languages of the EAL group were IsiZulu, Sepedi and Setswana.

The majority of the participants ($n=38$) attended an English nursery school. All of the participants ($n=40$) were exposed to English in an educational setting from Grade R. A larger number of participants in the EFL group were exposed to English through their caregiver ($n=12$) than in the EAL group ($n=7$). The participants presented with the following differences in their exposure to English (Table 3):

Table 3: Differences in exposure to English between the two groups

Exposure to English	Statistical computation		
	Mann-Whitney U	p-value	
<i>Age of exposure (years)</i>			
Caregivers	191,00	1,000	
Television	165,00	0,335	
Books	126,00	0.039*	
	Age of exposure to English books (years)	EAL group (n=20)	EFL group (n=20)
	Mean (=1.9 years)	2,50	1,30
	0-1.9 Years	n = 6 (30%)	n = 11 (55%)
	>1.9 Years	n = 14 (70%)	n = 9 (45%)
Radio	159,50	0,235	
Play with friends or family members	135,00	0,071	
Nursery school	196,00	0,917	
Grade R	160,00	0,343	
<i>Daily exposure (hours)</i>			
Caregivers	151,00	0,154	
Television	174,00	0,481	
Books	196,00	0,911	
Radio	192,00	0,831	
Play with friends or family members	148,50	0,161	
Nursery school	158,50	0,258	
Grade R	140,50	0,095	

*, statistically significant, $p \leq 0.05$

The Mann-Whitney U test confirmed that there was a significant difference between the two groups' age of exposure to English book reading ($p=0.039$). No other statistically significant differences were noted between the EAL and the EFL groups regarding their exposure to English.

All of the participants' otoscopy results indicated no abnormalities in the outer ear canal. Normal acoustic immittance results of type A tympanograms were obtained by all the participants. A pass result was obtained by all participants on the HearScreen™ application.

- **Teacher participants**

Nine teachers participated in the study. All of the teachers completed their studies at tertiary educational institutions. The teachers spoke English fluently. Only qualified teachers working with the participants on a daily basis since the beginning of the school year were included. Student teachers were excluded from the study. The teachers were all fully competent in English as they taught all their classes in English only and spoke English as their personal home language.

2.7 Data collection

The following information pertains to the data collection.

2.7.1 Materials and apparatus for data collection

The following materials and apparatus were utilized for data collection in this study:

- **Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R):**
The S.I.F.T.E.R is a subjective questionnaire designed to collect information on a variety of skill areas that are essential for success in the classroom (Anderson, 2014). The S.I.F.T.E.R has been field tested and shown to have good content and score reliability (Anderson, 1989).

The S.I.F.T.E.R was used to determine the functional performance of the participants, in comparison to their peers, based on their teacher's perception (Anderson, 2014). The S.I.F.T.E.R is a 15 item questionnaire that uses a five-point Likert-type scale and was developed through the identification of several areas of risk based on literature research and other instruments (Damen, Langereis, Snik, Chute, & Mylanus, 2007; Wilson et al., 2011). It consists of five areas, each represented by three questions determined after content validity tests and item analysis (Damen et al., 2007). The five content areas according to which each participant's performance was rated comprised academics; attention; communication; class participation; and social behaviour (Wilson et al., 2011).

- **Digits-In-Noise Hearing Test (DIN):**
Speech recognition in noise can be assessed through the Digits-In-Noise Hearing Test (Smits et al., 2013). An advantage of the test is that highly familiar spoken words, digit-triplets, are presented as speech material (Potgieter, Swanepoel, Myburgh, Hopper, & Smits, 2016). Digits are known by children from a young age and are amongst the first words that are learned in a second language (Smits et al., 2013) and therefore digit pairs are ideal for testing non-native speakers of English (Ramkissoo et al., 2002; Smits et al., 2013).

The DIN assesses the bottom-up process of speech recognition abilities in noise (Smits et al., 2013). As simple, familiar words of digit speech material in a closed set paradigm are used, the linguistic demand and the contribution of top-down processing required from the listener are minimized, and it can therefore be used as a diagnostic measure of auditory speech recognition abilities in noise (Smits et al., 2013). It has been found that when speech reception thresholds are determined for second language listeners, a closed-set speech test should be used, rather than an open-set speech test (Warzybok et al., 2015).

Everyday speech-in-noise environments are approximated with the DIN (Jansen, Luts, Wagener, Frachet, & Wouters, 2010; Zokoll, Wagener, Brand, Buschermöhle, & Kollmeier, 2012; Smits et al., 2013). The South African digits-in-noise hearing test, that was successfully developed and validated as a self-test on a smartphone via a smartphone application

using standard and clinical headphones, was used for this study (Potgieter et al., 2016).

- **Selective Auditory Attention Test (SAAT):**
The Selective Auditory Attention Test (SAAT) is a monaural low-redundancy speech test. The SAAT was developed as a speech-in-competing-message test (Cherry & Rubinstein, 2006). It was developed for the early identification of children who have difficulty attending to auditory information, especially in the presence of noise (Auditec, 2015). The ability to attend to a target signal and suppress any competing noise is of significant importance for learning and communication (Strait & Kraus, 2011).

The SAAT is a picture-pointing task that uses the four lists of the Word Intelligibility by Picture Identification (WIPI) Test. Each of the four lists consists of 25 monosyllabic words (Cherry & Rubinstein, 2006). The words for lists one and three of the SAAT were recorded in quiet. Lists two and four of the SAAT consists of words recorded with a competing noise. The competing noise for lists two and four comprised of a speaker telling a story that was chosen to be interesting to children (Cherry & Rubinstein, 2006). The signal and competing message were recorded at a 0dB signal-to-competition ratio, to increase the difficulty of the test.

The SAAT was designed to be quick and easy to administer, taking only eight minutes to both administer and score (Cherry & Rubinstein, 2006). It has been confirmed that it is viable and can be used in a clinical setting (Chermak & Montgomery, 1992). The SAAT has been found to have good test-retest reliability (Cherry, 1980) as well as high inter-list reliability (Chermak & Montgomery, 1992; Cherry, 1980).

- **Listening Comprehension Test 2 (LCT-2):**
The LCT-2 was developed by Bowers, Huisingsh, and LoGiudice (Bowers et al., 2006). Listening comprehension is the interactive and complex task of converting spoken language to meaning in the mind (Schafer et al., 2013) and is concluded on the basis of task completion (Vandergrift, 2007; Vandergrift & Goh, 2018). Diagnostic testing of the participants' listening comprehension indicated their strengths and weaknesses in certain listening comprehension skill areas that are associated with classroom situations. Strengths and weaknesses in terms of integrated language problem solving, reasoning, and comprehension of auditory material were revealed by the Listening Comprehension Test 2 (LCT-2) (Bowers et al., 2006).

The test requires the participant to identify the part of the message that requires immediate attention; to comprehend the input; and to plan the applicable response by integrating the communication skills of vocabulary and semantics, syntax and morphology, phonology, and thinking (Bowers et al., 2006). Vocabulary plays a role in listening, as does working memory, as it is required for the processing of information.

Listening comprehension is necessary in order to attend to, process, and respond to what is heard, especially in a classroom setting.

The test comprises of the following subtests (Bowers et al., 2006):

-Subtest A (Main Idea): It is important that a learner is able to identify the main idea of a story, math problem, or educational topic, and this ability is needed throughout their school career.

-Subtest B (Details): Learners need to separate significant detail from unimportant information, especially whilst reading books. Often books contain unimportant information that adds interest but not meaning to the story.

-Subtest C (Reasoning): Reasoning and thinking involve the ability to demonstrate thoughts beyond mere perception, by talking or writing about inferences, comparisons, contrasts, and conclusions, as well as decision making.

-Subtest D (Vocabulary): Vocabulary deficits may affect a learner's reading, communication, and learning abilities.

-Subtest E (Understanding messages): It is important for learners to understand a message, even if the message contains lengthy instructions or socially acceptable yet irrelevant information.

The test was standardized on 1,504 subjects. Reliability has been established by test-retest and internal consistency methods. Validity has been established by content validity and contrasted group validity (Bowers et al., 2006).

2.7.2 Procedures for data collection

The DIN, SAAT and LCT-2 were administered during two sessions. The order in which the tests were conducted was randomized, in order to avoid order effects (Kendall, 2003). If the participant required it, a break was allowed. The experimental group (EAL) learners and the control group (EFL) learners were evaluated in the same manner, with the same time frame and setting. The S.I.F.T.E.R was completed for every individual learner by each participant's respective teacher.

The following procedures were utilized for data collection in this study:

- Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R) (Anderson, 2014):
The S.I.F.T.E.R is a 15 question questionnaire (Wilson et al., 2011). It consists of a scoring chart that was completed for each learner participant by the participant's respective teacher. The teachers awarded scores of one to five on the individual questions of the different content areas. A total score was calculated for each content area. The teacher's responses were plotted on a chart, indicating a pass, marginal score, or fail for each of the five content areas (Damen et al., 2007).
- Digits-In-Noise Test (DIN) (Potgieter et al., 2016):

The DIN was presented binaurally out-of-phase on a smartphone with headphones in a quiet room. The participants were expected to press the numbers on the keypad as they were heard (Potgieter et al., 2016). The first triplet was presented to the participant based on his/her selected comfortable listening intensity. Following the entered response, the next digit-triplet was automatically presented at a 2 dB higher signal-to-noise ratio (SNR) for an incorrect response or at a 2 dB lower SNR for a correct response, with a triplet being judged as correct when all digits had been entered correctly (Potgieter et al., 2016). The speech reception threshold (SRT) was calculated as the average SNR of the triplets presented, and was used as an indication of the participant's speech perception in noise (Potgieter et al., 2016).

- Selective Auditory Attention Test (SAAT) (Auditec, 2015):
The SAAT is a closed-set, picture-pointing task (Cherry & Rubinstein, 2006). The four lists of the Word Intelligibility by Picture Identification (WIPI) Test are used for the test.

The SAAT was administered in a moderately quiet room through headphones at a comfortable listening level for all conditions. The comfortable listening level was indicated by the participant. Participants received lists one to four diotically through the headphones.

The participant was requested to point out the corresponding picture on the WIPI Test, as it was heard over the headphones. A point was scored for each picture that was correctly identified. A percentage score was then calculated for each of the four lists.

- Listening Comprehension Test 2 (LCT-2) (Bowers et al., 2006):
The test was presented to the participants in an environment with a low level of environmental noise, using live voice. The LCT-2 consists of 25 stories, with the length of the story varying between two and ten sentences, and three to four questions for each story.

The participant was required to complete the following subtests of the LCT-2 (Bowers et al., 2006):

-Subtest A (Main Idea): The participant had to identify the main idea after listening to a passage that was read aloud by the researcher, by recalling background knowledge of the topic in order to comprehend the passage's overall meaning.

-Subtest B (Details): The participant had to listen to a passage and answer a question about the details, by relying on the grammar, vocabulary, and semantics of the passage in order to understand the details.

-Subtest C (Reasoning): The participant had to deduce answers from information presented verbally and utilize higher-level cognitive skills.

-Subtest D (Vocabulary): The participant had to give a one-word synonym or definition for a word heard in the passage.

-Subtest E (Understanding messages): The participant had to listen to a short message and answer two questions regarding the content.

The list of acceptable and unacceptable answers in the test manual was consulted. Listening comprehension was calculated by adding the number of correct responses within each subtest area and for the whole test to obtain a mean raw score. An age equivalent, standard score, and percentile rank were then deduced from the raw score according to the participant's chronological age (Schafer et al., 2013).

2.8 Statistical data analysis

All data obtained during the research study was edited, coded and classified. Raw data was stored in a Microsoft Excel spreadsheet in a coded format and analysed by means of the Statistical Package for the Social Sciences 23.

The SAAT was scored in terms of the number of correct responses, and a percentage of correct responses was calculated. The SAAT results were compared for the EAL and EFL groups based on the percentages of correct responses obtained on the four lists. The results obtained in the LCT-2 were analysed according to standardized scores. Standard scores describe the distance of the raw scores obtained from the mean, in terms of the standard deviation of the scores (Bowers et al., 2006). The standard scores obtained on the LCT-2 by both participant groups were compared. The DIN test was scored in terms of an SNR obtained. The SNRs obtained by the participants of the EAL and EFL groups on the DIN test were compared. The S.I.F.T.E.R was scored in terms of a total score that was obtained for each of the five content areas. The total score of each of the content areas was categorized as a pass, marginal score, or fail, on the S.I.F.T.E.R's scale. The scores obtained by the participant groups were compared in terms of their pass, marginal score, or fail categorization.

As the sample size was less than 50, the Shapiro-Wilk test was used to establish normality of the data (Appendix N). The majority of the p-values were less than 0.05, therefore normality was not achieved and nonparametric tests were used. Inferential statistics were used to compare and analyse the results obtained. The Mann-Whitney U test was used to determine the significant differences in exposure to English between the EAL and EFL participants (MacFarland & Yates 2016; Nachar, 2008). The Shapiro-Wilk test was used to establish normality of the data (Górecki, Hörmann, Horváth, & Kokoszka, 2018). To determine the overall outcome of the comparison of S.I.F.T.E.R scores for the EAL and EFL participants, the Fisher's Exact test was used (Kim, 2017). The Mann-Whitney U test was also used to determine the overall outcome of the data comparison of the SAAT, LCT-2 and DIN between the participant groups (MacFarland & Yates 2016). The Spearman Rank Correlation was used to determine the strength of association between the SAAT, LCT-2, and DIN (Puth, Neuhäuser, & Ruxton, 2015).

2.9 Reliability and validity

Reliability is the degree of consistency and accuracy of findings in a study (Leedy & Ormrod, 2014). The same test battery was performed on all participants, which

supports the reliability of the research. To ensure that accurate results were obtained, participants received comprehensive instructions to ensure that they fully understood what was expected of them and how they had to respond.

Validity is the degree to which measurements that are used to obtain data are correctly measuring what they are intended to measure (Heale & Twycross 2015; Leedy & Ormrod, 2014). Validity was ensured in the current study by the strict selection criteria that were applied to ensure homogenous groups. Data was collected by the researcher by using different tests, all assessing related auditory processes. If any concurrence were established between the tests it could be interpreted as increasing the validity of the results. Validity of the SAAT, LCT-2, DIN, and S.I.F.T.E.R has been established through previous research (Anderson, 1989; Bowers et al., 2006; Chermak & Montgomery, 1992; Potgieter et al., 2016).

As stated in the LCT-2 guideline, the test was standardized using subjects from regular education, special education, all socioeconomic levels, and various culture groups (Bowers et al., 2006). The LCT-2 guideline states that their analysis of variance tests indicate that there were some race and socioeconomic effects on the subtest scores, but in 86% of the analysis, there were no race or socioeconomic effects (Bowers et al., 2006). The LCT-2 assessment tool can therefore be used to assess any group of participants, as the test is not influenced by culture. It has therefore been stated that neither race nor socioeconomic status has a major impact on the LCT-2 test (Bowers et al., 2006). The SAAT has been used for the first time in the South African context on this research study. It is a standardized assessment tool with a low linguistic demand as only single words are used, and will therefore not be affected by language differences (Auditec, 2015). The assessment tool's focus is more on auditory attention than on the participant's language competency. The assessment tools used in this research study are therefore valid and appropriate to be used for research in the South African context.

Chapter 3: Results

The aim of this chapter is to present the results obtained through the research study.

Results of the S.I.F.T.E.R are provided first, followed by the results of the remaining tests in the order of listening difficulty, starting with the DIN which is less linguistically dependent, to the SAAT and the LCT-2. Nominal results of the S.I.F.T.E.R are provided, followed by the continuous data results of the DIN, SAAT and LCT-2. Descriptive statistics were used to obtain the mean, SD, median and inter-quartile range for the SAAT, LCT-2 and DIN for the two groups. The Mann-Whitney U test was used to determine the overall outcome of the continuous data of the SAAT, LCT-2 and DIN between the two groups. 5.

3.1 Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R)

Figure 1 depicts the differences between the EAL participants and the EFL participants as scored by their respective teachers.

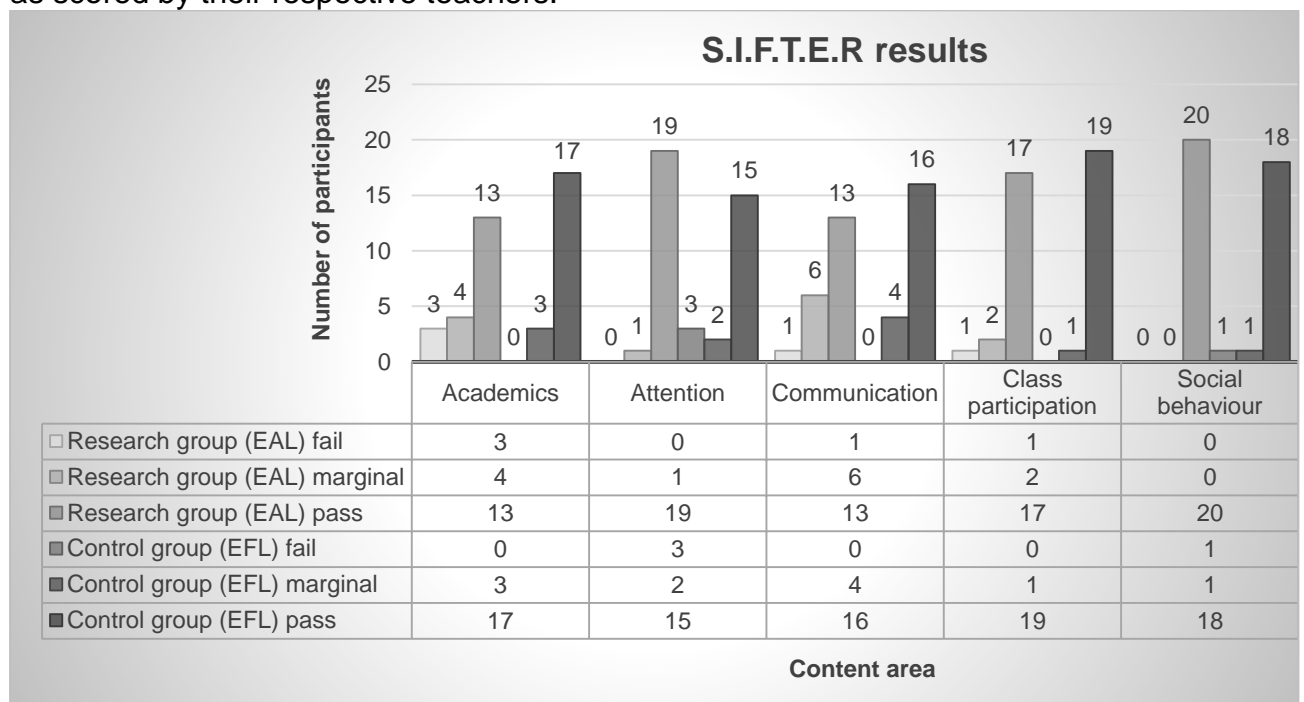


Figure 1: Results of the S.I.F.T.E.R for the EAL and EFL groups

Based on the scores obtained by the participants, more of the EAL participants failed in the academics, communication, and class participation sections, as opposed to the EFL participants (Figure 1). With regard to the attention section, more of the EFL participants than the EAL participants were scored as marginal.

The Fisher's Exact Test was used to compare the outcome of the S.I.F.T.E.R's nominal (categorical) data between the two groups (Table 4).

Table 4: Comparison of S.I.F.T.E.R results for EAL and EFL groups

Assessment method	Research (EAL) Group			Control (EFL) Group			Fisher's Exact Test (Exact Significant difference)
	Fail	Marginal	Pass	Fail	Marginal	Pass	
S.I.F.T.E.R: Academics	n=3 (15%)	n=4 (20%)	n=13 (65%)	n=0 (0%)	n=3 (15%)	n=17 (85%)	0,226
S.I.F.T.E.R: Attention	n=0 (0%)	n=1 (5%)	n=19 (95%)	n=3 (15%)	n=2 (10%)	n=15 (75%)	0,216
S.I.F.T.E.R: Communication	n=1 (5%)	n=6 (30%)	n=13 (65%)	n=0 (0%)	n=4 (20%)	n=16 (80%)	0,480
S.I.F.T.E.R: Class participation	n=1 (5%)	n=2 (10%)	n=17 (85%)	n=0 (0%)	n=1 (5%)	n=19 (95%)	0,605
S.I.F.T.E.R: Social behaviour	n=0 (0%)	n=0 (0%)	n=20 (100%)	n=1 (5%)	n=1 (5%)	n=18 (90%)	0,487

(*p≤0.05)

From Table 4 it is clear that no statistical difference was obtained between the EAL group and the EFL group for the content areas, namely academics, attention, communication, class participation, and social behaviour. It should be noted, however, that according to the scores obtained by the participants, more of the EAL participants than EFL participants failed in the academics, communication, and class participation sections (Figure 1). As more of the EAL participants failed in these content areas, it may indicate that these learners experience greater difficulty in these areas in comparison to their peers, as indicated by their teachers. With regard to the attention section, more of the EFL participants than the EAL participants were scored as marginal, and fewer EFL than EAL participants were scored as “pass”, indicating that they may experience greater difficulty with attention, as indicated by their teachers. These differences between the participants should therefore be taken into account when interpreting the results

3.2 Digits-In-Noise Test (DIN)

The results of the DIN are presented in Table 5. The Mann-Whitney U test was used to determine the overall outcome of the continuous data of the DIN between the two groups (Table 5).

Table 5: Comparison of DIN results for EAL and EFL groups

	Research (EAL) Group			Control (EFL) Group			Mann-Whitney U Test	p-value
	Mean	SD	Median (IQR)	Mean	SD	Median (IQR)		
DIN	-9,03	1,02	-9.10 (0.75)	-9,30	0,97	-9.40 (0.95)	166,00	0,362

*-p ≤ 0,05; SD-standard deviation; IQR- interquartile range

The SNR obtained by the EAL group (mean= -9.03 dB) was higher than the SNR obtained by the EFL group (mean= -9.30 dB) as indicated in Table 5. However, no statistical difference was found between the EAL group and the EFL group (p=0,362).

3.3 Selective Auditory Attention Test (SAAT)

Figure 2 depicts the percentage scores obtained by the participants of the EAL and EFL groups on the four lists of the SAAT.

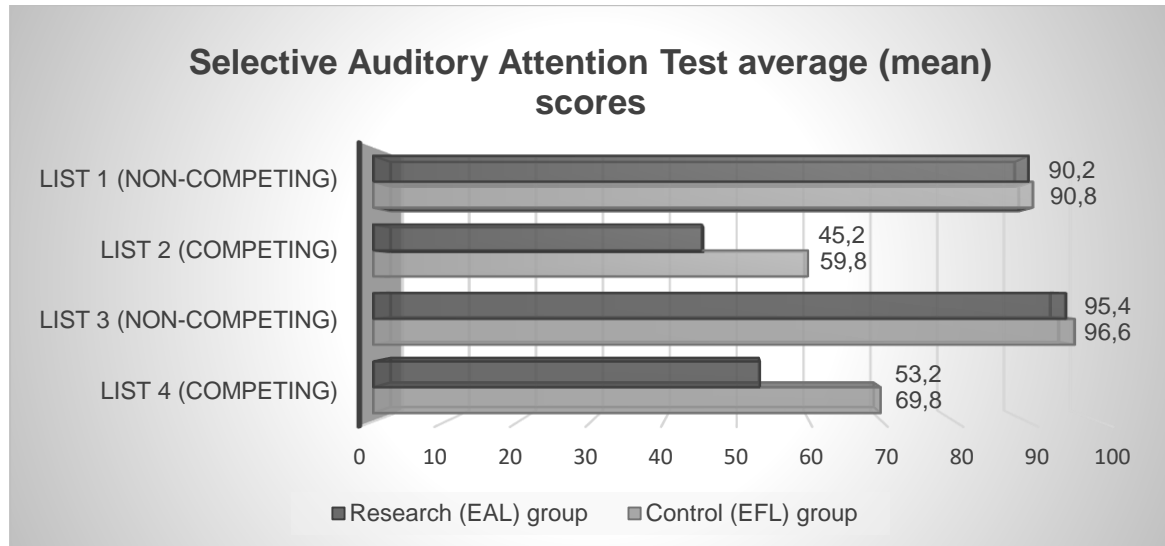


Figure 2: The average percentage score obtained for the various lists of the SAAT

In the non-competing and ideal conditions, the two groups achieved similar scores (Figure 2), with the EFL participants scoring slightly higher. However, in the competing conditions, the EAL participants achieved much lower scores than the EFL participants.

The Mann-Whitney U test was used to determine whether these differences were significant (Table 6).

Table 6: Comparison of SAAT results for EAL and EFL groups

	Research (EAL) Group			Control (EFL) Group			Mann-Whitney U Test	p-value
	Mean	SD	Median (IQR)	Mean	SD	Median (IQR)		
SAAT: List 1 Non-competing	90,20	6,01	92.00 (12.00)	90,80	4,32	92.00 (4.00)	195,00	0,903
SAAT: List 2 Competing	45,20	20,93	52.00 (35.00)	59,80	11,50	64.00 (16.00)	114,50	0.019*
SAAT: List 3 Non-competing	95,40	5,84	96.00 (8.00)	96,60	2,98	96.00 (4.00)	197,00	0,929
SAAT: List 4 Competing	53,20	20,61	62.00 (23.00)	69,80	8,85	72.00 (11.00)	82,00	0.001*

*-p ≤ 0,05; SD- standard deviation; IQR- interquartile range

Significant statistical differences between the two groups were obtained for lists two ($p=0,019$) and four ($p=0,001$), which present the competing test conditions, as shown in Table 6.

3.4 Listening Comprehension Test 2 (LCT-2)

Figure 3 depicts the results obtained in the LCT-2 for the EAL and EFL groups.

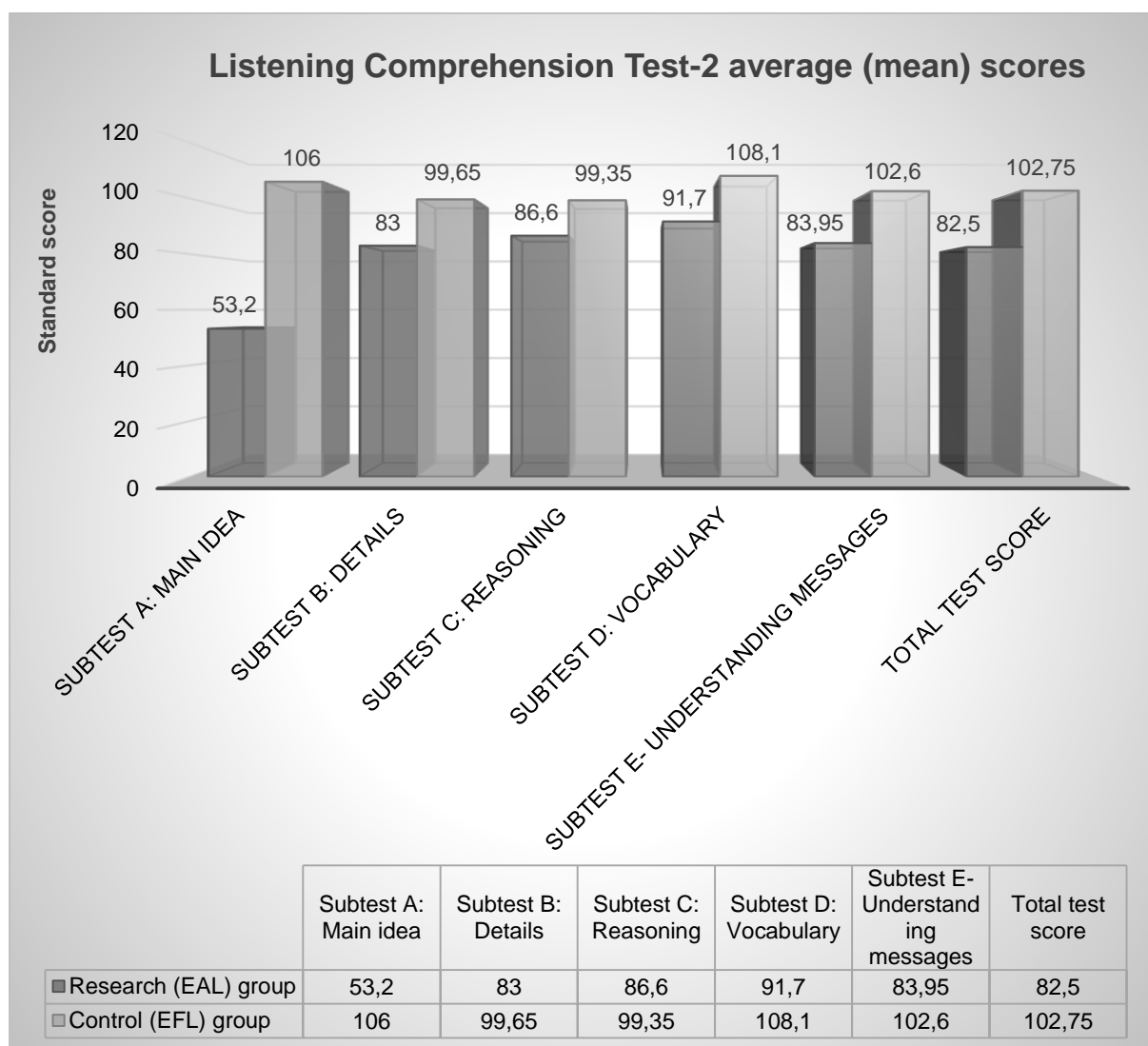


Figure 3: The average standard scores obtained for the LCT-2.

As depicted in Figure 3, the EAL group scored lower than the EFL group in all the subtests. The EAL group therefore achieved lower average standard scores across all of the subtest as well as a lower total test score compared to the EFL group, as shown in Figure 3.

To determine whether the differences in the scores were significant or not the Mann-Whitney U test was used (Table 7).

Table 7: Comparison of LCT-2 results for EAL and EFL groups

	Research (EAL) Group			Control (EFL) Group			Mann-Whitney U Test	p-value
	Mean (Total score)	SD	Median (IQR)	Mean (Total score)	SD	Median (IQR)		
LCT-2: Subtest A- Main idea (Standard score)	89,20	13,28	95.00 (23.75)	106,00	6,32	105.00 (10.00)	42,00	0.000*
LCT-2: Subtest B- Details (Standard score)	83,00	10,61	80.00 (18.00)	99,65	7,75	100.00 (9.00)	43,00	0.000*
LCT-2: Subtest C- Reasoning (Standard score)	86,60	10,69	90.00 (16.75)	99,35	7,51	97.00 (10.00)	65,00	0.000*
LCT-2: Subtest D- Vocabulary (Standard score)	91,70	12,79	90.00 (23.75)	108,10	7,30	105.00 (5.00)	69,00	0.000*
LCT-2: Subtest E- Understanding messages (Standard score)	83,95	12,17	85.00 (14.50)	102,60	10,15	101.00 (13.75)	47,50	0.000*
LCT-2: Total test (Standard score)	82,50	12,08	87.00 (21.50)	102,75	8,16	102.50 (12.00)	24,50	0.000*

*-p ≤ 0,05; SD- standard deviation; IQR- interquartile range

Statistically significant differences of p=0,000 were found between the two groups' scores for all the subtests as well as the total score of the LCT-2, with the EAL participants having performed significantly more poorly (Table 7). The EAL participants had the greatest difficulty identifying the main idea, followed by obtaining the details and understanding the message.

3.5 Integration and correlation of results

In order to determine the strength of association between the DIN, SAAT, and the LCT-2, the Spearman Rank Correlation was used (Table 8).

Table 8: Strength of association between the tests with continuous data results

Tests		Values	DIN	SAAT List 1 and 3 (Non-competing conditions)	SAAT List 2 and 4 (Competing conditions)	LCT-2 Total score
Research (EAL) Group	DIN	r_s	1,000	-0,510	-0,544	0,084
		p-value		0,022*	0,013*	0,724
	SAAT List 1 and 3 (Non-competing conditions)	r_s	-0,510	1,000	0,466	0,209
		p-value	0,022*	-	0,039*	0,377
	SAAT List 2 and 4 (Competing conditions)	r_s	-0,544	0,466	1,000	0,150
		p-value	0,013*	0,039*	-	0,528
	LCT-2 Total score	r_s	0,084	0,209	0,150	1,000
		p-value	0,724	0,377	0,528	-
Control (EFL) Group	DIN	r_s	1,000	-0,118	0,037	0,018
		p-value	-	0,621	0,878	0,940
	SAAT List 1 and 3 (Non-competing conditions)	r_s	-0,118	1,000	0,096	0,020
		p-value	0,621	-	0,686	0,934
	SAAT List 2 and 4 (Competing conditions)	r_s	0,037	0,096	1,000	-0,418
		p-value	0,878	0,686	-	0,067
	LCT-2 Total score	r_s	0,018	0,020	-0,418	1,000
		p-value	0,940	0,934	0,067	-

*- $p \leq 0,05$

A strong correlation was found between the DIN and the SAAT lists in the EAL group in both the non-competing ($p= 0,022$) and the competing conditions ($p= 0,013$). No significant correlation was found between the LCT-2 and the other tests for the EAL group. For the EFL group, no statistically significant correlations were found between the tests. The strong agreement found between the EAL participants' test results for the DIN and the SAAT indicates that they experience significant difficulties with detecting speech in unfavourable conditions.

Chapter 4: Discussion

The aim of this chapter is to provide a discussion of the results obtained with reference to relevant literature. A discussion of the results obtained from the S.I.F.T.E.R will be provided first, followed by a discussion of the results of the DIN, the SAAT, and the LCT-2.

4.1 Screening Instrument for Targeting Educational Risk (S.I.F.T.E.R)

The S.I.F.T.E.R explored several areas of school performance, namely academics, attention, communication, class participation, and school behaviour. Research by Fisher (as cited in Wilson et al., 2011) showed that the S.I.F.T.E.R is an instrument that can be used to identify general difficulties in learning. The skill areas that are assessed are essential for success in the classroom (Anderson, 2014).

Minor differences were noted between the scores of the EAL and EFL groups in the various areas of the S.I.F.T.E.R. It may be relevant to point out that scores were based on the observations recorded by their teachers. No statistically significant difference was found between the results obtained for the EAL and EFL groups. However, there were more EAL learners who were scored as failing in the areas of academics, communication, and class participation than learners from the EFL group. This could indicate that the teachers perceived the EAL participants as possibly having difficulty with these areas.

It would have been beneficial if the results obtained on the S.I.F.T.E.R by each participant could be compared with the results obtained on the DIN, SAAT and LCT-2. This comparison might have provided more information on whether participants perceived as being at risk by their teachers on the S.I.F.T.E.R, were also experiencing difficulty on the other assessment measures of this study. Due to the nature of the nominal data of the S.I.F.T.E.R and the descriptive statistics of the DIN, SAAT, and LCT2, this comparison was unfortunately not possible in the current research study.

Previous research advised that questionnaires, such as the S.I.F.T.E.R, should not be used as a screener, but rather be utilized to supplement the findings of a diagnostic assessment (Wilson et al., 2011). It should be taken into account, however, that previous research has stated that the S.I.F.T.E.R may produce inaccurate information due to its length which could cause fatigue or lack of interest in the respondents (Wilson et al., 2011). Teachers should nonetheless be aware of learners' abilities in these skill areas in order to identify learners that are at risk and who require further assessment. If teachers are able to identify learners who are at risk, they will be able to better assist these learners with possible learning difficulties.

4.2 Digits-In-Noise Test (DIN)

The scores obtained with the DIN also indicated minor differences between the two groups, but the EAL group did not perform significantly more poorly than the EFL group. This is in agreement with previous research that found only minor effects on non-native English speakers' ability to recognise digit-triplets in noise (Anderssen, 2017; Kaandorp, De Groot, Festen, Smits, & Goverts, 2015).

The low linguistic demand of the DIN test may account for the lack of a significant difference between the two groups. The DIN uses the simple, familiar words of digit-triplets as speech stimuli (Potgieter et al., 2016). Previous research has found that digit pairs effectively measure the hearing threshold for speech regardless of an individual's familiarity with English (Ramkissoon et al., 2002; Smits et al., 2013). The lack of a significant difference between the two groups may be accounted for by the minimized linguistic demand and the contribution of top-down processing required from the listener on the DIN test.

Although no significant differences were obtained between the EAL and EFL groups, the EAL learners did obtain lower scores on the DIN. The poorer performance of the EAL learners on the DIN could indicate that they experience more difficulty understanding speech than the EFL participants, especially in situations where noise is present. Therefore, teachers need to be aware of their learners' ability to comprehend speech in noise. The ability to perceive speech in noise is an essential auditory skill for learners to perform in a classroom setting and for listening comprehension to occur (Valente et al., 2012).

4.3 Selective Auditory Attention Test (SAAT)

Selective auditory attention is also required for effective listening comprehension to occur. The SAAT places a higher linguistic demand on the participant than the DIN as English words are used as the test stimuli. When testing non-native users of the test language, the complexity of the speech material used has been shown to be an important factor influencing their speech recognition (Warzybok et al., 2015).

In the non-competing and ideal conditions, the two groups achieved similar scores, although the EFL participants scored slightly higher. This may be due to their familiarity with words in the English language. In the conditions where the speech stimuli were presented along with a competing signal, significant differences in performance were noted between the EAL and EFL groups. The EAL group scored markedly lower than the EFL group in the conditions where competing stimuli were also presented.

This significant difference between the two groups may indicate that the EAL participants had greater difficulty attending to the target stimuli whilst suppressing the competing stimuli. An increase in the differences in speech recognition between non-native and native users of the test language has been found when the complexity of the speech material increases (Warzybok et al., 2015). Greater differences have also been found between non-native and native participants' performance on speech-in-noise tasks as the listening conditions increase in difficulty (Reetzke, Lam, Xie, Sheng, & Chandrasekaran, 2016). Previous research has found, furthermore, that when the participant is less familiar with the speech material, more differences in speech recognition occur between the non-native and native users of the test language (Warzybok et al., 2015).

Speech recognition in noise is a challenging task for all listeners, but it is especially difficult in a second language (Warzybok et al., 2015). In a classroom setting, it is essential for learners to be able to suppress the noise that is present and attend to the target stimuli, in order to comprehend the information and to achieve academic

learning (Neuman, Wroblewski, Hajicek, & Rubinstein, 2010; Valente et al., 2012). These considerations suggest that the demanding process of attending to auditory information in the presence of background noise may be a contributing factor to the listening difficulties experienced by EAL learners.

4.4 Listening Comprehension Test 2 (LCT-2)

The LCT-2 placed the highest linguistic demand on the participants in this study as linguistically complex information is presented in an auditory manner only, with no visual aids to assist the individual's interpretation and listening comprehension. The provision of visual support can assist a listener in interpreting verbal information (Chang, Wu, & Pang, 2013). The results of this test revealed clear significant differences between the EAL group and EFL group in all the subtests. These results correlate with previous research which also found that EAL learners encountered significant difficulties with listening comprehension skills (Anderssen, 2017). The fact that the LCT-2 placed the highest linguistic demand on the participants of all the assessment methods used, could account for the significant differences found between the EAL and EFL groups.

Listening comprehension comprises different skills namely listening for details, listening for overall understanding, listening for the main idea, making inferences, and listening selectively (Vandergrift & Baker, 2012). According to Goh (as cited in Yilmaz & Yavuz, 2015) learners are often unable to recognize the words they know, understand the intended message, or form a mental representation from the words heard whilst listening. The significant difference found between the EAL and EFL groups across all subtests of the LCT-2 indicates that the EAL learners had greater difficulty identifying the main idea, isolating the details, reasoning, understanding the vocabulary, and comprehending the message whilst listening.

The significantly poorer scores obtained by the EAL learners may be due to the fact that the LCT-2 requires the participants to depend solely on auditory information for comprehension. Auditory information to be interpreted by the participants was not supplemented with additional material. The participants had to rely exclusively on the auditory information received in order to comprehend the message presented in English, while they may well be accustomed to additional information being provided to supplement their comprehension during typical everyday activities.

The overall poorer performance of the EAL group is a concern as listening comprehension in the language of education is a key skill that is required in the academic setting. Listening comprehension has long been recognised as the essence of additional language learning (Byrnes, 1984; Kondrateva, Safina, & Valeev, 2016; Vandergrift, 2007). The development of additional language listening skills has also been shown to have a beneficial impact on the development of other skills (Dunkel & Rost, 2002, as cited in Vandergrift, 2007; Vandergrift & Baker, 2015).

Additional language learners are rarely taught how to listen effectively in their second language (Vandergrift, 2007). Helping learners with their listening problems has been recognised as an important part of teaching them how to listen (Graham & Santos, 2015). Additional support is therefore required by the EAL learners, to assist their development of effective listening comprehension skills. This will help EAL learners to

perform the linguistically demanding tasks that form part of the formal instruction used in an educational setting, and will aid in closing the gap between the EAL learners' and the EFL learners' performance and skills.

4.5 Summary of discussion

The lower scores obtained by the EAL participants in the LCT-2 indicate that they experience greater difficulty with listening comprehension, which can be linked to the poorer scores on the S.I.F.T.E.R for academics and communication as indicated by their teachers in comparison to their peers. The significant difference between the two groups in the LCT-2 correlate with the SAAT scores for the competing conditions. This correlation indicates the difficulty the EAL learners experience with more linguistically dependent tasks as they lack the adequate auditory attention and listening comprehension skills. This suggests that when only a high linguistically demanding task with only auditory information is provided, the EAL group's auditory attention and listening comprehension will be poorer when listening in noise compared to listening in a quiet environment. It can therefore be inferred that the EAL learners in this study have not yet developed the adequate higher level auditory skills and listening comprehension skills needed to understand the purely auditory information that is presented to them in a classroom. A reduction of classroom noise may therefore assist these learners with their listening comprehension abilities.

Identification of the various areas of auditory attention and listening comprehension in which EAL learners experience difficulty may lead to an improved understanding of their level of academic performance and also of difficulties they may experience. This knowledge should contribute to improved targeted intervention and educational support.

Chapter 5: Conclusion and recommendations

The aim of this chapter is to provide an overview of the research study in hand and to answer the study's research question. The study will also be evaluated in terms of its implications, strengths and weaknesses, and recommendations for further research.

5.1 Conclusion

Auditory attention and listening comprehension comprise various processes and areas, and therefore it would be challenging to assess an individual's listening and auditory skills with only one formal assessment instrument. The study consequently made use of the S.I.F.T.E.R, DIN, SAAT, and LCT-2 to investigate different aspects of auditory attention and listening comprehension in EAL learners aged seven to eight years. The results obtained by the EAL learners were compared with results from a matched EFL group. The four different outcome measures that were used for the study provided information on how teachers perceived the difficulties experienced by EAL learners as well as information on their auditory and listening skills with varying levels of linguistic demand. Evidence of differences in the auditory attention and listening comprehension skills levels between EAL learners and EFL learners were recorded in this study.

Results showed significant differences between the two groups for the results obtained in the SAAT and the LCT-2, with the EAL group performing more poorly than the EFL group in all areas. The lower scores obtained by the EAL learners in this study suggest that they experienced greater difficulty as the formal assessment increased in linguistic demand. This implies that the auditory and listening comprehension difficulties experienced by the EAL group were related to intrinsic factors such as their English language proficiency, rather than environmental interferences.

The results obtained in this study identified the areas of auditory and listening comprehension skills with which the EAL learners experienced difficulty. Audiologists and speech-language therapists can assess and provide appropriate targeted intervention for these difficulties. Education of teachers and parents may provide the learners with educational and curriculum support to develop their auditory attention and listening comprehension skills.

5.2 Clinical implications of the study

This study highlighted the areas of auditory skills and listening comprehension where EAL learners experienced difficulty. The results obtained indicated that the EAL group experienced greater difficulty and performed more poorly as the linguistic load of the listening tasks increased. The findings of this study provide information on various auditory skills and listening comprehension skills that may aid in the development of a comprehensive overview of the components that make up listening. In an educational setting, audiologists and speech-language therapists are required to work in collaboration with teachers and also to provide parent training, to ensure that optimal prevention approaches are being used (ASHA, 2005). A better description of auditory attention and listening, and the processes that are involved, may assist audiologists,

speech-language therapists and teachers to better understand and more effectively assess these interlinked processes, in order to ensure that the correct intervention and support is provided. The identification of specific areas of difficulties may allow for more targeted assessment measures and intervention to be used by audiologists and speech-language therapists.

5.3 Critical evaluation

5.3.1 Strengths of the study

- Auditory skills and listening comprehension involve various factors and processes. By making use of four outcome measures in this study, various components of auditory attention and listening comprehension were investigated.
- Learners with confounding variables, such as diagnosed developmental conditions or hearing loss, were excluded from the study to ensure accurate results.
- The participants of the research and control groups were matched for age, gender, and socio-economic status to limit confounding variables.
- Various areas of auditory skills and listening comprehension were assessed, with differing levels of linguistic dependence.

5.3.2 Limitations of the study

- A small sample size was used for the study. It is important that this be taken into account when interpreting the results.
- Nine different teachers participated in the study. Each teacher's interpretation of the questions of the S.I.F.T.E.R may have influenced the scores obtained by the participants.
- The SAAT appeared to be an appropriate assessment tool to be used in an urban setting. However, some of the participants were unfamiliar with some of the vocabulary items. Adaptations were therefore made when the participant said the target word correctly but was unable to identify the appropriate picture, e.g. the word "pail". The response was marked as correct if the participant was able to correctly attend to the target word and repeat it to the researcher, despite being unable to identify the corresponding picture. This did not affect the reliability of the results, as the participant was still able to correctly identify the target word, but was unable to point out the correct picture in some cases, e.g. as the word 'bucket' is more commonly taught than 'pail' in South African schools.
- Some culturally appropriate adaptations were made to the vocabulary of the passages used in the LCT-2. To ensure reliable results, some American words were replaced with their South African English equivalents, e.g. 'school outing' replaced 'field trip', 'parents evening' replaced 'parent conferences' and 'Durban beaches' replaced 'Miami beaches'. These modifications were made in order to make the passage relatable to the participants, whilst correlating with the context of the original passage. The adaptations did therefore not affect the participants' listening comprehension or the reliability of the results.

5.4 Recommendations for future research

Based on the critical evaluation of the current research project, recommendations for future research could be established. These recommendations are discussed below.

- Further studies are required with a larger research sample than the current study where only 40 participants were included. Increasing the size of the research sample may contribute to more significant values obtained with inferential statistics, which may lead to more specific findings, and also the generalization of the results found in the current study.
- Further studies are required regarding suitable speech and language screening assessments, so that factors linked to poor academic performance can be identified in greater detail.
- Further studies are required to investigate whether there is a link between EAL and EFL learners' listening comprehension and the various areas of academic performance.
- Exploration of the relationship between language experience and the auditory and listening skills of EAL and EFL learners should be conducted in future studies.
- The language proficiency of the participants could influence their listening comprehension, which could be further explored in future research.
- The increased difficulty experienced by the EAL learners as the linguistic demands of the assessment increased could be explored in further research.

5.5 Final comment

There is substantial proof that learners in South Africa who receive schooling in English, rather than in their home language, encounter various challenges in an academic setting (Howie, 2003; Murray, 2002; Taylor & von Fintel, 2016; van Staden, Bosker & Bergbauer, 2016). This research study further identified the areas of auditory and listening comprehension where EAL learners in South Africa experienced difficulty. Previous research, along with this research study, highlights the fact that there is a need to address the challenges faced by EAL learners in South Africa. Challenges faced by EAL learners should be addressed in order to promote the learning and academic success of all learners in South Africa, regardless of their home language.

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Appendix A: Ethical clearance letter from the Faculty of Humanities Research Ethics Committee



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

10 April 2018

Dear Ms Venter

Project: Auditory attention and listening comprehension in English second language learners
Researcher: C Venter
Supervisor: Drs M Soer and L Pottas
Department: Speech-Language Pathology and Audiology
Reference number: 13055969 (GW201801115HS)

Thank you for your response to the Committee's letter of 20 February 2018.

I have pleasure in informing you that the Research Ethics Committee formally **approved** the above study at an *ad hoc* meeting held on 9 April 2018. Data collection may therefore commence.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should your actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely

A handwritten signature in blue ink, appearing to read 'Maxi Schoeman'.

Prof Maxi Schoeman
Deputy Dean: Postgraduate and Research Ethics
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

cc: Drs M Soer and L Pottas(Supervisors)
Dr J van der Linde (HoD)

Research Ethics Committee Members: Prof MME Schoeman (Deputy Dean); Prof KL Harris; Dr L Blokland; Dr K Booyens; Dr A-M de Beer; Ms A dos Santos; Dr R Fasselt; Ms KT Govinder; Dr E Johnson; Dr W Kelleher; Mr A Mohamed; Dr C Puttergill; Dr D Reyburn; Dr M Soer; Prof E Taljard; Prof V Thebe; Ms B Tsebe; Ms D Mokalapa

Appendix B: School information letter and permission letters from primary schools



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Faculty of Humanities

Department of Speech-Language Pathology and Audiology

February 2018

Dear Principal

REQUEST FOR PARTICIPANTS FOR A RESEARCH STUDY

I am an Audiology Masters student at the University of Pretoria. I am investigating the auditory attention and listening comprehension in English second language and English first language learners. I would hereby please like to request your permission to be allowed to conduct my study at the school.

Through the process of selective auditory attention a specific input is selected and focused on for further processing, whilst irrelevant or distracting information is simultaneously suppressed; this process plays an important role in forming the academic foundations of language, literacy, and mathematics. The typical classroom environment is abounding in auditory and visual distractions, resulting in a challenging situation for a child to focus on the teacher's instructions or on the task at hand, and the auditory system needs to adapt to a variety of listening conditions in order to extract specific information. Selective auditory attention provides the process needed to determine the portion of the sound input that will be focused on and further processed. A child's ability to attend to a target signal and suppress any competing noise is a concern for teachers and clinicians as it forms an important part of learning and communication.

Listening comprehension is the interactive process whereby spoken language is converted to meaning, and forms a key language skill required by school-aged children to develop their academic skills. Academic skills that require listening comprehension includes the ability to

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determine the main idea and details of information, answering questions, following instructions and partaking in classroom discussions. The Listening Comprehension Test represents the type of listening required in a typical classroom setting and evaluates a student's strengths and weaknesses in certain listening comprehension skill areas. The test requires students to identify the part of the message that requires immediate attention; comprehend the input; and plan the appropriate response by integrating the communication skills of vocabulary and speech science (semantics, syntax, morphology and phonology) with thinking.

Given the range of auditory demands that children are faced with in typical classroom settings, along with the importance of listening comprehension and selective auditory attention in order to achieve academic success, additional research is needed to determine how learners in South Africa perform on these tests, to assist in the principles of instruction and education.

For my study, forty children between the ages of eight to nine years that are both males and females will be selected. One group will consist of participants with English as their second language, and a second group of participants with English as their first language. Each group will be comprised of twenty participants. During the selection process we will determine if the participant is a candidate for participation, through a case history questionnaire that is to be completed by the participant's parent or guardian, as well as an audiological assessment that will be performed. Participants with normal hearing sensitivity and middle ear functioning, as well as normal cognitive abilities will be selected for the study. The testing will be divided into two sessions which will be conducted on separate days, to avoid fatiguing the learners. Together the total testing session for each learner will take approximately 90 minutes. The participants' teachers will also be asked to complete a short questionnaire regarding the participants' performance.

Confidentiality of participants' personal information and audiometric results will be ensured. The information will only be accessible to the researcher and the research supervisors. Participants will be designated a code number to ensure anonymity. Only the researcher will know the code number and this information will not be given to anyone. The results of the

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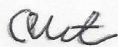
Kgoro ya Phatholotši ya Polelo-Maleme le Go kwa

research will be stored at the Department of Speech-Language Pathology and Audiology for a minimum period of 15 years as is policy at the University of Pretoria. All of the relevant results will be compiled in a research report, which will be available at the University of Pretoria.

Participation in this research is completely voluntary. The participants' parent or guardian is to provide written consent for their child to participate in the study. Assent will be obtained from the under-aged participants before the commencement of the study. Participants will be asked to write their name and/or draw a picture on the assent form to provide their assent to participate in the study. The participants will be informed before any testing, of their right to withdraw immediately from the study at any given time if they wish to. The comfort and safety of the participants will be ensured, and participants will be treated in a respectful manner. The information obtained from this study could help to gain insight and a better understanding of the workings of the listening process, to assist in the principles of instruction and education.

Your attention regarding this request is highly appreciated. Please do not hesitate to contact us should any further information be required.

Kind regards



Researcher

Ms Chanté Venter

Tel: 0722686381

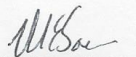
Email: chante.pvt@gmail.com



Supervisor

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Supervisor

Dr Maggi Soer

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Faculty of Humanities

Department of Speech-Language Pathology and Audiology

PERMISSION FROM THE SCHOOL TO CONDUCT THE RESEARCH STUDY:
Auditory attention and listening comprehension in English second language learners


Please complete the following:

I hereby confirm that I have been informed by the researcher about the nature, conduct, benefits and risks of this research study. I hereby provide permission for the researcher, Chanté Venter, to go through the student register to select possible participants for the study. I provide permission for the researcher to collect data at the school in 2018, and to use students from the school as participants in the research study. I also understand that any personal details and data obtained will be anonymously processed into a research report.

Signed at REDDFORD HOUSE THE HILLS on the 21st day of
May 2018.

Reddford House The Hills
School's name

KELLY-ANNE KUNITZ (DEPUTY)
Principal's name


Principle's signature

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Auditory attention and listening comprehension in English second language learners

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Signed at Queenswood on the 16th day of
March 2018.

Loreto School Queenswood
School's name

Mr. Marcello Palozzi
Principal's name


Principle's signature

LORETO SCHOOL
1161 WOODLANDS DRIVE
QUEENSWOOD
PRETORIA 0186

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Appendix C: Teacher information letter and teacher informed consent letter



Faculty of Humanities
Department of Speech-Language Pathology and Audiology

March 2018

Dear Teacher

INFORMATION LEAFLET AND INFORMED CONSENT

I am an Audiology Masters student at the University of Pretoria. I am investigating the auditory attention and listening comprehension in English second language and English first language learners. Information about the study as well as what the child can expect to happen during the study is detailed in this letter. Please read the information and complete the consent form should you choose to participate in the research.

The purpose of this study is to determine the auditory attention and listening comprehension in learners. Selective auditory attention is used to attend to a specific signal and is needed for learning and communication. Listening comprehension is needed to convert speech into meaning in the mind. The Digits-In-Noise hearing test will be used to evaluate the participants' ability to recognize speech in the presence of noise. In the classroom environment learners have to cope with adverse classroom conditions with a high level of noise, which impacts their auditory performance and listening abilities. The results obtained in the study may be beneficial as it could lead to an improvement of the classroom environment, in order to better support learners' listening abilities.

Listening comprehension is the interactive process whereby spoken language is converted to meaning, and forms a key language skill required by school-aged children to develop their academic skills. Academic skills that require listening comprehension includes the ability to determine the main idea and details of information, answering questions, following instructions and partaking in classroom discussions. The Listening Comprehension Test represents the type of listening required in a typical classroom setting and evaluates a student's strengths and

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weaknesses in certain listening comprehension skill areas. The test requires students to identify the part of the message that requires immediate attention; comprehend the input; and plan the appropriate response by integrating the communication skills of vocabulary and speech science (semantics, syntax, morphology and phonology) with thinking.

Given the range of auditory demands that children are faced with in typical classroom settings, along with the importance of listening comprehension and selective auditory attention in order to achieve academic success, additional research is needed to determine how learners in South Africa perform on these tests, to assist in the principles of instruction and education. The information obtained from this study could help to gain insight and a better understanding of the workings of the listening process, to assist in the principles of instruction and education.

For my study, forty children between the ages of seven to eight years that are both males and females will be selected. One group will consist of participants with English as their second language, and a second group of participants with English as their first language. Each group will be comprised of twenty participants. During the selection process we will determine if the participant is a candidate for participation, through a case history questionnaire that is to be completed by the participant's parent or guardian, as well as an audiological assessment that will be performed. Participants with normal hearing sensitivity and middle ear functioning, as well as normal cognitive abilities will be selected for the study. The testing will be divided into two sessions which will be conducted on separate days, to avoid fatiguing the learners. Together the total testing session for each learner will take approximately 90 minutes.

As the participants' teachers, you will also be asked to complete a short questionnaire regarding the participants' performance. The questionnaire will be used to collect more information on a variety of skill areas that are essential for success in the classroom. The participants' functional performance will be determined, in comparison to their peers, based on your perception as their teacher.

Confidentiality of participants' personal information and audiometric results will be ensured. The information will only be accessible to the researcher and the research supervisors. Participants

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will be designated a code number to ensure anonymity. Only the researcher will know the code number and this information will not be given to anyone. The results of the Confidentiality of participants' personal information and audiometric results will be ensured. The information will only be accessible to the researcher and the research supervisors. Participants will be designated a code number to ensure anonymity. Only the researcher will know the code number and this information will not be given to anyone. The results of the research will be stored at the Department of Speech-Language Pathology and Audiology for a minimum period of 15 years as is policy at the University of Pretoria. All of the relevant results will be compiled in a research report, which will be available at the University of Pretoria.

Participation in this research is completely voluntary. The participants' parent or guardian is to provide written consent for their child to participate in the study. Assent will be obtained from the under-aged participants before the commencement of the study. The participants will be informed before any testing, of their right to withdraw immediately from the study at any given time if they wish to. The comfort and safety of the participants will be ensured, and participants will be treated in a respectful manner.

You are kindly requested to participate in this research study. Your participation will be greatly appreciated. Permission has been received from the school to conduct the research at the school. Please do not hesitate to contact us should any further information be required.

Kind regards



Ms Chanté Venter- Researcher

Tel: 0722686381

Email: chante.pvt@gmail.com



Supervisor
Dr Lidia Pottas
Email: Lidia.Pottas@up.ac.za



Supervisor
Dr Maggi Soer
Email: maggi.soer@up.ac.za

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Faculty of Humanities
Department of Speech-Language Pathology and Audiology

TEACHER'S INFORMED CONSENT TO THE RESEARCH STUDY:
Auditory attention and listening comprehension in English second language learners

Please complete the following:

I hereby confirm that I have read and understood the information provided on the nature, conduct, benefits and risks of this research study. I hereby provide consent that the information and data provided by me may be used for this research study. I also understand that any personal details regarding my participation in the research study will be anonymously processed into a research report. I understand that I do so voluntarily and that I may withdraw from this study at any time.

Teacher's name (please print): _____

Teacher's signature: _____

Date: _____

Contact number(s): _____

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Appendix D: Parent information letter



Faculty of Humanities
Department of Speech-Language Pathology and Audiology

Dear parent/ guardian

REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

Thank you for your consideration regarding your child's possible participation in our research study. Information about the study as well as what your child can expect to happen during the study is detailed in this letter. Please read the information and complete the consent form should you choose to allow your child to participate in the research.

The purpose of this study is to determine the auditory attention and listening comprehension in learners. Selective auditory attention is used to attend to a specific signal and is needed for learning and communication. Listening comprehension is needed to convert speech into meaning in the mind. The Digits-In-Noise hearing test will be used to evaluate the participants' ability to recognize speech in the presence of noise. In the classroom environment learners have to cope with adverse classroom conditions with a high level of noise, which impacts their auditory performance and listening abilities. The results obtained in the study may be beneficial as it could lead to an improvement of the classroom environment, in order to better support learners' listening abilities.

Participation in this research is completely voluntary. Assent will be obtained from the under-aged participants before any testing. The testing process will be explained verbally, along with the use of pictures, to the participants. Participants will be asked to mark the 'Yes' blocks on the assent form if they provide their assent to participate in the study. The participants will be informed before any testing, of their right to withdraw immediately from the study at any time if they wish to. Confidentiality of participants' personal information and audiometric results will be ensured. The

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information will only be accessible to the researcher and the research supervisors. Participants will be designated a code number to ensure anonymity.

For this study children with normal audiometric results are required between the ages of seven to eight years old. During the selection process we will determine if the participant is a candidate to participate through a case history questionnaire that is to be completed by the parent or guardian of the participant, and an audiological assessment. The case history questionnaire contains questions about the participant's personal history that may affect the research's outcomes. The results of the audiological tests must be normal for participants in this study.

If your child chooses to participate in this research, and is selected during the selection process, he/ she will be required to take part in two testing session. The total time for the two testing sessions together will take approximately 90 minutes. The results obtained will be made available to you, should you be interested and request the information.

Contact details

If you have any questions or concerns about any aspect of this study please feel free to contact us.



Researcher

Ms Chanté Venter

Tel: 0722686381

Email: chante.pvt@gmail.com



Supervisor

Dr Lidia Pottas

Email: lidia.pottas@up.ac.za



Supervisor

Dr Maggi Soer

Email: maggi.soer@up.ac.za

Faculty of Humanities
Department of Speech-Language Pathology and Audiology

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Appendix E: Parent informed consent letter

INFORMED CONSENT TO THE RESEARCH STUDY:

Auditory attention and listening comprehension in English second language learners

Please complete the following and return to the school:

I, _____ the parent/ guardian of
_____ hereby confirm that I have read and understood
the above stated information on this research study. I hereby provide consent that the above stated
child may participate in this research study. I understand that I do so voluntarily and that he/ she
may withdraw from this study at any time. I also understand that the data will be used for research
purposes in accordance with the information provided in the information letter.

Signature of parent/ guardian

Date

Contact number(s)

Faculty of Humanities
Department of Speech-Language Pathology and Audiology
Fakulteit Geesteswetenskappe
Departement Spraak-Taalpatologie en Oudiologie
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Appendix F: Participant information letter



Faculty of Humanities

Department of Speech-Language Pathology and Audiology

PARTICIPANT INFORMATION LETTER FOR THE RESEARCH STUDY: Auditory attention and listening comprehension in English second language learners

Good day, my name is Chanté. I am an audiologist, and I would like to learn more about your hearing.

I want to ask if you will help me and work with me. If you say yes, this is what we will do:



I will use a light to look into your ear. This might tickle a bit.



I will place this plastic tip into your ear. You don't have to do anything and you can just sit still.



We will have a look at which sounds you can hear. I am going to put headphones on your ears. Each time that you hear the peep-peep sound, you quickly put up your hand to show me that you heard it.

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Kgomo ya Phatholotši ya Polelo-Malemme le Go kua



We will listen to a few stories, and then I will ask you questions about the stories that you have just heard.



You will listen to different numbers through the headphones that I will put on your ears. I will ask you to enter the numbers that you heard, on the cell phone.



If you want to stop or go back to class, you can tell me or point to the stop sign. Then we will go back to class. Nobody will be mad if you want to stop.







Appendix G: Participant informed assent letter



Faculty of Humanities
Department of Speech-Language Pathology and Audiology

INFORMED ASSENT TO THE RESEARCH STUDY: Auditory attention and listening comprehension in English second language learners

Name of participant: _____

	Do you understand everything that I explained to you?	
	Yes ✓	No X
	Do you understand that it is your choice to help me today?	
	Yes ✓	No X
	Do you understand that you can stop at any time if you want?	
	Yes ✓	No X
	Do you have any questions?	
	Yes ✓	No X
	Do you understand the way I answered your questions?	
	Yes ✓	No X
	Do you want to work with me today?	
	Yes ✓	No X

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Appendix H: Case history questionnaire



Faculty of Humanities

Department of Speech-Language Pathology and Audiology

CASE HISTORY FORM TO THE RESEARCH STUDY:

Auditory attention and listening comprehension in English second language learners

Thank you for your participation in this research study. Please answer the following questions about your child as truthfully and accurately as possible.

Section A: Demographical information

Child Information	
Your child's name:	
Your child's date of birth:	YYYY / MM / DD
Your child's age:	
Your child's gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female
Your child's first language:	<input type="checkbox"/> English <input type="checkbox"/> IsiXhosa <input type="checkbox"/> SiSwati <input type="checkbox"/> Afrikaans <input type="checkbox"/> IsiNdebele <input type="checkbox"/> Xitsonga <input type="checkbox"/> IsiZulu <input type="checkbox"/> Setswana <input type="checkbox"/> Tshivenda <input type="checkbox"/> Sepedi <input type="checkbox"/> Sesotho <input type="checkbox"/> Other:
Caregiver Information	
Your name:	
Your date of birth:	YYYY / MM / DD
Your relationship to the child:	
Your cell phone number:	
Your occupation:	
Your first language:	<input type="checkbox"/> English <input type="checkbox"/> IsiXhosa <input type="checkbox"/> SiSwati <input type="checkbox"/> Afrikaans <input type="checkbox"/> IsiNdebele <input type="checkbox"/> Xitsonga <input type="checkbox"/> IsiZulu <input type="checkbox"/> Setswana <input type="checkbox"/> Tshivenda <input type="checkbox"/> Sepedi <input type="checkbox"/> Sesotho <input type="checkbox"/> Other:

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Language(s) spoken at home:	
English	
Afrikaans	
IsiNdebele	
IsiXhosa	
IsiZulu	
Sepedi	
SeSotho	
Setswana	
SiSwati	
XITsonga	
Other, please specify:	

If your child has been exposed to English in these situations, please specify:	The age of exposure:	Approximate daily exposure (hours):
<input type="checkbox"/> Caregivers		
<input type="checkbox"/> Television		
<input type="checkbox"/> Books		
<input type="checkbox"/> Radio		
<input type="checkbox"/> When playing with friends or family members		
<input type="checkbox"/> Nursery school/day care		
<input type="checkbox"/> Grade R		
<input type="checkbox"/> Other: PLEASE SPECIFY		

Section B: Medical history

Does your child have a history of ear infections? _____

When? _____

Does your child experience difficulty to hear? _____

If yes, in which situations? _____

Has your child experienced any?

Trauma to the head? _____

Epileptic seizure? _____

Injury due to an accident? _____

Has your child had any ear surgery? _____

If yes, please specify: _____

Is your child on any medication? _____

If yes, please specify: _____

Section C: Academic history

Does your child experience any difficulty with the following areas in school:	Yes	No
Reading		
Writing		
Following instructions		
Spelling		
Completing tasks in time		

Was your child have any learning difficulties or Attention Deficit Hyperactivity Disorder (ADHS)? _____

If yes, please specify: _____

Appendix I: Participant pass letter



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities

Department of Speech-Language Pathology and Audiology

THE RESEARCH STUDY:

Auditory attention and listening comprehension in English second language learners

Dear Parent/ Guardian

Thank you for providing consent so that _____'s hearing could be screened on the _____ 20____. Results obtained indicate that currently there is no problem with your child's hearing and no further investigation is needed. It is recommended that your child have his/her hearing screened annually.

Kind regards

Researcher

Ms Chanté Venter

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Kgoro ya Phatholotši ya Polelo-Maleme le Go kwa

Appendix J: Participant referral letter



Faculty of Humanities
Department of Speech-Language Pathology and Audiology

THE RESEARCH STUDY:

Auditory attention and listening comprehension in English second language learners

Dear parent/ guardian

Thank you for providing consent so that _____'s hearing could be screened on the _____ 2018. During the evaluation it was noted that your child should be referred for further assessment. Therefore, we would like to refer you to:

Professional person:		Reason:	
	Audiologist		Complete hearing evaluation recommended (due to referred screening).
	Ear-, nose- and throat specialist		Excessive wax in the ear.
			Negative pressure in the middle ear.
			Other: _____

Kind regards

Researcher
Ms Chanté Venter

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Departement Spraak-Taalpatologie en Oudiologie
Lefapha la Bomotheo
Kgoro ya Phatholotši ya Polelo-Malame le Go kwa

Appendix K: Selective Auditory Attention Test



SAAT SCORE SHEET

Name _____ Birth Date _____ Date _____
 Grade _____ Examiner _____

List 1	List 2	List 3	List 4
SCHOOL _____	BROOM _____	MOON _____	SPOON _____
BALL _____	BOWL _____	BELL _____	BOW _____
SMOKE _____	COAT _____	COKE _____	GOAT _____
FLOOR _____	DOOR _____	CORN _____	HORN _____
FOX _____	SOCKS _____	BOX _____	BLOCKS _____
HAT _____	FLAG _____	BAG _____	BLACK _____
PAN _____	FAN _____	CAN _____	MAN _____
BREAD _____	RED _____	THREAD _____	BED _____
NECK _____	DESK _____	NEST _____	DRESS _____
STAIR _____	BEAR _____	CHAIR _____	PEAR _____
EYE _____	PIE _____	FLY _____	TIE _____
KNEE _____	TEA _____	KEY _____	BEE _____
STREET _____	MEAT _____	FEET _____	TEETH _____
WING _____	STRING _____	SPRING _____	RING _____
MOUSE _____	CLOWN _____	CROWN _____	MOUTH _____
SHIRT _____	CHURCH _____	DIRT _____	SKIRT _____
GUN _____	THUMB _____	SUN _____	GUM _____
BUS _____	RUG _____	CUP _____	BUG _____
TRAIN _____	CAKE _____	SNAKE _____	PLANE _____
ARM _____	BARN _____	CAR _____	STAR _____
CHICK _____	STICK _____	DISH _____	FISH _____
CRIB _____	SHIP _____	BIB _____	LIP _____
WHEEL _____	SEAL _____	QUEEN _____	GREEN _____
STRAW _____	DOG _____	SAW _____	FROG _____
PAIL _____	NAIL _____	JAIL _____	TAIL _____

Appendix L: Listening Comprehension Test 2

The Listening Comprehension Test 2™

Linda Bowers
 Rosemary Huisingsh
 Carolyn LoGiudice

Raw Score	A	B	C	D	E	A-E
Age Equivalency	Main Idea	Details	Reasoning	Vocabulary	Understanding Messages	Total Test
Percentile Rank						
Standard Score						

Name _____
 School _____
 Grade _____
 Examiner _____
 Administration Date _____
 Birthdate _____
 Chronological Age _____

Age Equivalency Profile		Standard Score Profile	
Yr-Mo	A B C D E Total Test	A B C D E Total Test	
12-0			145
			140
			135
11-0			130
			125
			120
10-0			115
			110
			105
9-0			100
			95
			90
8-0			85
			80
			75
7-0			70
			65
6-0			60
			55



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SCORE / SUBTEST	A				
	B				
	C				
	D				
	E				

PASSAGE Allowable prompt: <i>What else can you tell me?</i>	A. Main Idea Acceptable responses	B. Details Acceptable responses	C. Reasoning Acceptable responses	D. Vocabulary Acceptable responses
<p>Demonstration item: (The demonstration item may be repeated, altered, or explained to show the subject how to respond. No other instruction may be provided after the demonstration item.)</p> <p>Ray's friends came to his house. They brought gifts for Ray and played games. Ray blew out the candles on the cake.</p>	<p>What am I talking about?</p> <p>any reference to a birthday or party</p>	<p>Where was the party?</p> <p>any reference to Ray's house</p>	<p>What might Ray's friends have done to get ready for his party?</p> <p>any reference to an activity related to getting ready for a party</p>	<p>What is another word for <i>gift</i>?</p> <p>present</p>
<p>Next Tuesday we have our field trip. You will need to bring your lunch, some sunscreen, and your permission form. The bus will pick us up at 9:00 in back of the library.</p>	<p>1. What am I talking about?</p> <p>any reference to a field/class trip</p>	<p>2. When will the field trip be?</p> <p>either one of these: Tuesday, 9:00</p>	<p>3. How do you know the field trip will be outdoors?</p> <p>any reference to bringing sunscreen/sunblock</p>	<p>4. What does <i>permission form</i> mean?</p> <p>any reference to parental consent</p>
<p>The first year in a new land was hard for the Pilgrims. Many of them got sick. Their cell phones would not work. They had very little food. It was a tough life, but they were glad to be free.</p>	<p>5. What am I talking about?</p> <p>any reference to hardships, Pilgrims</p>	<p>6. Why was the first year a hard year for the Pilgrims?</p> <p>any reference to getting sick, having little food/supplies</p>	<p>7. What doesn't make sense about this story?</p> <p>any reference to cell phones</p>	<p>8. What is another word for <i>tough</i> in this sentence?</p> <p><i>It was a tough life.</i></p> <p>hard, harsh, rough, challenging, dangerous, difficult, complicated, grueling</p>
<p>I'm glad our class is sitting in the front rows. We will see everything. My sister has a big part. She gets to wear four costumes. She's been practicing for weeks. The curtain is going up!</p>	<p>9. What am I talking about?</p> <p>any reference to a play, performance, show, program, recital</p>	<p>10. Where is this student's class sitting?</p> <p>any reference to in front, near the stage</p>	<p>11. What do you think the sister did to practice her role?</p> <p>any reference to studied, memorized, repeated, rehearsed, read her lines/part/script, kept looking at it, going over it</p>	<p>12. What does <i>practicing</i> mean?</p> <p>any reference to rehearsing, doing something repeatedly, studying</p>

Subtotals Page 1

A				
B				
C				
D				
E				

SCORE / SUBTEST	PASSAGE Allowable prompt: What else can you tell me?	Acceptable responses		
		A. Main Idea	B. Details	C. Reasoning
15	It is hard to spot baboons at night. They climb trees at night. That keeps them safe from leopards and lions. Then the baboons climb down in the morning.	13. What am I talking about? any reference to baboons, primates, apes, monkeys		14. Why don't baboons worry about lions or leopards during the day? any reference to lions or leopards being nocturnal
17	Ian has soccer practice every day after school. Today is Tuesday. Ian has a doctor's appointment tomorrow after school.	16. What am I talking about? any reference to a schedule, plan, soccer practice, doctor's appointment	17. What day of the week will Ian miss soccer practice? either one of these: Wednesday, tomorrow	18. Why is a doctor's appointment more important than soccer practice? any reference to specific importance of doctor's appointment
21	The We Care Club is a club kids can join to help animals. Kids who donate money have their names on a big sign near the food court at the zoo. To find out how you can help, visit their website.	20. What am I talking about? any reference to a club, group	21. How can you find out how to help the We Care Club? any reference to website, internet, online	22. Why does the zoo list the names of the kids who donate money? any reference to acknowledgement of participation
23				23. What is another word for donate in this sentence? Kids who donate money have their names on a big sign near the food court at the zoo. give, contribute, provide, offer
25	Please take out a pencil. Write your name at the top left of your paper. Number your paper from 1 to 15. I will say each word. Then I will use each word in a sentence. Listen to what I say. Then write the word on your paper.	24. What am I talking about? any reference to directions, instructions, test, quiz, spelling time	25. Where should the students write their names? must have both parts: top left	26. Why do teachers give tests? any reference to check what kids know/don't know
				19. What does appointment mean in this sentence? Ian has a doctor's appointment tomorrow after school. any reference to a meeting, date, scheduled/specific/certain time, visit with, time to see
				15. What is another word for spot in this sentence? It is hard to spot baboons at night. see, find, notice, locate, spy, recognize

Subtotals Page 2

A	B	C	D	E

SCORE / SUBTEST		PASSAGE Allowable prompt: What else can you tell me?				A. Main Idea Acceptable responses		B. Details Acceptable responses		C. Reasoning Acceptable responses		D. Vocabulary Acceptable responses	
A	B	C	D	E	A. Main Idea Acceptable responses		B. Details Acceptable responses		C. Reasoning Acceptable responses		D. Vocabulary Acceptable responses		
		29			<p>27. What am I talking about?</p> <p>any reference to sea horses</p>	<p>Sea horses are elusive. They hide themselves by changing color and ducking between rocks. Sea horses don't swim very quickly. Instead, they float in the water, often attached to each other by their tails.</p>			<p>28. Why would a sea horse need to hide?</p> <p>any reference to staying safe</p>		<p>29. What does elusive mean in this sentence?</p> <p>Sea horses are elusive. any reference to hard to find/get ahold of, mysterious</p>		
	31		33		<p>30. What am I talking about?</p> <p>any reference to damage to school, garden</p>	<p>Attention, students! Last night the garden by our front door was ruined. The plants were cut and the flowers were pulled up. We need your assistance to find out who did this. We also need your help to raise money to buy new plants.</p>	<p>31. What happened to the plants in the school garden?</p> <p>any reference to plants cut, flowers pulled up</p>		<p>32. How could the students raise money to replant the garden?</p> <p>any reference to a fund-raising activity</p>		<p>33. What is another word for assistance in this sentence?</p> <p>We need your assistance to find out who did this.</p> <p>help, aid, support</p>		
	35		36		<p>34. What am I talking about?</p> <p>any reference to internal/external senses</p>	<p>You know you have five external senses: hearing, touch, sight, smell, and taste. But did you know you have internal senses? These senses alert you to when you're tired, hungry, thirsty, or in pain. These internal senses are found in your muscles and nerves.</p>		<p>35. What are two things your internal senses tell you?</p> <p>any two of these: tired, hungry, thirsty, pain</p>			<p>36. What's another word for alert in this sentence?</p> <p>These senses alert you to when you're tired, hungry, thirsty, or in pain.</p> <p>warn, caution, signal, notify, tell, inform, prepare</p>		
	38				<p>37. What am I talking about?</p> <p>any reference to sharks</p>	<p>Nurse sharks are the most sedentary of sharks. They lie quietly on the ocean bottom pumping water over their gills so they don't have to move much to keep warm. They eat crabs, shrimp, and lobster just like we do! They will not attack humans unless they are surprised or hurt by them.</p>	<p>38. What do nurse sharks eat?</p> <p>any two of these: crabs, shrimp, lobster</p>		<p>39. What is one way a human could surprise a nurse shark?</p> <p>any reference to an aggressive movement/action</p>				

SCORE/ SUBTEST	A	B	C	D	E	PASSAGE Allowable prompt: What else can you tell me?	A. Main Idea Acceptable responses	B. Details Acceptable responses	C. Reasoning Acceptable responses	D. Vocabulary Acceptable responses
41				43		Many people are allergic to peanuts. How do they find out they are allergic? Many get a rash, also known as hives, and others have difficulty breathing. This type of allergy means you have to check the labels of most dry goods because many crackers, cereals, and noodles contain traces of peanut or peanut oil.	40. What am I talking about? any reference to allergies	41. How do allergic people react to peanuts? any reference to a rash, hives, difficulty breathing	42. How would you know if a baby had an allergy to peanuts? any reference to a rash, hives, difficulty breathing	43. What does the word <i>traces</i> mean in this sentence? <i>Many crackers, cereals, and noodles contain traces of peanut or peanut oil.</i> any reference to a small amount
44				46		Do you know where the expression "you smell like a skunk" is from? It comes from the spray a skunk spews out when it is threatened or frightened. A skunk can spray its target from a long way off, and the odor lingers on its victim for many days. However, a skunk will give its predator two warnings before spraying. It will stamp its feet and hiss.		44. Besides spraying its target, what other defense does a skunk use? either one of these: stamping its feet, hissing	45. Why do animals have defensive behaviors? any reference to protecting themselves	46. What does <i>predator</i> mean in this sentence? <i>A skunk will give its predator two warnings.</i> any reference to hunter, killer, attacker, destroyer, animal that eats another animal, an animal that's higher on the food chain, opposite of prey
47				49		The wind blew even harder. The grass was flat and our windows shook. We raced down into our basement and shut the door. We heard a howl like a train. Then it was quiet. Mom said it was safe to leave the basement. There was a lot of broken glass upstairs. Things were all out of place. At least we were safe. Our next-door neighbors weren't so lucky.		47. Where was a safe place for the family to go? any reference to the basement, cellar	48. Why would the basement be safer than upstairs? any reference to basement being underground	49. What is a <i>basement</i> ? any reference to an underground room, cellar

Subtotals Page 4

A	B	C	D	E

SCORE / SUBTEST		PASSAGE Allowable prompt: What else can you tell me?	A. Main Idea Acceptable responses	B. Details Acceptable responses	C. Reasoning Acceptable responses	D. Vocabulary Acceptable responses
A	B					
51	52	The old lion was tired. He was too old to chase his food. He lay down in his den and pretended to be sick. Soon all the other beasts heard about the sick lion. One by one, they came to his den. And one by one, the lion devoured them. A sly fox watched the lion's den for a time. Then he stood out of the lion's reach and asked the lion, "How are you feeling?" "I am old and tired," said the lion. "Please come in and talk to me." "No thanks," said the fox. "Many tracks lead into your den, but no tracks come out."	50. What am I talking about? any reference to a lion, being tricked/deceived	51. What kind of tracks was the fox talking about? any reference to an animal		52. What is another word for devoured in this sentence? And one by one, the lion devoured them. ate (or any form of eat), consumed, gobbled, gulped
54	56	Did you know that some fish can breathe out of the water? The mudskipper can. A mudskipper doesn't have lungs. It breathes through its gills. The gills take oxygen out of the water to give the fish air. Before this fish leaves the water, it stores water in two sacs beside its gills. It can stay on land as long as it keeps the water in its sacs. This fish looks for small creatures in the mud. As the fish swallows, water squishes out of its sacs. Then it darts back into the water.	53. What am I talking about? any reference to fish, mudskipper	54. How is a mudskipper different from other fish? any reference to breathing out of water, looking for things to eat in the mud	55. Why does the mudskipper look for creatures in the mud? any reference to food, something to eat	56. What is another word for darts in this sentence? Then it darts back into the water. hops, jumps, leaps, runs, dashes, skips, hurries, scurries, scoots, sprints, whizzes, zips, charges, races, shoots, springs
58	60	Shadow is Dave's faithful companion. Some people say Dave and Shadow are best friends. When Dave is at school, Shadow waits patiently at home. Every afternoon, Shadow sits in the front yard, waiting for Dave's bus to drop him off. When Shadow was a puppy, she started following Dave everywhere. If Dave went to baseball practice, Shadow went too. When Dave rode his bike, Shadow ran alongside him.	57. What am I talking about? any reference to Shadow, Dave, a pet	58. Where did Shadow follow Dave? any reference to baseball practice, bike rides, everywhere	59. Why is Shadow a good name for Dave's dog? any reference to follows/always with him	60. What does the word faithful mean in this sentence? Shadow is Dave's faithful companion. loyal, true, devoted, trusty, trustworthy, dependable, can count on, won't leave/betray him, reliable, dedicated, committed, always there, by his side

Subtotals Page 5

A B C D E

SCORE /
SUBTEST
A B C D E

E. Understanding Messages <i>Acceptable responses</i>	
<p>PASSAGE Allowable prompt: <i>What else can you tell me?</i></p> <p>Our bake sale to raise money is tomorrow afternoon. Please bring your cakes and cookies to Room 28 tomorrow morning.</p>	<p>61. What are you supposed to bring to Room 28 tomorrow? either one of these: cakes, cookies</p> <p>62. Why are people bringing cakes and cookies to school tomorrow? any reference to a bake sale, fund-raising activity</p>
<p>For math homework tonight, please do the problems on page 33. You only have to do the last ten problems because we already did the first ten in class today.</p>	<p>63. What is your math homework tonight? any reference to the last ten/remainder of the problems</p> <p>64. Why don't you need to do all of the problems on the page? any reference to doing the first part in class</p>
<p>Sunday afternoon, I want all of us to go over the schedule for the week. I need to know your game times so I know when to be at school to watch.</p>	<p>65. What are you supposed to do Sunday afternoon? any reference to going over the schedule/game times/plan for the week</p> <p>66. Why do you need to go over the schedule for the week? any reference to knowing when to be at school/watch the games</p>
<p>Parent conferences are next week, so school will dismiss 30 minutes early on Tuesday, Wednesday, and Thursday.</p>	<p>67. What days are parent conferences? must have all 3: Tuesday, Wednesday, Thursday</p> <p>68. Why will students be dismissed early next week? any reference to parent/teacher conferences</p>

A B C D E

Subtotals Page 6

Appendix M: S.I.F.T.E.R

S.I.F.T.E.R
SCREENING INSTRUMENT FOR TARGETING EDUCATIONAL RISK
by Karen L. Anderson, Ed.S., CCC-A

STUDENT _____ TEACHER _____ GRADE _____
 DATE COMPLETED _____ SCHOOL _____ DISTRICT _____

Based on your knowledge from observations of this student, circle the number representing his/her behaviour. After answering the questions, please record any comments about the student in the space provided.

<p>1. What is your estimate of the student's class standing in comparison of that of his/her classmates?</p>	UPPER 5 4	MIDDLE 3 2	LOWER 1	ACADEMICS	<input type="checkbox"/>
<p>2. How does the student's achievement compare to your estimation of his/her potential?</p>	EQUAL 5 4	LOWER 3 2	MUCH LOWER 1		
<p>3. What is the student's reading level, reading ability group or reading readiness group in the classroom (e.g. a student with average reading ability performs in the middle group)?</p>	UPPER 5 4	MIDDLE 3 2	LOWER 1		
<hr/>					
<p>4. How distractible is the student in comparison to his/her classmates?</p>	NOT VERY 5 4	AVERAGE 3 2	VERY 1	ATTENTION	<input type="checkbox"/>
<p>5. What is the student's attention span in comparison to that of his/her classmates?</p>	LONGER 5 4	AVERAGE 3 2	SHORTER 1		
<p>6. How often does the student hesitate or become confused when responding to oral directions (e.g. "Turn to page...")?</p>	NEVER 5 4	OCCASIONALLY 3 2	FREQUENTLY 1		
<hr/>					
<p>7. How does the student's comprehension compare to the average understanding ability of his/her classmates?</p>	ABOVE 5 4	AVERAGE 3 2	BELOW 1	COMMUNICATION	<input type="checkbox"/>
<p>8. How does the student's vocabulary and word usage skills compare with those of other students in his/her group?</p>	ABOVE 5 4	AVERAGE 3 2	BELOW 1		
<p>9. How proficient is the student at telling a story or relating happenings from home when compared to classmates?</p>	ABOVE 5 4	AVERAGE 3 2	BELOW 1		

10. How often does the student volunteer information to class discussions or in answer to teacher questions?
- FREQUENTLY 5 4 OCCASIONALLY 3 2 NEVER 1
11. With what frequency does the student complete his/her class and homework assignments within the time allocated?
- ALWAYS 5 4 USUALLY 3 2 SELDOM 1
12. After instruction, does the student have difficulty starting to work (looks at other students working or asks for help)?
- NEVER 5 4 OCCASIONALLY 3 2 FREQUENTLY 1

CLASS PARTICIPATION

13. Does the student demonstrate any behaviour that seems unusual or inappropriate when compared to other students?
- NEVER 5 4 OCCASIONALLY 3 2 FREQUENTLY 1
14. Does the student become frustrated easily, sometimes to the point of losing emotional control?
- NEVER 5 4 OCCASIONALLY 3 2 FREQUENTLY 1
15. In general, how would you rank the student's relationship with peers (ability to get along with others)?
- GOOD 5 4 AVERAGE 3 2 POOR 1

SCHOOL BEHAVIOUR

SCORING

CONTENT AREA	TOTAL SCORE	PASS	MARGINAL	FAIL
ACADEMICS		15 14 13 12 11 10	9 8	7 6 5 4 3
ATTENTION		15 14 13 12 11 9	8 7	6 5 4 3
COMMUNICATION		15 14 13 12 11	10 9 8	7 6 5 4 3
CLASS PARTICIPATION		15 14 13 12 11 10 9	8 7	6 5 4 3
SOCIAL BEHAVIOUR		15 14 13 12 11 10	9 8	7 6 5 4 3

Source: "Screening instrument for targeting educational risk" by K. Anderson, 1989. Copyright by Karen Anderson

Appendix N: Summarized data collection record form

Summarized data collection record form

Participant number:	
Participant group:	
Participant name:	
School and class:	
Date:	
Date of birth:	
Chronological age:	

Summary of results				
SAAT	LGT-2		DIN	SIFTER
	RAW	AGE E	SNR	
	%	SS		
Pass/ Refer	Pass/ Refer		Pass/ Refer	Pass/ Refer

Selective Auditory Attention Test			
List 1	List 2	List 3	List 4
SCHOOL	BROOM	MOON	SPOON
BALL	BOWL	BELL	BOW
SMOKE	COAT	COKE	GOAT
FLOOR	DOOR	CORN	HORN
FOX	SOCKS	BOX	BLOCKS
HAT	FLAG	BAG	BLACK
PAN	FAN	CAN	MAN
BREAD	RED	THREAD	BED
NECK	DESK	NEST	DRESS
STAIR	BEAR	CHAIR	PEAR
EYE	PIE	FLY	TIE
KNEE	TEA	KEY	BEE
STREET	MEAT	FEET	TEETH
WING	STRING	SPRING	RING
MOUSE	CLOWN	CROWN	MOUTH
SHIRT	CHURCH	DIRT	SKIRT
GUN	THUMB	SUN	GUM
BUS	RUG	CUP	BUG
TRAIN	CAKE	SNAKE	PLANE
ARM	BARN	CAR	STAR
CHICK	STICK	DISH	FISH
CRIB	SHIP	BIB	LIP
WHEEL	SEAL	QUEEN	GREEN
STRAW	DOG	SAW	FROG
PAIL	NAIL	JAIL	TAIL
# Correct	# Correct	# Correct	# Correct
% Correct	% Correct	% Correct	% Correct

S.I.F.T.E.R.				
Content area	Total score	Pass	Marginal	Fail
Academics				
Attention				
Communication				
Class participation				
Social behaviour				

Listening Comprehension Test 2											
Subtest A			Subtest B			Subtest C			Subtest D		
No.	Score	Answer	No.	Score	Answer	No.	Score	Answer	No.	Score	Answer
1			2			3			4		
5			6			7			8		
9			10			11			12		
13						14			15		
16			17			18			19		
20			21			22			23		
24			25			26					
27						28			29		
30			31			32			33		
34			35						36		
37			38			39					
40			41			42			43		
			44			45			46		
			47			48			49		
50			51						52		
53			54			55			56		
57			58			59			60		
RAW	AGE	%	SS	RAW	AGE	%	SS	RAW	AGE	%	SS

Subtest E		
No.	Score	Answer
61		
62		
63		
64		
65		
66		
67		
68		
RAW	AGE	%
		SS

Appendix O: Test of normality

Result of the Shapiro-Wilk test as a test of normality

	Statistic	df	Significant difference
V3: Chronological age (years)	0,559	40	0,000
V4: Chronological age (months)	0,807	40	0,000
V4.1: Chronological age (in total months)	0,881	40	0,001
V7: Exposure to English - Caregivers - The age of exposure (years)	0,259	40	0,000
V8: Exposure to English - Caregivers - Approximate daily exposure (hours)	0,779	40	0,000
V9: Exposure to English - Television - The age of exposure (years)	0,878	40	0,000
V10: Exposure to English - Television - Approximate daily exposure (hours)	0,921	40	0,008
V11: Exposure to English - Books - The age of exposure (years)	0,887	40	0,001
V12: Exposure to English - Books - Approximate daily exposure (hours)	0,839	40	0,000
V13: Exposure to English - Radio - The age of exposure (years)	0,709	40	0,000
V14: Exposure to English - Radio - Approximate daily exposure (hours)	0,674	40	0,000
V15: Exposure to English - Play with friends or family members - The age of exposure (years)	0,867	40	0,000
V16: Exposure to English - Play with friends or family members - Approximate daily exposure (hours)	0,837	40	0,000
V17: Exposure to English - Nursery school - The age of exposure (years)	0,881	40	0,001
V18: Exposure to English - Nursery school - Approximate daily exposure (hours)	0,834	40	0,000
V19: Exposure to English - Grade R - The age of exposure (years)	0,637	40	0,000
V20: Exposure to English - Grade R - Approximate daily exposure (hours)	0,870	40	0,000
V21: DIN - SNR	0,922	40	0,009
V22: Selective Auditory Attention Test (SAAT) - Level 1%	0,900	40	0,002
V23: Selective Auditory Attention Test (SAAT) - Level 2%	0,879	40	0,000
V24: Selective Auditory Attention Test (SAAT) - Level 3%	0,787	40	0,000
V25: Selective Auditory Attention Test (SAAT) - Level 4%	0,832	40	0,000
V31: Listening Comprehension Test 2 (LCT2) - Subtest A - Percentile rank	0,930	40	0,017
V32: Listening Comprehension Test 2 (LCT2) - Subtest A - Standard Score	0,912	40	0,004
V33: Listening Comprehension Test 2 (LCT2) - Subtest B - Percentile rank	0,928	40	0,013
V34: Listening Comprehension Test 2 (LCT2) - Subtest B - Standard Score	0,961	40	0,185
V35: Listening Comprehension Test 2 (LCT2) - Subtest C - Percentile rank	0,962	40	0,202
V36: Listening Comprehension Test 2 (LCT2) - Subtest C - Standard Score	0,960	40	0,169
V37: Listening Comprehension Test 2 (LCT2) - Subtest D - Percentile rank	0,907	40	0,003

V38: Listening Comprehension Test 2 (LCT2) - Subtest D - Standard Score	0,947	40	0,061
V39: Listening Comprehension Test 2 (LCT2) - Subtest E - Percentile rank	0,950	40	0,078
V40: Listening Comprehension Test 2 (LCT2) - Subtest E - Standard Score	0,976	40	0,542
V41: Listening Comprehension Test 2 (LCT2) - A-E Total test - Percentile rank	0,958	40	0,142
V42: Listening Comprehension Test 2 (LCT2) - A-E Total test - Standard Score	0,956	40	0,120

The majority of the p-values (significant difference) ≥ 0.05 . Therefore, normality was not achieved. Nonparametric tests were therefore used.