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Auditory skills and listening comprehension in English second language learners in Grade 1

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Background: Studies indicate that difficulties English second language (ESL) learners experience in the classroom may not be attributed to only listening comprehension of the language of learning and teaching (LoLT). ESL learners' performance-related difficulties may increase when linguistic complexity is added to auditory comprehension tasks. Limited research is available on the auditory skills of ESL learners and listening comprehension in ESL learners younger than 12 years.

Aim: To determine which areas of auditory skills and listening comprehension Grade 1 ESL learners find most difficult.

Setting: The study was conducted at two independent primary schools in an urban setting of the Tshwane district, Gauteng province, South Africa where the LoLT is English.

Methods: A static two-group comparison design was used. Data were collected from two similar independent urban schools. The research group comprised ESL learners (n = 15) exposed to English for 12–18 months. The control group comprised English first language (EFL) learners (n = 15). The digits-in-noise (DIN), children's auditory processing performance scale (CHAPPS) and listening comprehension test 2 (LCT-2) were used. Six Grade 1 teachers participated in this study.

Results: Majority of the participants (n = 25) passed the DIN test. In the overall scores for the CHAPPS and LCT-2, significant differences were found between the two groups (p = 0.024; p = 0.001). Strong agreements were found between the ESL participants' test results for the CHAPPS and LCT-2. Results indicate that ESL learners experience significant difficulties with higher linguistically dependent auditory skills and listening comprehension tasks.

Conclusion: ESL learners achieved poorer scores as the listening tasks became more linguistically demanding. Specific layers of auditory skill and listening comprehension difficulties when listening in their LoLT were identified in the ESL learners. Targeted intervention and curriculum support with the help of a speech-language therapist can be provided.

Keywords: auditory skills; listening comprehension; Grade 1 learners; English second language; digits-in-noise test; children's auditory processing performance scale; listening comprehension test-2.

Introduction

In 2007, 65.3% of South African learners were enrolled in schools where the language of learning and teaching (LoLT) was English (Department of Basic Education 2010:16), yet only 9.6% of the population were English first language (EFL) speakers (Statistics South Africa 2011). This indicates that more than 50% of learners in South Africa could be English second language (ESL) learners. Globally, it is acknowledged that language proficiency and competence play a key role in academic achievement (Hoff 2006:55–88; Owens 2012:16–17) and require the understanding and use of classroom discourse that includes the educator's verbal instructions and lessons, as well as written text (Van Rooyen & Jordaan 2009:271–287). Learners are therefore required to develop adequate language skills in speaking, listening, reading and writing in their LoLT in order to attain the cognitive academic language proficiency (CALP) necessary for academic learning. In many low-to-middle income countries such as South Africa, ESL learners have not developed sufficient CALP in their second language (L2) for successful academic learning upon school entry (Taylor & Von Fintel 2016:75–89). Much research exists on the difficulties ESL learners experience when speaking, reading and writing in their L2. However, it is of great concern that the auditory skills and listening abilities of ESL learners has only recently been investigated, even though listening is globally recognised as a key component of language acquisition

(Vandergrift & Baker 2015:390–416) and 50% – 75% of a learner's time in the classroom is estimated to be spent on listening (Bowers, Huisingh & LoGuidice 2006:7–9).

Listening and understanding is a complex cognitive process and is perceived as a difficult skill to learn and master (Cole & Flexer 2015:229–232). In this study, the terms auditory skills and listening comprehension are not used interchangeably but both form integral components of listening. Auditory skills are the interrelating and overlapping auditory components that are essential for integrating, interpreting and comprehending auditory or linguistic information produced by others (Cole & Flexer 2015:229–232). Listening comprehension is the active process of constructing meaning in which listeners attend to and process auditory information in order to understand the message and make necessary inferences implied in the input (Buck 2001). In both natural and structured activities, auditory skills are essential to integrating, interpreting and comprehending auditory or linguistic information and are interrelated and overlap (Cole & Flexer 2015:229–232). According to Cole and Flexer (2015:229–232), these auditory skills comprise attending to and detecting auditory information, localizing and disregarding competing stimuli, discriminating, identifying, categorizing and associating the information with other similar items as well as involving memory and retrieval. Understanding the different components of auditory skills may assist in analysing ESL learners' layered difficulties. The process of successful listening comprehension is highly automatised in first language (L1) listeners as little or no conscious attention is required from them (Brunfaut & Revesz 2015:141–168). L2 listeners commonly lack harmonious top-down and bottom-up processing (Yeldham 2016:394–420) and therefore may experience difficulties with their auditory skills and listening comprehension abilities. Bottom-up processing involves decoding auditory input by segmenting the sounds heard into meaningful units while top-down processing makes use of context and prior knowledge in order to build a conceptual framework. Vandergrift and Baker (2015:390–416) emphasise the paucity in research with regards to the variables contributing to the development of individuals' L2 listening ability. Researches regarding the difficulties that ESL learners experience and factors influencing their auditory skills and listening comprehension abilities have emerged only recently.

Several factors have been investigated so far and are proposed to be associated with difficulties in auditory skills and listening comprehension experienced by ESL learners. Environmental factors such as classroom noise and high levels of reverberation have been shown to affect learners' attention, speech perception and concentration, thereby negatively influencing their listening comprehension abilities and educational achievement (Nelson et al. 2005:219–229). Studies have also shown that ESL learners experience greater difficulty when perceiving speech in noise and reverberation as opposed to EFL learners (Tabri, Chacra & Pring 2011:411–422) which is a low linguistically dependent process of auditory skill and listening comprehension.

In addition to the listening environment, listening tasks with higher linguistic dependency contributing to one's listening comprehension have also been investigated. Goh (1999:14–42) highlighted how vocabulary, speech rate, input text (e.g. lectures, radio broadcasts, face-to-face conversations) and a speaker's accent may be the major sources contributing to listening comprehension difficulties experienced by ESL university students in Singapore. Chang, Wu and Pang (2013:415–434) stressed how the auditory information presented is an important factor contributing to ESL participants' listening comprehension difficulties. English second language learners indicated that utterances were difficult to understand when they contained unknown words, difficult grammatical structures, unfamiliar topics, abstract concepts and long sentences (Chang et al. 2013: 415–434). The effectiveness of listening comprehension of familiar and unfamiliar native accents has been explored and results obtained from the participants (ranging between the ages of 19 and 35 years) indicated that the familiarity with the speaker's accent benefits the listener under adverse listening conditions such as listening in noise (Adank et al. 2009: 520–529). In a recent South African study, Moodley, Kritzinger and Vinck (2016:1–15) found that ESL learners of isiNdebele L1 teachers performed better, most probably because there are more English-derived words in that language than in other South African languages.

For the limited research investigating the auditory skills and listening comprehension difficulties of ESL learners, majority of participant groups vary from Grade 4 learners to university students (Adank et al. 2009:520–529; Chang et al. 2013: 415–434; Goh 1999:14–42). Very few studies describing the auditory skills or ESL learners and listening comprehension abilities of younger ESL learners are available, specifically with regards to Grade 1 ESL learners. This gap in knowledge of young ESL learners is of concern as this is the age in which learners' CALP should be adequately developed in their LoLT for academic purposes. Because of the paucity in research regarding the layered components of auditory skills and listening comprehension in ESL learners under the age of 10, difficulties experienced by this population may go undetected or be identified only later in their academic career. Without adequate preventative intervention to facilitate their auditory skills and listening comprehension, these ESL learners' academic progress and achievement may be negatively impacted.

Therefore, the aim of this study was to determine the areas of auditory skill and listening comprehension Grade 1 ESL learners experience most difficulty with.

Method

Study design

This study employed a quantitative, static two-group comparison design to compare auditory skills and listening comprehension abilities of Grade 1 ESL learners and Grade 1 EFL learners.

Settings

This study was conducted at two independent primary schools in an urban setting of the Tshwane district, Gauteng province of South Africa where the LoLT is English. Independent primary schools were selected as opposed to public primary schools as to limit variables amongst participants, such as family income. The parents of the participants were all able to afford private education for their children, indicating a similarity in socio-economic status between the participants from both schools.

Study population

Two sets of participants were used in this study, namely, Grade 1 learners and their teachers. A non-random, purposive sampling method was used when selecting participants for the ESL (n = 15) and EFL groups (n = 15) according to the following inclusion criteria: normal hearing Grade 1 learners between the ages of 72 and 83 months with no history of otitis media. English second language learners whose first language is Sepedi, Sesotho or Setswana and who have had 12–18 months of formal exposure to English were selected. The study employed matching samples control procedures where the ESL participants were matched with the EFL participants according to age and gender. Six Grade 1 teachers participated in the study. All the teachers spoke English fluently and completed their degrees at tertiary educational institutions. The number of years of teaching experience was evenly distributed between the two schools and varied from 2 years (n = 1), 5–8 years (n = 4) and over 30 years of experience (n = 1). The characteristics of the Grade 1 participants are described in Table 1.

There were 15 Grade 1 participants in each group. The Sotho-Tswana language group was selected as the research groups' L1 as approximately 40% of the South African population speak Northern Sotho (20%), Setswana (15%) or Southern Sotho (5%) as their first language (Frith 2011). Participants in the research and control groups were similar in age and gender, and differed slightly in their mothers' mean age and mothers' level of education (Table 1). Mothers in the control group were slightly higher educated and older than the mothers in the research group, but no statistically significant difference was found. With regards to the Grade 1's English exposure, all the participants (n = 30) communicated in English with their mothers, watched English speaking programmes on television (TV) and were exposed to the use of English in an educational context in both Grade R and Grade RR. Although all participants frequently communicate in English with their mothers starting from birth to the age of 3 years, the ESL participants had no exposure to English. According to Saville-Troike (2012:14) a first language is acquired during early childhood usually before the age of 3 while a second language is an official or societally dominant language acquired subsequent to the first language. Large contrasts between the groups in terms of their shared book reading and TV viewing were noted. The ESL group was greatly exposed to TV, but almost no book reading at home,

TABLE 1: Grade 1 participant characteristics (n = 30).

Participant characteristic	Research (ESL) group (n = 15)	Control (EFL) group (n = 15)
Age in months		
Mean	79.27	79.60
SD	4.28	2.29
Minimum	74.0	76.0
Maximum	87.0	84.0
Gender		
Female	-	-
n	8	8
%	53	53
Male	-	-
n	7	7
%	47	47
First language		
English	-	-
n	-	15
%	-	100
Sepedi	-	-
n	3	-
%	20	-
Sesotho	-	-
n	5	-
%	33	-
Setswana	-	-
n	7	-
%	47	-
Additional languages	-	-
None	-	-
n	-	5
%	-	33
Afrikaans	-	-
n	-	3
%	-	22
English	-	-
n	15	-
%	100	-
Sesotho	-	-
n	-	4
%	-	27
Setswana	-	-
n	-	2
%	-	13
Other	-	-
n	-	1
%	-	7
Mother's age in years		
Mean	37.33	40.67
SD	7.04	3.60
Minimum	26.0	35.0
Maximum	47.0	45.0
Mother's education		
Secondary	-	-
n	3	-
%	20	-
Tertiary	-	-
n	12	15
%	80	100
Exposure to English		
Mother	-	-
n	15	15
%	100	100

Table 1 continues on the next page →

TABLE 1 (Continues...): Grade 1 participant characteristics (n = 30).

Participant characteristic	Research (ESL) group (n = 15)	Control (EFL) group (n = 15)
Father	-	
n	8	13
%	53	87
Other	-	-
n	6	5
%	40	33
Since birth – 3 years	-	-
n	-	15
%	-	100
Grade RR	-	-
n	15	15
%	100	100
Grade R	-	-
n	15	15
%	100	100
Frequent exposure to TV		
n	12	8
%	80	53
Frequent exposure to book reading	-	-
n	3	15
%	20	100
Radio	-	-
n	2	2
%	13	13
Weekly exposure to TV at home		
Mean	16.13 h	9.8 h
0–11 hours	-	-
n	3	9
%	20	60
> 12 hours	-	-
n	12	6
%	80	40
Exposure to book reading at home		
None	-	-
n	12	-
%	80	-
Occasional	-	-
n	3	-
%	20	-
Daily	-	-
n	-	15
%	-	100

ESL, English second language; EFL, English first language; SD, standard deviation; TV, television; h, hours.

whereas the EFL group was exposed to shared book reading on a daily basis and their TV exposure was more controlled at home.

Materials and apparatuses

Three formalised outcome measures were used to assess the auditory skills and listening comprehension abilities of the Grade 1 participants in an educational context. Each tool was considered to have a different level of complexity ranging from linguistically independent to highly linguistically dependent, allowing for various layered levels of auditory skills and listening comprehension to be assessed comprehensively. The digits-in-noise (DIN) test is a low linguistically demanding listening task, as it uses pre-recorded English digit triplets (e.g. 4-9-3 spoken by a female EFL speaker) in steady-state speech noise to assesses an individual's ability to perceive speech in noise (Smits, Goverts & Festen 2013:1693–1706). The first triplet is presented to the learner based on their selected comfortable listening intensity and their response is entered into a smartphone application (Potgieter et al. 2016:405–411). The next triplet is then presented at a 2 dB lower signal-to-noise ratio (SNR) for a correct response or a 2 dB higher SNR for an incorrect response to the previous triplet presented (Potgieter et al. 2016:405–411). The DIN test uses the speech reception threshold of the learner to calculate their average SNR of the triplets presented and these results can be an indication of the learners' speech perception in noise. In addition to its low linguistic demand, the DIN test has validated normative data for the South African population (Potgieter et al. 2016:405–411).

The children's auditory processing performance scale (CHAPPS) (Smoski, Brunt & Tannahill 1998) was originally developed for children with hearing loss, but can be used for children with normal hearing. It is a 36-item questionnaire using a seven-point scale (from cannot function at all in the context observed, to showing less difficulty) that both teachers and parents can complete to rate a child's listening behaviour (Wilson et al. 2011:278–291). It is a screening questionnaire that has been used to determine listening difficulties in children at home or in school under six different listening conditions (Wilson et al. 2011:278–291). Given that the setting of this study was in an educational context, only teachers were required to complete the CHAPPS questionnaire for each participant. The CHAPPS was selected to provide information on the learners' listening comprehension abilities when listening in noise, in quiet and ideal conditions as well as listening with multiple inputs, such as watching the speaker's face or being provided with illustrations. Their auditory skills such as their auditory memory and attention abilities in the classroom were also assessed. The first three listening conditions (noise, quiet and ideal) are linguistically dependent as teachers are required to score the learners listening comprehension abilities in terms of how they answer questions and respond to instructions under each listening condition. Listening with multiple inputs was less demanding linguistically as learner's listening comprehension abilities were aided with various visual components as opposed to relying on purely auditory information. The auditory memory or sequencing and auditory attention span conditions are considered to have a low less linguistic demand as they assessed the learner's ability to simply store and retain auditory information and selectively focus on the important auditory stimulus while disregarding irrelevant auditory stimuli.

The listening comprehension test 2 (LCT-2) assesses learners' listening comprehension abilities used in the everyday classroom environment rather than through simple repetition and discrimination subtests (Bowers et al. 2006:9). In a natural classroom environment, learners are required to process many incoming speech and non-speech signals, distinguish

which signals need immediate attention, organise and understand the input of the signals and plan appropriate responses, making listening a complex and integrated process. Therefore, the LCT-2 assesses a high level of listening comprehension ability through five highly linguistically dependent subtests. In the first and second subtests, the learner is required to identify the main idea of the verbally presented information and remember details by answering a question. The third subtest involves reasoning where the learner is required to infer answers form the auditory information provided and the fourth subtest assesses the learner's vocabulary as they are required to define a word in the passage read to them. Subtest five requires the learner to gather the most relevant information from the passage to show understanding of the message.

Procedures

Written permission to conduct the study at both primary schools was obtained along with the informed consent from all six Grade 1 teachers. The class registers were used to determine potential participants. The parents of the potential participants were contacted and interviewed telephonically to obtain the background and additional information of the child such as their medical history and English language exposure. Parents of all the participants provided informed consent for their child to partake in the study. Child assent was obtained by explaining the tests to the children and using pictures on their forms to indicate whether or not they would participate in the study. To determine outer and middle ear functioning of each participant an otoscopic and tympanometric examination was performed. All participants passed a pure tone hearing screening conducted on site by an audiologist using the HearScreen™ smartphone application according to the 'child protocol' of 25 dB intensity at 1000 Hz, 2000 Hz and 4000 Hz (Swanepoel et al. 2014:841–849). The DIN test and LCT-2 were conducted by the researcher as 35-min sessions for each participant. All six Grade 1 teachers were trained in a one-on-one session on how to complete the CHAPPS questionnaire for each participant in their classroom. They were then required to complete the CHAPPS for each participant.

Data analysis

The data were processed and analysed using the Statistical Package for the Social Sciences 23 (SPSS 23). Nonparametric statistical measures were used to analyse the data collected because through the use of histograms and the Shapiro–Wilk test there was evidence that the data did not have a normal distribution. Descriptive and inferential statistical measures such as the Wilcoxon signed rank test and Chi square test were utilised. The DIN test was scored in terms of a SNR where according to Methula, Visser and Zulu (2016) the preliminary score for children aged 5–7 years is between –7.75 dB and –6.31 dB. For the CHAPPS, scores lower than –1.0 (from slightly more difficult to not functional at all in the listening context) are considered to be below the normal range and are cause for concern (Smoski et al. 1998). Standard scores were used when analysing the LCT-2 results. Standard scores describe the distance of the raw scores obtained from the mean in terms of the standard deviation (SD) of the distribution of scores (Bowers et al. 2006:57). A mean of 100 and a SD of 15 were established for the purposes of reporting the results of the LCT-2.

Ethical considerations

Ethical clearance (reference no.: GW20170206HS) was obtained from the University of Pretoria, Faculty of Humanities Research Ethics Committee.

Results

Descriptive statistics were used to obtain the mean, SD, median and interquartile range for the three formal assessment tests completed by the ESL and EFL groups. These results as well as the differences between the assessment outcomes for the two groups as determined by

TABLE 2: Overall outcome of the digits-n-noise test, children's auditory processing performance scale and listening comprehension test-2.

Assessment tests	Research (ESL) group			Control (EFL) group			*p*
	Mean	SD	Median (IQR)	Mean	SD	Median (IQR)	
DIN test	-7.54	2.41	-7.2 (-8.8 – -6)	-7.89	1.47	-8.4 (-8.8–-6.8)	0.378
CHAPPS: Total	-1.3	0.90	-1	-0.33	0.88	0	0.024*
CHAPPS: Noise	-1.87	1.11	-1.5	-0.83	1.13	-0.5	0.021*
CHAPPS: Quiet	-1.5	1.1	-1	-0.37	0.99	0	0.013*
CHAPPS: Ideal	-0.63	1.23	-0.5	0.37	0.81	1	0.015*
CHAPPS: Multiple inputs	-1.03	0.72	-1	-0.2	0.86	0	0.012*
CHAPPS: Auditory memory and sequencing	-1.33	1.03	-1.5	-0.43	1	-0.5	0.038*
CHAPPS: Auditory attention span	-1.07	0.90	-1	-0.33	0.86	0	0.053
LCT-2: Overall	87.13	10.47	85 (79–98)	111.2	8.63	112 (104–119)	0.001*
LCT-2: Subtest A	88.33	12.20	90 (80–100)	106.33	9.54	110 (95–115)	0.001*
LCT-2: Subtest B	87.13	12.21	87 (75–100)	111.8	10.19	114 (105–119)	0.001*
LCT-2: Subtest C	91.8	7.61	95 (85–98)	108.27	9.79	107 (102–114)	0.001*
LCT-2: Subtest D	90.53	7.57	87 (85–97)	115.8	9.03	115 (110–122)	0.001*
LCT-2: Subtest E	92.4	6.87	90 (85–98)	106	12.42	110 (98–117)	0.003*

ESL, English second language; EFL, English first language; SD, standard deviation; IQR, interquartile range; DIN, digits-in-noise; CHAPPS, children's auditory processing performance scale; LCT, listening comprehension test.

*, Statistically significant $p \leq 0.05$.

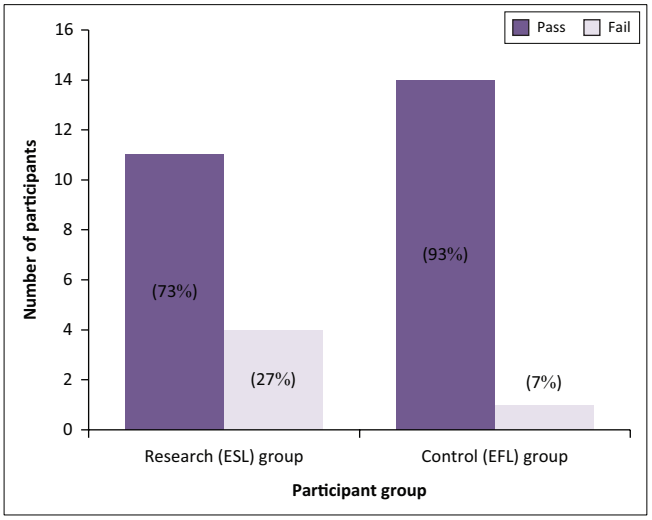
the Wilcoxon Signed Ranks Test are shown in Table 2. The results are given in order of listening difficulty, from the DIN test which is less linguistically dependent to higher linguistically dependency as assessed by the CHAPPS and LCT-2.

Figure 1 illustrates the number of participants in the ESL and EFL groups who passed or failed the DIN test.

Of the EFL group, 93% (n = 14) passed the DIN test while 73% (n = 11) of the ESL group passed the DIN test (Figure 1). No significant difference was found between the two groups as seen in Table 2 (p = 0.387). Although only a few, there were participants from both groups who showed auditory skill difficulties despite having normal hearing.

Figure 2 depicts the number of participants in the ESL and EFL group who passed or failed the CHAPPS questionnaire as well as its various subsections.

It is evident from the CHAPPS results (Table 2 and Figure 2) that the ESL participants showed poorer overall scores for each subsection of the CHAPPS, except for an auditory attention span where scores showed no significant difference compared to the EFL participants. Auditory attention span is an auditory skill and similar results across the groups were in agreement with the DIN test results, showing that these ESL participants experienced few difficulties with this particular lower level auditory skill. Majority of the ESL participants' ability to listen in noise was not as superior as their EFL peers and significant differences were noted (Table 2) between the ESL and EFL participant groups' listening comprehension under this condition (p = 0.021). The ESL participants obtained higher scores for their listening comprehension abilities under quiet and ideal conditions; however, significant differences between their scores and the EFL participants' scores (quiet, p = 0.013; ideal, p = 0.015) were still found (Table 2). Although a significant difference (p = 0.012) was found between the groups' scores, the ESL participants' listening comprehension abilities were better when listening with multiple inputs such as visual aids (Figure 2) compared to their other scores in the CHAPPS. Many of the ESL participants were reported to have difficulty with auditory memory and sequencing tasks in the classroom (Figure 2). A significant difference between the ESL and EFL participants' auditory memory and sequencing scores (p = 0.038) was found (Table 2). No significant difference (p = 0.053) was found between the ESL and EFL participants where their auditory attention span was scored and majority of the ESL participants performed well in this subtest. Majority of the ESL participants (67%) experienced the maximum difficulty when listening in a noisy environment and with their auditory memory and sequencing (47%). Apart from listening comprehension difficulties identified in the ESL group, they also showed significant differences with certain higher level auditory skills such as auditory memory.



ESL, English second language; EFL, English first language.

FIGURE 1: The number of participants in the English second language and English first language groups who passed or failed the digits-in-noise test according to their signal-to-noise ratio.

TABLE 3: Results of the Spearman rank correlation to determine the strength of association between the digits-in-noise test, children's auditory processing performance scale and listening comprehension test 2.

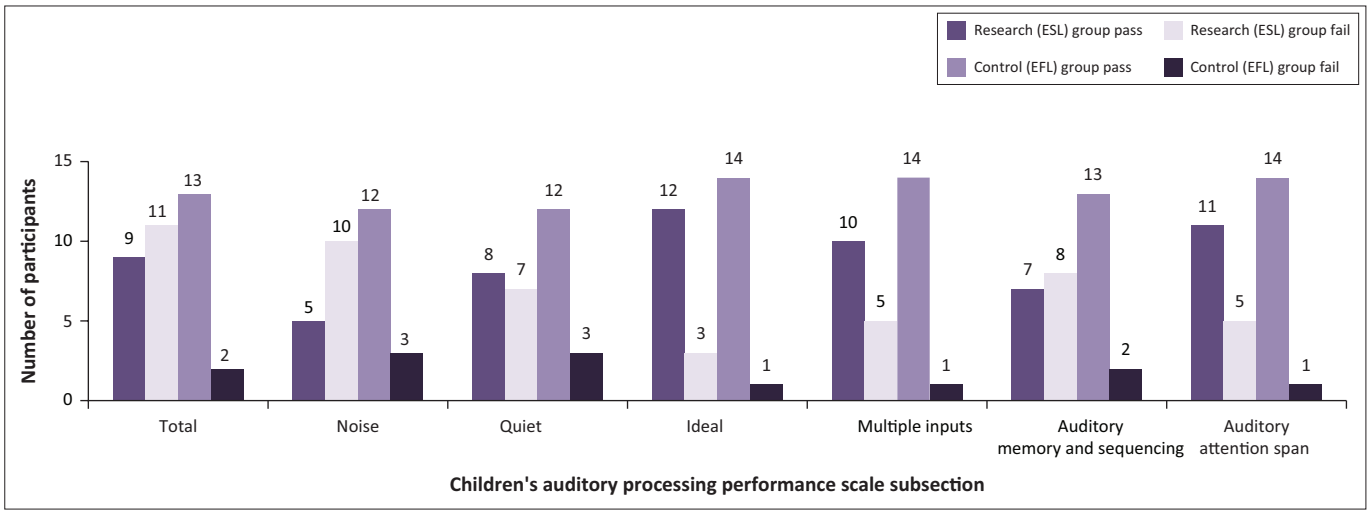
Tests	DIN test		CHAPPS		LCT-2	
	r_s	p	r_s	p	r_s	p
Research (ESL) group						
DIN test	1.000	-	-0.459	0.085	-0.340	0.215
CHAPPS	-0.459	0.085	1.000	-	0.701	1.000
LCT-2	-0.340	0.215	0.701	0.004**	1.000	-
Control (EFL) group						
DIN test	1.000	-	-0.221	0.428	-0.529	0.043**
CHAPPS	-0.221	0.428	1.000	-	0.113	0.688
LCT-2	-0.529	0.043**	0.113	0.688	1.000	-

ESL, English second language; EFL, English first language; DIN, digits-in-noise; CHAPPS, children's auditory processing performance scale; LCT-2, listening comprehension test 2.

**, Correlation is significant, $p \leq 0.05$; r_s, Spearman's correlation coefficient.

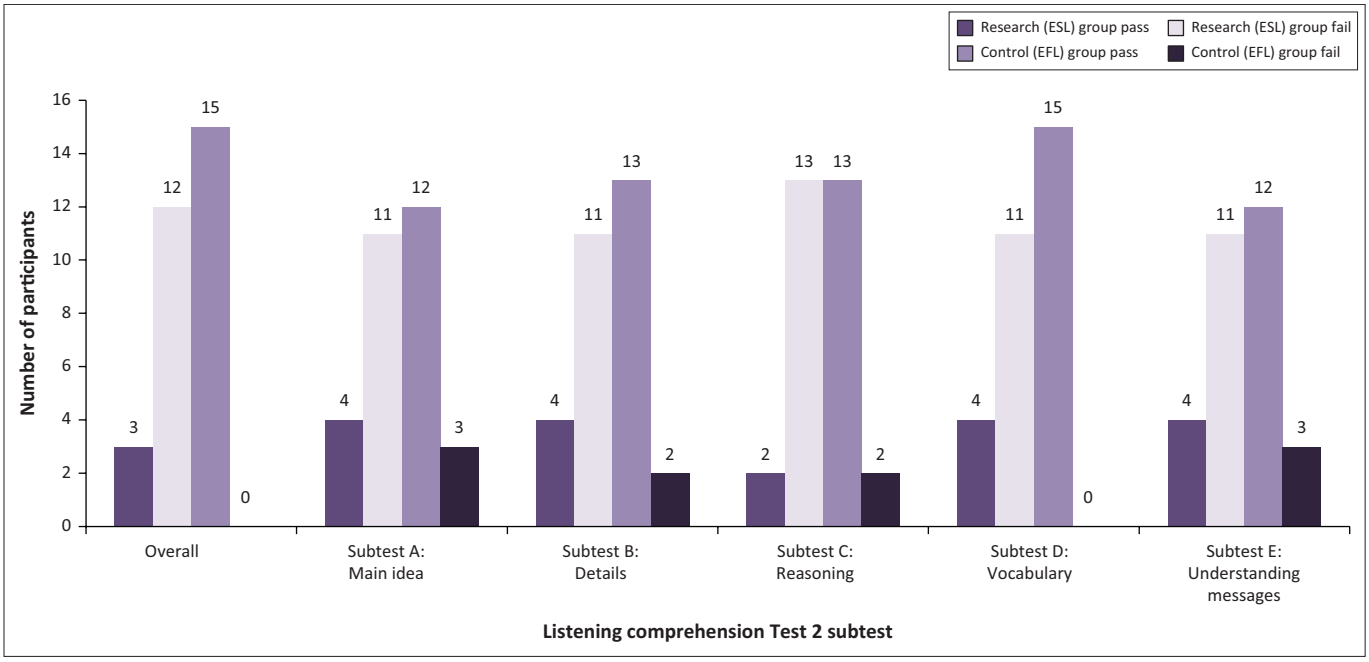
The ESL participants showed a significantly poorer overall performance and in each subtest of the LCT-2 (Figure 3) in comparison with the EFL group. Significant differences were also found between the scores of the two participant groups in all of the LCT-2 subtests and in the overall score (Table 2). The overall LCT-2 score of 87.13 (Table 2) obtained by the ESL learners and all the subtests indicate that they scored 1 SD below the mean of the normative sample. This result is depicted in Figure 3 where majority of the ESL participants did not display adequate listening comprehension skills according to the LCT-2. The ESL participants' scores for all subtests of the LCT-2 were 1 SD below the norm (Table 2). Significant differences of p = 0.001 between participant groups scores for the main idea, details, reasoning and vocabulary were found (Table 2). A significant difference of p = 0.003 was found between the groups for understanding messages in the LCT-2. Over 80% of the EFL participants passed each LCT-2 subtest (Figure 3), and their standard scores (Table 2) indicate that they were within 1 SD of the peer group for every subtest.

The strength of association between the three formal outcome measures selected for this study was determined through the



ESL, English second language; EFL, English first language.

FIGURE 2: The number of participants in the English second language and, English first language groups who passed or failed the various sections of the children's auditory processing performance scale questionnaire.



ESL, English second language; EFL, English first language.

FIGURE 3: The number of participants in the English second language and English first language groups who passed or failed the various sections of the listening comprehension test 2. ESL, English second language; EFL, English first language.

use of Spearman's rank correlation (Table 3). A strong correlation (r_s = 0.701, p = 0.004) was found between the LCT-2 and CHAPPS questionnaire in the ESL group (Table 3). A correlation (r_s = −0.529, p = 0.043) was also established between the LCT-2 and DIN test in the EFL group (Table 3). The strong agreements found between the ESL participants' test results for the CHAPPS and LCT-2 indicate that they experience significant difficulties with higher linguistically dependent auditory skill and listening comprehension tasks.

Discussion

Listening is a complex skill because of the many cognitive and linguistic processes involved which makes it challenging to assess an individual's listening abilities using one formal assessment tool. Therefore, this study aimed to investigate the layered auditory skills and listening comprehension abilities of Grade 1 ESL learners by means of three different assessment tools (the DIN test, CHAPPS and LCT-2) and comparing their results with a matched EFL group. In the ESL participant group, significant correlations were found between the LCT-2 and CHAPPS. The strong agreement between the CHAPPS and LCT-2 scores suggests that these ESL learners experienced greater difficulty as the tasks in the formal outcome measures became more linguistically demanding.

Only minor differences were observed between the two participant groups' DIN test results; however, the ESL

participants performed poorer than the EFL participants. The results are in agreement with the findings of Kaandorp et al. (2015:157–167) who found that English being a foreign language for the DIN test-takers had only minor effects on their ability to recognise digit triplets in noise. Overall, the DIN test was a low linguistically demanding assessment that majority of the ESL participants were able to pass. Despite having normal hearing, not all participants in both groups passed the DIN test. Teachers should be aware of their learners' ability to perceive speech in noise as it is an auditory skill necessary for listening comprehension.

Another auditory skill required for successful listening comprehension was assessed in the auditory attention span subsection of the CHAPPS. Similar to the DIN test results, majority of the ESL participants were able to pass this low linguistically demanding subsection. The evaluation of the ESL participants' auditory attention span provided information on their ability to attend to auditory information in the classroom but not their comprehension of the information provided. As no significant differences were found between the ESL and EFL participants' performance in their DIN test and auditory attention span scores, it is suggested that the basic process of perceiving and attending to auditory information was not a contributing factor to the listening comprehension difficulties of the ESL participants. When listening with multiple inputs such as the teacher's facial expressions, written text or pictures, the ESL participants were able to successfully understand the auditory information provided. Many of the ESL participants demonstrated adequate listening comprehension abilities when the auditory information was supplemented with visual aids. This listening comprehension task was more linguistically demanding than simply perceiving speech or attending to auditory information but not as linguistically demanding as understanding purely auditory information with no visual aid. The results showed that when only auditory information was provided (a highly linguistically demanding task), the ESL participants' listening comprehension of abilities was better when listening in a quiet environment compared to listening in noise. These findings suggest that the higher level auditory skills and listening comprehension abilities of the ESL participants in this study are not sufficiently developed to understand purely auditory information as presented to them in the classroom as they rely on visual cues in an attempt to make sense of what they have heard. The results also suggest that reducing classroom noise may assist ESL learners with listening comprehension. The ESL participants' demonstrated the maximum difficulty with the higher linguistically demanding tasks of the CHAPPS. These tasks included the participants' ability to listen in noise as well as their auditory memory abilities. The trends in results obtained from the CHAPPS indicate that these ESL participants' listening comprehension abilities were sufficient for very low linguistically dependent tasks but they have not yet developed adequate skills for high linguistically dependent tasks that are the need of Grade 1.

Unlike the CHAPPS, all subtests of the LCT-2 are highly linguistically dependent as the information presented was purely auditory and no visual aids were available to assist with the participants' listening comprehension and interpretation. The five subtests of the LCT-2 are where the ESL participants showed the poorest results in the study and the differences in their scores compared to the EFL participants were the most significant. The results of the LCT-2 are in accordance with the conclusion drawn from the CHAPPS scores, demonstrating how the ESL participants do not have adequate listening comprehension skills for high linguistically dependent tasks. The inability of the ESL participants to make inferences from what was said based on their limited linguistic knowledge and contextual knowledge may offer an explanation for their poor scores in the LCT-2. Vandergrift and Goh (2012:30) list the core skills for successful listening comprehension as listening for details, listening for global understanding, listening for main ideas, making inferences, predicting and listening selectively. The ESL participants' results of the LCT-2 are of great concern as learners are expected to have adequate listening comprehension skills in LoLT upon entry into Grade 1 in order to develop their CALP. They must be supported to develop adequate listening comprehension abilities in their LoLT in order to close the gap between them and EFL learners as highly linguistically dependent formal instruction is used from Grade 1. As the specific processes of auditory skills and listening comprehension in which these ESL learners experience difficulty have been identified, targeted intervention and curriculum support can be given.

Conclusion

The varying complexities and features of the three outcome measures used in this study provided the opportunity to describe layered processes of the ESL participants' auditory skills and listening comprehension abilities. From the results it was evident that the ESL participants' performance was poorer in all three tests compared to their EFL peers. A direct relationship was observed with the results obtained by the ESL participants showing that as the tasks from the three outcome measures became more linguistically dependent, the lower their scores were. This relationship suggested that the auditory skills and listening comprehension difficulties experienced were not strongly related to environmental interferences but rather to intrinsic factors such as their English language proficiency. Additionally, this conclusion is supported by the EFL and ESL DIN test and auditory attention span scores. These scores showed that listening comprehension difficulties of the ESL participants were not influenced by the basic processes of perceiving and attending to auditory information.

This study provides information that raises concern about how these learners' auditory skills and English listening comprehension abilities were not adequately developed upon entry into Grade 1 which may have negative effects on their acquisition of CALP. The recent report on the Annual National Assessment of 2011 (Department of Basic Education 2011) stated that only 12% – 31% of learners in Grades 2–7 had reached an 'achieved level of performance' in language and mathematics indicating that poor CALP in learners is very common in South Africa. A large number of South African learners make a sudden unsupported transition to English in Grade 1 (Kathard et al. 2011:59–71). It is important, however, to consider the limitations to this study such as the small study population sample when interpreting the results, discussion and conclusion. Additionally, all participants were taken from independent schools where resource allocation and availability as well as the educational environment may differ significantly from public schools. This limits the generalisation of these finding to ESL learners in other educational contexts. Lastly, it should be considered that one EFL learner did not pass the DIN test despite having normal hearing. Although the study draws attention to the lack of CALP in a single independent school and cannot be generalised, poorly developed listening comprehension skills for English in Grade 1 learners are widespread. The results isolated the areas of difficulty in auditory skills and listening comprehension which these ESL participants experienced. These specific areas of difficulty may be indirectly addressed by speech-language therapists through teachers and parents where education and curriculum support provided by speech-language therapists will aid in developing ESL learners' CALP in English. A suggestion is that preschool and foundation phase teachers increase their knowledge regarding the 'layers' of listening. This can be done either in their own capacity or via school-based speech-language therapists providing information sessions and workshops to their clients' or schools' teachers. This should equip teachers in identifying learners experiencing listening difficulties early in their academic career and refer them as soon as possible to a speech-language therapist. The focus should not only be on intervention for listening comprehension difficulties but rather on prevention too. Early identification of learners at risk of auditory skills and listening comprehension difficulties should occur prior to their Grade 1 academic year. As there was limited book reading reported at home in the ESL group, parent guidance on developing their child's CALP in the LoLT by means of shared book reading and the oral tradition of storytelling may be an important component of prevention.

Learners' auditory skills and listening comprehension abilities have been associated with language competence and literacy development (Wildschut, Moodley & Aronstam 2016:1–9; Wium & Louw 2015:19–41) which are necessary for academic success. Further studies should explore if relationships exist between Grade 1 ESL and EFL learners' listening comprehension abilities and various areas of their academic performance. Alternatively, studies to determine the auditory skills and listening comprehension abilities of Grade 1 ESL learners should be conducted and a large representative population sample should be employed in the study design.

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Competing interests

The authors declare that they have no financial or personal competing interests that may have inappropriately influenced them in writing this article.

Authors' contributions

K.-L.A. was the primary author of the manuscript and collected and analysed the data. A.K. and L.P. assisted with the design of the study and provided continuous input and internal review of the manuscript.

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