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The identification of language impairment in English additional language learners.

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CHAPTER 1

INTRODUCTION AND RATIONALE

"Language is not everything in education, but without language everything in education is nothing" (Wolff in Alidou, Brock-Utne, Dallio, Heugh & Wolff, 2006, p.9).

As a result of the socio-political history of South Africa, its influence on the education system and the central role of language in both history and education, there is currently much controversy and debate over language-in-education policies and practices (Heugh, 2000). One of the issues central to these debates is the fact that many children in South Africa learn in English as an additional language (Foley, 2008). This is regarded by many as the main reason for the educational crisis in this country (Heugh, 2000). Of particular concern to the profession of speech-language therapy, is the position of children with language impairment within this educational system (Jordaan, 2011). Thus, there are a number of reasons why it is imperative to conduct research on this population. First and most significantly, is the question of distinguishing between children who are simply in the process of acquiring English and those who have true language impairment. While one could argue that it is important to ensure that all children acquire the language of learning and teaching (LoLT), the level of support provided to children with language impairment will be more intensive than that provided to typically developing (TD) English additional language (EAL) learners (Jordaan, 2011).

Second, although there are a number of conditions associated with language impairment (e.g., autism and cognitive impairment), the condition known as specific language impairment (SLI), is particularly important in the educational context. Defined as impairment in expressive and/or receptive language, this condition is difficult to identify because it has no overt manifestations and may be easily overlooked during the pre-school and school-age years (Schwartz, 2009). In South Africa in particular, a delay in learning to talk may not be regarded as a priority by parents who are more concerned with physical disabilities and family economic status (Jordaan, 2011). However, SLI has a significant effect on academic development and the acquisition of literacy. It is therefore important that children with SLI are identified so that appropriate intervention is provided as early as possible to avoid the consequences of poor academic success and educational failure (Jordaan, 2011).

Third, there is a significant overlap in the language profiles of EAL learners and English first language (L1) learners with language impairment (Linan-Thompson & Ortiz, 2009). For example, both groups exhibit poor reading comprehension, poor vocabulary knowledge and growth, inadequate learning of classroom material as well as poor literacy attainment (Linan-Thompson & Ortiz, 2009). It is thus essential that research is conducted to find a valid measure that will distinguish EAL learners with language impairment from their typically developing peers.

The focus of the current study was to identify children with language impairment within the complex multicultural and multilingual South African context. In order to further investigate a valid assessment tool that can be used to identify language impairment in EAL learners, the current study explored an assessment approach and tool that had been shown in previous research (e.g., Jordaan, 2011), to have the potential to distinguish learners with a language disorder from those who were merely in the process of acquiring the language of learning as an additional language.

The primary focus of Jordaan's (2011) study was to describe the development of the psycholinguistic processes underlying the acquisition of academic language by EAL learners in the foundation phase of formal schooling. This is significant as the multilingual and multicultural South African context is faced with many educational challenges. One of the most significant challenges is inadequate development of academic language, as predominantly seen in many EAL learners (Jordaan, 2011). Although bilingualism is associated with cognitive, social and academic advantages, the current South African education system does not promote bilingual practices (Heugh, 2000). In addition, there is inequality in different contexts of education and a mismatch between language policies and practice within South African classrooms (Jordaan, 2011).

The design of Jordaan's (2011) study was quantitative, descriptive, and longitudinal in nature, with both comparative and correlational components. A total of 134 learners from 4 schools in Gauteng participated in the study over a period of three years. Two contexts of education, where English is the medium of instruction, were included in the study. Context 1 consisted of EAL learners who were taught by EAL educators. Context 2 was comprised of

EAL and English L1 learners who were integrated in the classroom and educated by English L1 teachers. The EAL learners from the two groups were compared in order to establish whether different contexts of education impact on the development of academic language. Furthermore, the EAL learners were compared to the EFL learners from the integrated context as they provided a comparative group that is representative of the broader South African context (Jordaan, 2011). In order to obtain an in-depth investigation of the development of academic language in the foundation phase, each learner was assessed on the Diagnostic Evaluation of Language Variation-Criterion Referenced edition (DELV-CR) (Seymour Roeper & de Villiers 2003) at the end of each academic year (e.g., grade 1, 2 and 3). The Gray Oral Reading Test-4 (GORT-4) (Wiederholt & Bryant, 2001) was administered to evaluate the learner's reading comprehension and reading accuracy. This was done at the end of grade 2 and 3. The Automated Working Memory Assessment (AMWA) (Alloway, 2007) and the Redmond (2005) Sentence Repetition test were administered at the end of grade 2. The AMWA proved to be a valuable measure for the purpose of Jordaan's (2011) study. Firstly, the results were correlated to the reading comprehension and language measure in order to determine whether working memory had an impact on the development of an additional language. Secondly, Jordaan (2011) investigated whether working memory measures can be used as a valid assessment tool for EAL learners. The results of the Redmond (2005) Sentence Repetition test supplemented the findings from the AMWA as all of the learners identified as at-risk for language impairment scored below the peer group mean on this measure, and the scores on this particular sentence repetition test correlated significantly with most of the language domains from the DELV-CR (Seymour et al., 2003) and the reading comprehension measure (Jordaan, 2011).

The results of Jordaan's (2011) study revealed that there was a significant development of academic language in all of the groups of participants over the three year period. Although the EAL learners in the integrated context had some delay in language learning in relation to the English L1 group, they performed significantly better than the EAL learners in context 1 on all measures (Jordaan, 2011). Seven of the 134 (5.2%) participants from Jordaan's (2011) study were identified and diagnosed with language impairment. The peer group mean proved to be a critical component in the identification of at-risk learners. The learners identified with language impairment consistently fell 2 standard deviations (SD) below the peer group mean on each language domain of the DELV-CR (Seymour et al., 2003) throughout the three year

period. The longitudinal design of the study thus allowed Jordaan (2011) to describe the manifestations of language impairment in an additional language.

Of particular interest for further research, and thus the purpose of the current study, were the results that Jordaan (2011) obtained for the Redmond (2005) Sentence Repetition test. Sentence repetition measures have been included as a sub-test in many formal language assessments as a psycholinguistic marker for SLI (Conti-Ramsden, Botting & Faragher, 2001; Redmond, Thompson & Goldstein, 2011). For example, sentence repetition is regarded as a measure of linguistic processing as learners are not able to repeat sentences that are beyond their current level of linguistic knowledge (Conti-Ramsden at al., 2001). If, during sentence recall, the semantics or syntax of the sentences is changed in any way, one can infer that a learner has weak linguistic representations in their long term memory (LTM) (Vance, 2008). However, accurate recall depends not only on the linguistic system, but also on working memory capacity (Archibald & Joanisse, 2009; Reisberg, 2006). However, sentence repetition measures have not always been recognised as a measure of working memory (Vance, 2008). Sentence repetition has received much attention in the literature in recent years (Conti-Ramsden et al., 2001; Archibald & Joanisse, 2009). Research indicates that this particular measure assesses both phonological short term memory (STM) and the episodic buffer zone of working memory (Vance, 2008; Alloway, Gathercole, Willis & Adams, 2004).

As sentence repetition relies on both linguistic knowledge and components of working memory, it has the potential to screen and identify learners who are at-risk for language impairment (Archibald & Joanisse, 2009; Montgomery, 2002). However, there has been virtually no research on sentence repetition as a screening and identification tool for language impairment in EAL learners in the South African context. The results that Jordaan (2011) obtained for the Redmond (2005) Sentence Repetition test indicate that sentence repetition measures have the potential to identify language learning difficulties in EAL learners. Furthermore, sentence repetition is increasingly difficult for EAL learners as energy and attention resources are used up by less familiar content, which leads to weak storage of information in working memory (Montgomery, 2002).

Learners who are at-risk for language impairment should be identified while they are in the foundation phase of formal education so that appropriate intervention strategies can be introduced as early as possible. This is significant as academic success in the foundation phase at school provides the building blocks for academic success in the intermediate and high school grades (Heugh, 2000). The results from Jordaan's (2011) study provide evidence for the fact that working memory plays an imperative role in language development, and subsequently academic achievement. Furthermore, sentence repetition has the potential to screen for language impairment among EAL learners, provided that the peer group mean is used as a standard of comparison. The aim of the current study was therefore to investigate whether sentence repetition can be used as a valid screening tool to identify EAL learners who are at-risk for language impairment. The results of the study therefore have theoretical and practical implications for the identification of language impairment among EAL learners. In addition, this research highlights the important role speech-language-therapists (SLTs) play in the educational setting in terms of promoting language learning and identifying learners whose academic language development is not on par with that of their peers.

CHAPTER 2
LITERATURE REVIEW

The literature review covers a range of theoretical issues and practical implications relevant to this study. A discussion on the South African education system and specifically English as the medium of instruction will shed light on the need for research into an assessment measure that can be used to identify EAL children with language impairment. Academic language development is critical for academic success and will thus be described. The typical development of bilingualism will be discussed, followed by an in depth description of SLI. The literature review will also describe Baddeley and Hitch's (1974) model of working memory, in order to provide relevant detail regarding the theoretical perspectives surrounding working memory, and its implications for assessment and the identification of language impairment, specifically among EAL learners. Speech-language therapists play an integral role in the identification and assessment of learners with language impairment. Within the South African context, SLT's are faced with the challenge of differentiating between learners with language delay due to language difference, and learners with language impairment. The literature review will describe the challenges that SLTs within the South African context are faced with in terms of assessment of bilingual learners, and possible solutions to the problem. The SLTs role within the educational context will also be discussed, as well as the importance of collaborative consultation with educators.

2.1. The South African Education System

The South African education system has had a turbulent history, and although South Africa is in its second decade of democracy, the education system is still considered to be in crisis (Navsaria, Pascoe & Kathard, 2011; Fleisch, 2008; Webb, Lafon & Pare, 2010). The most significant debate that arises from education policies and practices in South Africa is the role of English as the language of learning and teaching (LoLT) (Heugh, 2000; Foley, 2008). During apartheid, the South African education system was altered in such a way that racial divides in education left many learners under-educated or educated within resource-scarce classrooms (Heugh, 2000). When apartheid ended, the racial segregation that dominated the education system subsided, and as a result, there was migration and integration between different races across South Africa. Most importantly, learners were integrated in the

classroom, resulting in a variety of multicultural and multilingual educational contexts (Navsaria, et al., 2011; Foley, 2008).

English as the medium of instruction in the South African educational context is a topic which often results in controversial debate (Foley, 2008). Research in the area of language in education suggests that learners learn best through mother tongue instruction (Foley, 2008; de Klerk, 2002). Although the South African constitution states that all children have the right to be educated in their home language (Foley, 2008), there is disparity between language-in-education policies and current practices within South African classrooms (Webb, 1999; Heugh, 2000). Therefore, not all educational environments adequately accommodate learners who are not proficient in the LoLT (Nixon, McCardle & Leos, 2007). For example, English has remained the medium of instruction, despite the linguistic and cultural diversity that exists among learners within South African classrooms (Navsaria, et al., 2011). Therefore, a large proportion of South African learners are educated in their second or third language (Jordaan, 2011). These learners are required to learn the language of instruction *through* the language of instruction (Cummins, 2000). Therefore, many EAL learners may not be able to reach their full academic potential as they are not able to access the curriculum through English (Cardenas-Hagan, Carlson & Pollard-Durodola, 2007; Brock-Utne & Skattum, 2009; Bush, Joubert, Kiggunda & van Rooyen, 2010; Webb et al., 2010; Kathard et al., 2011; Brock-Utne & Skattum, 2009; Navsaria, et al., 2011).

Educators also play a significant role in the development of academic language (Linan-Thompson & Ortiz, 2009). Of significant concern, however, is the fact that educators are often not from the same linguistic background as the learners in their class, and this is likely to result in communication breakdowns (Pluddeman, Xola & Mahlahela-Thusi, 2000). In addition, educators are often not aware of their responsibility to meet the language and literacy related needs of learners who speak English as an additional language (Meier, 2005; Myers & Botting, 2008; O'Connor & Geiger, 2009; Gorman, 2009). As a result, learning English as a second language is not adequately facilitated in the classroom (Gutierrez-Clellen & Simon-Cereijido, 2009). A lack of knowledge and awareness among educators regarding the importance of language and literacy development has dire consequences for learners as they are not able to achieve their academic potential and obtain academic success. This is

further confounded by delayed identification and intervention of language impairment in some of these learners (Gorman, 2009).

The South African education system has placed a lot of emphasis on outcomes-based education (Jordaan, 2011). Research regarding education policies and practices in South Africa focusses on the use of English as the medium of instruction, and academic failure is attributed to the fact that learners have not developed academic language proficiency in English as the LoLT (Foley, 2008). Although English as the medium of instruction may be a hindrance to the development of academic language, researchers should place greater emphasis on the underlying processes that lead to poor academic achievement (Jordaan, 2011). Thus, there should be more focus on *how* learners acquire academic language, not merely on the outcomes of poor academic achievement (Jordaan, 2011). Through such research, the teaching of English within the educational context can be improved so that learners are able to actively and appropriately use this language in order to achieve academic success, and develop language competence (Foley, 2008).

2.2. Language for Academic Purposes

"Without the ability to communicate effectively in speech and through reading and writing, children and young people are seriously disadvantaged for life" (Rose, 2006, p.14).

2.2.1. Language

When a child is enrolled in formal education, there is a shift in language use from learning-to-talk to talking-to-learn (Owens, 2005). Thus, there is a distinction between language use for social purposes and language for academic purposes (Bedore & Pena, 2008). Language for academic purposes is an important skill to develop during the school age years. However, the development of academic language proficiency in English is somewhat challenging for learners who speak English as an additional language (Scarcella, 2003).

Academic language as a distinct register is vital for the development of all learning outcomes and academic success (Scarcella, 2011). Academic language includes the cognitive, linguistic and cultural aspects of academic discourse (Zwiers, 2006). Thus, language for

academic purposes encompasses oral language proficiency, literacy attainment (van Rooyen & Jordaan, 2009), and the language used in academic textbooks (Linan-Thompson & Ortiz, 2009). Academic achievement is dependent on a learner's ability to access the curriculum (Foster & Miller, 2007). Thus, there is an interaction between the LoLT and language competency (Cummins, 1979). The ability to develop and use language for academic purposes is somewhat challenging in a linguistically and culturally diverse country like South Africa, where the LoLT is English (Zwiers, 2006; van Rooyen & Jordaan, 2009). EAL learners therefore suffer a double disadvantage as they are required not only to *learn* an additional language, but also develop academic language proficiency in that language (Zwiers, 2006). As a result, many South African learners are achieving poor results academically (Navsaria, et al., 2011).

Research suggests that it could take a learner up to five years to achieve additional language (L2) proficiency if exposure to an additional language is only in an educational setting (Hakuta, Goto, Butler & Witt, 2000). Therefore, the definition of academic language in L2 learners differs somewhat from the traditional sense of the word. For example, from the perspective of 'teaching English as a second language' (TESL), academic language is the use of language to complete academic tasks such as formal schooling and tertiary education (Jordaan, 2011). Within the TESL perspective, research has focussed on two areas, namely, English for specific purposes (ESP) and English for academic purposes (EAP) (Swales, 1990; Bhatia, 1997; Johns, 1997). It is important to note that there is little transfer of conversational language to academic language (Kwan & Willows, 1998; Verhoeven, 2000). For example, many EAL learners may be able to speak English during conversation in order to achieve immediate communicative goals (de Klerk, 2002; Cummins, 2008); however, they may not be able to use English in a broader linguistic context (de Klerk, 2002), for example, for academic purposes (Cummins, 2008).

In order to describe these differences, Cummins (2008) developed a model of two distinct language uses, namely, cognitive academic language proficiency (CALP) and basic interpersonal communication skills (BICS). In order to develop discrete language skills, such as listening, speaking, reading and writing, one needs to acquire the rule-governed aspects of language, for example, phonology, grammar and spelling. These skills are learned through

direct teaching and exposure to a language rich environment (Weber & Longhi-Chirlin, 2001). EAL learners need to acquire academic language skills in a second or third language and this has a negative influence on their overall academic performance (Linan-Thompson & Ortiz, 2009). Thus, it is evident that learners require maximal support within the educational environment in order to make the shift from BICS to CALP (Scarcella, 2011).

Language for academic purposes as a distinct register is not always recognised within the South African education system and as a result, there is limited use of specific teaching strategies aimed at developing academic language skills. Poor literacy attainment (Howie, 2009) and oral language skills in general is caused by inefficient development of academic language (Jordaan, 2011). Kathard, et al. (2011, p. 61) reported that "learner failure is symptomatic of a systemic problem"; thus, the problems that are experienced by learners often result from problems within the school system. . Each learner within any classroom environment has diverse learning needs and the educational system is required to meet the individual needs of each learner (Navsaria, et al., 2011). However; the poor academic performance of many South African learners may be attributed to the fact that the quality of education within the South African context is inappropriate (Wium & Louw, 2011). In addition, not all educators are adequately trained in order to assist learners who experience barriers to learning (Navsaria, et al., 2011). It is thus evident that South Africa has challenges regarding current educational practices, and it is imperative that educators acknowledge their role in the development of academic language and provide assistance in terms of language development and exposure to academic text (Jordaan, 2011).

2.2.2. Literacy

Literacy is inherently a language based activity that stems from the development of oral language skills (Farber & Klein, 1999; Hadley, Simmerman, Long & Luna, 2000; Scarborough, 2001; Myers & Botting, 2008; Cardenas-Hagan et al, 2007; Schuele, Spencer, Barako-Arndt & Guillot., 2007), and encompasses both a reading and writing component (Schuele et al., 2007; Kathard et al., 2011). Phonological awareness and rapid automatic naming are vital skills that underlie the development of literacy (Kimborough-Oller & Jarmulowicz, 2009). In

addition, working memory, specifically phonological STM, is an important cognitive component that contributes to reading proficiency as learners are required to store information in their working memory while they make sense of the written text (Linan-Thompson & Ortiz, 2009). The role of working memory and literacy development will be discussed in more detail in a later section.

The South African education system is faced with a significant challenge regarding literacy development (Kathard et al., 2011) among learners in the foundation and intermediate phases of schooling. The main cause for concern regarding literacy in South Africa is the fact that the majority of learners are not proficient in the LoLT (Linan-Thompson & Ortiz, 2009). Although decoding skills are an important pre-requisite for comprehension during reading tasks, oral language proficiency has critical role in reading comprehension (Gorman, 2009; Myers & Botting, 2008). Of particular importance is the fact that language and literacy proficiency in a first language facilitates the development of these skills in an additional language (August, Calderon, Carlo & Nutall, 2006; Gorman, 2009). Thus, Cummins (1984) proposed that children who have language and literacy strengths in their L1 will develop adequate language and literacy skills in their L2. However, EAL learners within the South African context receive little support in their L1 (Jordaan, 2011) and this is detrimental for language learning and literacy attainment.

As the relationship between L1 and L2 is dependent on a child's proficiency in L1 (Cardenas-Hagan et al., 2007), EAL learners with language impairment experience a significant double-disadvantage regarding the development of literacy (Jordaan, 2011; Myers & Botting, 2008). As mentioned previously, inadequate literacy development poses a significant challenge for achieving age and grade appropriate academic results for school age children, especially for learners who are not proficient in the LoLT. This warrants further investigation of literacy development, especially with regards to EAL learners (Gorman, 2009). In addition, early identification of SLI is imperative in order for language and literacy difficulties to be addressed and remediated (Foster & Miller, 2007; Schuele et al., 2007).

2.3. Bilingualism

The definition of bilingualism is not clear cut and is associated with a variety of meanings (De Lamo White & Jin, 2011). There is discrepancy in the literature as to whether 'bilingualism' refers to complete oral fluency in two languages, or varying degrees of competency in the languages (De Lamo White & Jin, 2011). The most appropriate definition to date defines bilingualism as the ability use two or more languages in order to achieve oral and written communication, with varying levels of proficiency (De Lamo White & Jin, 2011; Kohnert, 2010; 2009; Owens, 2005). The period between birth and adolescence is considered to be "the most dynamic period of communication development" (Kohnert, 2010, p. 457). Therefore, children who receive regular input in two or more languages during this period are considered to be bilingual.

Second language acquisition is not static and can take the form of simultaneous acquisition, or successive acquisition (Kohnert, 2010; Owens, 2005). Simultaneous acquisition of languages occurs when a child is exposed to two languages from birth (Paradis, 2007; Pihl, 2009; Kohnert, 2010). Simultaneous bilinguals tend to progress through speech and language developmental milestones at age appropriate norms for both languages. These children tend to be proficient in both of the languages that they speak, provided that language exposure takes place within a supportive and meaningful environment (Kohnert, 2010). Alternatively, successive acquisition occurs when a child is exposed to one language from birth and a second language is introduced at a later stage during childhood (Owens, 2005; Kohnert, Windsor & Ebert, 2009; Kohnert, 2010; Verhoeven, Steenge & Van Balkom, 2012). For the majority of successive bilingual learners, L2 exposure and acquisition thereof occurs within the educational environment where the LoLT differs from that of the home language (Paradis, 2007; Bedore & Pena, 2008; Kohnert et al, 2009; Pihl, 2009; Kohnert, 2010; Verhoeven et al., 2012). Exposure to the LoLT typically takes place between the ages of three and six years of age (Bedore & Pena, 2008).

2.3.1. Developing and Learning in an Additional language

There are three defining characteristics that are used in the description of TD bilingual learners. First, there is an uneven distribution of language abilities in the L1 and L2, second, there are cross-linguistic associations in terms of language development, and third, individual variation exists among learners in similar social circumstances (Kohnert, 2010).

2.3.1.1 Distributed skills and uneven ability

Successive bilinguals are considered to be more skilled in their first language and this is positive in that supported and continued development of the L1 leads to better development and attainment of an additional language (Kohnert, 2010). Thus, in order to experience academic success, a child's L1 needs to be consolidated before entering formal schooling where there is intense L2 exposure (Cummins, 1979; Cobo-Lewis, Eilers, Pearson & Umbel, 2002; Lopez & Greenfiled, 2004). Many successive bilinguals who are educated at an English medium school are likely to experience a shift in language dominance from the L1 to the L2 (Verhoeven et al., 2012). This is especially true for the South African context. A shift in language dominance from an L1 to an L2 occurs when there is adequate motivation to learn the L2 (Bedore & Pena, 2008; Verhoeven et al., 2012). Thus, these learners often experience a regression or stabilisation in their L1 as they become more accustomed to the L2, through increased demands and opportunities to learn this particular language (Bedore & Pena, 2008; Kohnert, 2010). As a result of these shifts in language dominance, an EAL learner's performance on language tasks varies between the languages (Kohnert et al, 2009). These changes in patterns of development indicate that it is inappropriate to compare successive bilingual learners to their monolingual peers, especially when identifying learners who may be at-risk for language impairment (Kohnert et al, 2009).

2.3.1.2. Cross-language associations

Cross-linguistic studies have been proposed in order to understand the influence that a L1 has on the acquisition of an additional language (Cardenas-Hagan et al., 2007; Nixon, McCardle

& Leos, 2007). Cross-linguistic transfer occurs in additional language learning where L1 influences the development of L2 (Leafstedt & Gerber, 2005). Cross-language associations in bilingual learners typically focus on the language features of the two languages, cognitive-linguistic factors as well as the processing mechanisms central to language learning (Kohnert, 2010). There are typically cross-language associations that exist in terms of rate of acquisition for different structures; for example, grammar, narratives and word classes (Bedore & Pena, 2008). Such associations arise from salience and frequency of specific structures across languages (MacWhinney, 2005).

2.3.1.3. Individual variation

Like monolingual learners, there is individual variation among bilingual learners regarding their language profiles (Kohnert, 2010). Cognition, neurological functioning, as well as social-emotional development contribute to individual variation throughout language development (Kohnert et al., 2009). In addition, there are a variety of external and internal factors that affect the development of language, that are unique to each individual. For example, external factors influencing the development of language include the context of language learning, the social value associated with the home language, as well as the level of support and opportunities provided in order to promote the development of each of the languages (Kohnert, 2010). Internal factors that affect the development of language include the socio-economic status of the child's parents, the level of parental education and literacy skills, as well as individual variations within cognitive capabilities (Kohnert, 2010).

It is apparent that the development of an additional language is complex and there are a variety of factors that influence linguistic proficiency. However, there is much concern for EAL learners who display delayed language development in both languages where there is no evidence for the cause of a delay (Kohnert, 2010). It is these learners that make up a large proportion of a SLT's case load. EAL learners with language impairment suffer a significant double disadvantage in terms of developing language proficiency and adequate literacy skills as language development is delayed in both languages. . These learners are therefore at risk for academic failure and early identification is essential (Kohnert, 2010).

2.4. Specific Language Impairment

Specific language impairment is a type of developmental language disorder that is characterised by delayed expressive and/or receptive language, resulting in an array of linguistic and non-linguistic processing difficulties (Montgomery, 2002; Bedore & Pena, 2008; Schwartz, 2009; Kohnert, 2010; Verhoeven, Steenge & van Balkom, 2012). Children with SLI have innate factors that affect their ability to cope with the demands of language learning (Kohnert, 2010) and literacy development (Schuele et al., 2007). Children with SLI typically display disproportionate language weaknesses and are often classified as being "late talkers" (Kohnert, 2010, p. 457; Schuele et al., 2007). SLI is a lifelong language learning disability (Schuele et al., 2007) and early identification is essential as approximately 7% of the general population has SLI (Tomblin, Records, Buckwater, Zhang, Smith & O'Brien, 1997). There is a higher incidence of the disorder in males than in females (Tomblin et al., 1997; Paul, 2001).

As the name suggests, SLI is specifically a language-based disorder as children with this impairment do not have any organic impairments that may impact on language development; for example, the child's non-verbal intelligence quotient (NVIQ) is considered to be 'normal', hearing is within normal limits, the neurological system is intact and there is no diagnosis of a pervasive developmental disorder (PDD) (Montgomery, 2002; Owens, 2004; Kohnert, 2010; Paradis, 2007; Schuele et al., 2007; Archibald & Joanisse, 2009; Schwartz, 2009; Kohnert et al., 2009; Montgomery, Magimairaj & Finney, 2010; Verhoeven et al., 2012). In addition, the presence and development of SLI is not influenced by socio-economic and environmental factors (Kohnert et al., 2009).

2.4.1. Causes of SLI

The cause of SLI is difficult to establish (Hoff, 2005; Schwartz, 2009). Individuals with SLI form part of a heterogeneous group and many of the theories outlining the cause of SLI do not account for all of the underlying linguistic deficits that are present in this disorder (Hoff, 2005). However, there is agreement among all of the theories that children with SLI have disordered cognitive and perceptual processing mechanisms which result in impaired language learning (Bedore & Pena, 2008; Ellis, Weismer, Evans & Hesketh, 1999). Thus, the

two main theories that researchers use when describing the cause of SLI focus on cognitive processing and linguistic representation (Paradis, 2007; Bedore & Pena, 2008; Schwartz, 2009). Each theory provides different perspectives regarding the outcome of children with language impairment learning an additional language (Paradis, 2007).

The cognitive processing theory proposes that deficits exist in terms of processing speed and working memory (Schwartz, 2009; Montgomery et al., 2010). These processing limitations are described by the 'generalised slowing hypothesis' whereby processing and working memory limitations contributes to an inability to intake, store and access linguistic information (Miller, Kail, Leonard & Tomblin, 2001; Owens, 2004; Montgomery et al., 2010). Children with SLI are therefore unable to employ active linguistic and non-linguistic processing mechanisms, and language learning is thus not effective (Botting & Conti-Ramsden, 2001; Ellis, Weismer & Evans, 2002; Montgomery, 2002; Owens, 2004). As a result, children with language impairment need more time to process information than their TD peers (Paradis, 2007). Thus, the representation of language and comprehension thereof is impaired if processing and storage demands exceed available resources (Montgomery et al., 2010; Owens, 2004).

If a child with SLI were to learn an additional language, the generalised slowing hypothesis would predict that the child would experience language delay not only in comparison to TD age-matched monolingual peers, but also to age-matched monolingual peers with language impairment (Paradis, 2007). Bilingual children with SLI are required to process and learn double the amount of linguistic information within the same amount of exposure time as their monolingual peers (Paradis, 2007) and this will be affected by slower processing speed.

Recent studies on the cause of SLI have included the central executive of working memory as a component of cognitive processing (Jordaan, 2011). These studies indicate that attention is an additional cognitive process that is impaired in children with SLI (Archibald & Gathercole, 2006). Attention is closely related to working memory and can be broken into three components; selective attention, divided attention and sustained attention (Schwartz, 2009). The role of the central executive is to control and shift attention, planning, as well as inhibit irrelevant information (Schwartz, 2009). Children with SLI have impaired attention capacity and poor inhibitory control on both verbal and non-verbal tasks (Archibald &

Gathercole, 2006). In addition, children with SLI do not have capacity for sustained focus and are not able to effectively re-focus and shift their attention. Therefore, in the presence of disordered attention, there is a poor representation of incoming information (Owens, 2004).

In comparison to the cognitive processing theory, linguistic representation theories of SLI propose that children with language impairment have impaired internal linguistic representations of language (Rice, 2003). For example, the 'disruption-within-delay' theory states that children with SLI have delayed linguistic development (Paradis, 2007; Bedore & Pena, 2008; Schwartz, 2009). Therefore, children with SLI do not develop age appropriate linguistic structures (Rice, 2003; Wexler, 2003). Due to this delayed development, children with SLI have difficulty learning and using morphological structures such as past tense *–ed* and the auxiliary verb 'be' (Rice & Wexler, 1996). Linguistic structures are language specific (Paradis, 2007) and can be used to differentiate children with language impairment from TD children. Additionally, Rice and Wexler (1996) reported that English L1 learners with language impairment have more difficulty producing grammatical morphemes that mark tense than any other kind of grammatical morpheme. Therefore, the linguistic representation theory accounts for distributed skills and uneven ability, specifically with regards to bilingual children (Paradis, 2007).

The above theories each have their limitations as they do not describe the interaction between cognitive processing and linguistic representation. Leonard, Eyer, Bedore & Grela (1997), proposed the 'surface hypothesis' to describe how impaired processing affects language learning. The surface hypothesis suggests that the patterns of deficits in language impairment result from an interaction between processing deficits and the linguistic characteristics of a particular language that is being learned. Therefore, a mismatch between processing capacity and linguistic demands leads to ineffective language learning. Linguistic development is disordered in children with SLI as they require more time to process information in comparison to their TD peers (Paradis, 2007; Schwartz, 2009). The surface hypothesis also describes *why* children with SLI find it difficult to acquire less phonetically salient morphemes (Leonard et al., 1997). For example, children with language impairment have limitations in their ability to understand and process perceptual information. Therefore,

grammatical morphemes are difficult to acquire in many languages due to their brief phonetic duration; for example, the plural –s in English (Leonard et al., 1997).

2.4.2. Specific Areas of Difficulty in SLI

The manifestations of language impairment are on a continuum and vary from mild to severe (Kohnert et al, 2009). The following section aims to describe the manifestation of language impairment in English L1 learners with SLI.

2.4.2.1. Semantic deficits

Children with SLI have delayed semantic development (Owens, 2004; Bedore & Pena, 2008; Kohnert et al, 2009), which results in an incomplete or underspecified representation of words (Schwartz, 2009). Children with SLI exhibit naming errors (Owens, 2004) as they are unable to adequately organise and access their mental lexicon (Bedore & Pena, 2008; Schwartz, 2009). In addition, verb learning is particularly problematic for children with SLI (Schwartz, 2009). For example, Hansson & Bruce (2002) reported that children with SLI often omit verbs, or make lexical approximations where target verbs are substituted with another verb within the same semantic class.

2.4.2.2. Morpho-syntactic deficits

The development of morpho-syntax in children who have SLI is delayed (Schwartz, 2009). During the pre-school years, a child with SLI will make errors with pronouns, verb morphology, auxiliary verbs and function words (Gutierrez-Clellen & Simon-Cereijido 2009; Schwartz, 2009; Owens, 2004; Bedore & Pena, 2008). The appropriate use of verb-tense agreement and finite verb morphology is considered a highly sensitive measure of distinguishing children who have SLI and those who do not (Gutierrez-Clellen & Simon-Cereijido 2009; Schwartz, 2009). The third person singular *–s* and the verb *be* are also affected (Kohnert et al, 2009). The morpho-syntactic profile of children with SLI is variable

and dependant on the consistency of grammatical forms in a language and the semantic value of these forms (Kohnert et al, 2009).

2.4.2.3. Syntactic deficits

Children with SLI have delayed development of syntactic complexity (Bedore & Pena, 2008; Schwartz, 2009). Thus, children with language impairment use simple sentences and their mean length of utterance (MLU) is not age appropriate (Bedore & Pena, 2008). In particular, they have immense difficulty with long-distance dependencies such as those found in *wh*- questions (Deevy & Leonard, 2004; Marinis & van der Lely, 2007; Schwartz, 2009) and relative clauses (Friedmann & Novogrodsky, 2004, 2007). In addition, children with SLI do not have the capacity to comprehend and produce passive tense sentences (Leonard, Wong, deevy, Stokes & Fletcher, 2006; Schwartz, 2009) as well as finite complement clauses (Owen & Leonard, 2006).

The processing of syntactically complex sentences is challenging for children with SLI (Schwartz, 2009). Limited understanding of complex sentences subsequently affects their ability to produce syntactically and semantically complex sentences. Research indicates that working memory deficits (Deevy & Leonard, 2004; Montgomery, 2000, 2003) may be the cause for poor comprehension and development of syntactically complex sentences.

2.4.2.4. Pragmatic deficits

Children with SLI are typically unable to make presuppositions about the knowledge and social status of the listener, the communicative intent of a verbal message and non-verbal communication. In addition, they have poor flexibility with their language, and poor turn taking (Owens, 2004; Schwartz, 2009). Inappropriate responses and poor narrative discourse is also evident in children with SLI (Owens, 2004; Schwartz, 2009). As a result of the above-mentioned pragmatic deficits, children with SLI have difficulty relating to peers and interacting appropriately within social environments (Schuele et al., 2007). The cause of the pragmatic deficits in children with SLI is thought to be the underlying structural deficits in

language (Craig, 1985). Deficits in comprehension result in inappropriate responses or an unawareness of the requirement to respond when spoken to (Schwartz, 2009).

The development of narrative discourse in children with SLI is significantly delayed (Kohnert et al, 2009). Children with SLI typically produce narratives that lack structural complexity and cohesiveness; there is poor sequencing of events, and information is often omitted. Thus, the production of a narrative by a child with SLI is disorganised (Redmond et al., 2011) and limited information is conveyed (Scott & Windsor, 2000). In addition, deficits with semantics and syntax are evident in the production of narratives (Schwartz, 2009).

2.4.2.5. Literacy

Research regarding the relationship between early identification of language impairment and subsequent reading comprehension deficits has been reported in the literature for many years (e.g., Juele, 1988; Stothard et al., 1998; Catts et al., 2002; Foster & Miller, 2007). Research continues to indicate that children with language impairment are at increased risk for developing reading disabilities (Schuele et al., 2007). It is estimated that 75% of children with SLI will have subsequent difficulties with decoding and comprehension (Schuele et al., 2007; Catts, Fey, Tomblin & Zhang, 2002). In terms of reading comprehension skills, children with SLI are unable to integrate explicit information and make inferences, which results in a poor ability to answer comprehension questions (Bishop & Adams, 1990; Botting & Adams, 2005; Norbury & Bishop, 2002).

Although there is a relationship between oral language skills and reading comprehension, it should be noted that not all children who have poor comprehension have underlying language impairment (Nation, Clarke & Marshall, 2004). Similarly, not all children with language impairment have poor reading comprehension skills (Nation et al., 2004).

2.4.2.6. Cognitive processing deficits

Although language is considered the primary area of deficit in children with SLI, limitations in cognitive processing (e.g., memory and attention) are also evident (Kohnert, 2010; Kohnert et al., 2009; Schwartz, 2009; Montgomery, 2002).

Working memory is considered a significant cognitive processing factor that influences language development (Kohnert, 2010). Children with SLI have difficulty encoding and storing verbal information in phonological STM, and as a result, storage of phonological representations in LTM is insufficient (Montgomery et al., 2010). These limitations subsequently lead to protracted language learning, and children with language impairment require an increased amount of exposure to words before they are represented and stored in their linguistic system (Leonard, Ellis Weismer, Miller, Francis, Tomblin & Kail, 2007).

2.4.3. Overlap in Language Profiles between English First Language Learners with Specific Language Impairment (SLI) and EAL Learners

The language profiles of typically developing EAL learners is similar to English L1 learners with SLI (Ciolli & Seymour, 2004; Kohnert et al, 2009; Linan-Thompson & Ortiz, 2009; Kohnert, 2010; Verhoeven et al., 2012). For example, poor reading comprehension, poor vocabulary knowledge and growth, inadequate learning of classroom material and poor literacy attainment are common language attributes among English L1 learners with language impairment and EAL learners who are educated in English medium schools (Oritz, 2002 cited in Linan-Thompson & Ortiz, 2009). Often, these similarities result in misdiagnosis of language impairment among EAL learners (De Lamo White & Jin, 2011). However, it is important to note that the underlying cause of these difficulties differ among the two groups of learners (Linan-Thompson & Ortiz, 2009). English L1 learners with language impairment have disordered language processing, whereas EAL learners have limited English language knowledge and are thus not proficient in the L2 (Linan-Thompson & Ortiz, 2009; Kohnert et al., 2009).

Tomblin et al, (1997) reported that the prevalence of SLI among bilingual children is the same as for monolingual children. Therefore, it is estimated that 7% of all bilingual learners have SLI. Bilingual learners with SLI form part of a unique sub-group whereby they suffer a double-disadvantage in terms of language development. These learners are required to learn an additional language in the presence of a disordered language system (Ciolli & Seymour, 2004; Verhoeven et al., 2012). Language learning is believed to be further jeopardised if the LoLT differs from the home language and is not supported within the broader societal context (Verhoeven et al., 2012).

The overlap in language profiles between English first language learners with language impairment and EAL learners pose as a challenge to educators and SLTs in terms of identifying bilingual learners who are at risk for LLI. In addition, there are limited assessment tools available that have the potential to differentiate between delayed acquisition of the L2 and language impairment; which makes the identification of EAL learners with language impairment increasingly difficult. As there is no clear way to differentiate the language profiles of TD bilingual children and children with language impairment, EAL learners are at-risk for being over-identified, under-identified or misdiagnosed as having language impairment (Kohnert, 2008; Kohnert et al., 2009). The practical limitations regarding identification stem from a general lack of knowledge regarding the development of language in EAL learners and subsequent comparison of language skills with monolingual peers (Bedore & Pena, 2008; Kohnert, 2010). Alternatively, bilingual learners are also at-risk for being under-identified for having language impairment. Delayed language development is often attributed to the fact that a child is learning more than one language and they will eventually 'catch-up' to their age related peers (Bedore & Pena, 2008). The misrepresentation and identification of language difficulties in bilingual children may stem from either a fluctuation in performance regarding the languages that the child speaks, or a lack of appropriate identification and assessment tools to differentiate between TD and language impaired EAL learners (Bedore & Pena, 2008; Linan-Thompson & Ortiz, 2009).

In order to adequately identify learners with language impairment and avoid misdiagnosis of language impairment in bilingual learners, it is important to consider the underlying cognitive processes that influence language development. Working memory is a significant component of cognitive processing that has been included in many assessment measures to aid in the identification of language impairment.

2.5. The Role of Working Memory

Self-regulatory behaviour in terms of initiating, planning, shifting attention and thought, organising and inhibiting behaviours are dependent on executive functioning (Westby & Watson, 2004). One of the most significant components of executive functioning is working

memory. Working memory is a cognitive process that refers to the short-term storage, processing, manipulation and transformation of information (Baddeley & Logie, 1999; Schneider & Pressley, 1997; Montgomery et al, 2010; Reisberg, 2006; Baddeley & Hitch, 1974). Working memory has a limited storage capacity (Montgomery, 2002); which means that only a certain amount of information can be processed and integrated at a particular point in time (Snyder, Dabasinskas & O'Connor, 2002). Therefore, during verbal working memory tasks, speech based material is only temporarily processed and stored (Montgomery, 2002). Working memory is therefore imperative for appropriate cognitive control (Pascale & Engel de Abreu, 2011), and plays a significant role in our daily lives (Reisberg, 2006). Children rely on in-tact working memory skills for language development (Snyder et al, 2002) and academic achievement (Reisberg, 2006).

In the past two decades, working memory has been extensively researched by cognitive psychologists and psycholinguists. More recently, SLTs have begun to research working memory and its effect on language learning (Juffs, 2004; Felser & Roberts, 2007; O'Brien, Segalowitz, Collentine & Freed, 2006) and academic potential (Montgomery et al, 2010. In addition, working memory appears to be a central issue underlying individual variation in second language learning, as well as a cause of language learning difficulties in children with SLI (Linan-Thompson & Ortiz, 2009). According to the literature, it is apparent that there is a causal relationship between language abilities and working memory capacity (Maimela-Arnold, Misra, Miller, Poll & Park, 2012). The relationship that exists between working memory and language development is of significant importance for SLTs in order to understand individual differences with linguistic processing and language development (Maimela-Arnold et al., 2012). It is important to remember that children with language impairment form part of a heterogeneous group not only in terms of their language abilities, but also regarding working memory capacity (Montgomery et al, 2010). Therefore, differences in verbal working memory result in individual differences in language skills and abilities (Maimela-Arnold et al., 2012; Lahey & Bloom, 1994). For example, weak verbal working memory will subsequently inhibit the development of the linguistic system. It is for this reason that the relationship between language knowledge and working memory in children with SLI has been of particular interest among researchers in recent years (Montgomery, 2002; Snyder et al, 2002).

In order to understand the role working memory plays in language acquisition and academic achievement, one needs to explore the broad architecture of working memory (Reisberg, 2006). The working memory model, as described by Baddeley & Hitch (1974), illustrates the complex, multidimensional system of working memory. The model also explores the interaction between the components of working memory which allow for effective and efficient processing of information. Furthermore, this particular model of working memory will be described as it has been empirically researched and is the most prominent model described in the literature (Montgomery, 2002). The model is divided into three components, namely, the phonological loop, the visual-spatial sketch pad and the central executive. The phonological loop and the visual-sketchpad are domain specific storage mechanisms (Montgomery et al, 2010; Westby & Watson, 2004), which act as 'assistants' during the working memory process (Reisberg, 2006). The components of working memory function in different ways in order to regulate and coordinate information, prevent information overload, as well as inhibit irrelevant incoming stimuli (Baddeley, 2000).

2.5.1. The Phonological Loop

The phonological loop is primarily responsible for verbal and phonological STM (Montgomery, 2002; Vance, 2008). STM is described as the temporary storage and recall of unprocessed material during a limited period of time (Westby & Watson, 2004). The phonological loop is commonly referred to as 'verbal working memory', which incorporates internalised language use (e.g., self-talk) (Westby & Watson, 2004).

The phonological loop is made up of two components, the phonological store and the articulatory rehearsal process (Baddeley, 1986). The phonological store serves as a temporary storage unit for speech based information, which is represented in phonological form. The articulatory rehearsal process is responsible for maintaining these phonological representations (Baddeley, 1982; Reisberg, 2006). The phonological store and the articulatory rehearsal process work together in order to ensure effective storage of phonological information in STM. The phonological store is limited in terms of its storage capacity; for example, information that fades easily from the phonological store is irretrievable after 1.5-2 seconds (Baddeley, 1982). Therefore, the articulatory rehearsal process refreshes the information so that it can be fed back to the phonological store. This

procedure is known as the sub-vocal rehearsal mechanism (Vallar & Baddeley, 1984; Vance, 2008). This process is imperative as verbal input can be immediately processed and representations of verbal material can be permanently represented in LTM (Montgomery, 2002). LTM is a storage device for language, ideas, images and memories that can be retrieved when necessary (Reisberg, 2006). Therefore, the interaction between the phonological store and the articulatory rehearsal process is particularly important for developing representations for language learning (Montgomery, 2002). Gathercole and Baddely (1990) reported that the semantic deficits present in children with SLI are a result of a deficit in phonological STM. Thus, impairments with new word learning (Bedore & Pena, 2008) stem from limitations in phonological STM.

2.5.2. The Visual-Spatial Sketchpad

The visual-spatial sketchpad (i.e. non-verbal working memory) is responsible for holding and manipulating visual and spatial information over a brief period of time (Baddeley, 2003; Westby & Watson, 2004). In addition, the generation and manipulation of mental images are controlled by this system. As the name suggests, the visual-spatial sketchpad is made up of a visual and a spatial component. The visual component is responsible for determining *what* visually presented images are (e.g., patterns of visual input are processed and interpreted), whereas the spatial component is responsible for determining *where* images are in space (Reisberg, 2006). Like the phonological store, there are constraints on the visual-spatial system as it is able to hold only 3-4 images at any given point in time (Baddeley, 2003). During childhood, the visual component develops at a faster rate than the spatial component (Logie & Pearson, 1997).

The visual-spatial sketchpad is unique in that it does not only deal with visual imagery, but also verbal cues (Baddeley, 2006). For example, verbal cues can activate visual-spatial representations. This is particularly important during reading comprehension tasks where descriptive discourse needs to be interpreted in a meaningful manner (Baddeley, 2003; Westby & Watson, 2004). Non-verbal working memory also plays a role in the ability to activate past sensory events and activate thought processes related to hindsight and foresight (Westby & Watson, 2004).

2.5.3. The Central Executive

The central executive is responsible for controlling the working memory assistants and ensuring that they are functioning appropriately (Reisberg, 2006). Thus, the central executive is responsible for controlling the flow of information between the phonological loop and the visual-sketch pad with other cognitive domains (Baddeley & Hitch, 1974; Montgomery, 2002; Gathercole, Pickering, Ambridge & Wearing, 2004; Montgomery et al, 2010). The central executive is made up of two components; attentional capacity and attentional control. Just and Carpenter (1992) described attentional capacity as the mental energy and activation levels necessary for a person to complete a task. On the other hand, attentional control refers to the ability to shift attention between more than one task at a time. Therefore, the central executive needs to allocate resources for processing, storing, activating and retrieving information from LTM, as well as inhibiting unnecessary information (Baddeley, 1996; Snyder et al, 2002; Montgomery et al, 2010).

The basic model of working memory (including phonological STM, visual-spatial STM and the central executive) is typically developed by 6 years of age (Gathercole et al., 2004). With development, the capacity of each component subsequently increases, which allows for adequate completion of complex working memory tasks (Gathercole, 1999; Gathercole et al., 2004).

2.5.4. The Episodic Buffer Zone

The episodic buffer zone was included in the model of working memory by Baddeley (2000). The episodic buffer zone was proposed in an attempt to explain why people were able to recall visually presented verbal stimuli from memory whilst simultaneously engaging in articulatory suppression. . Articulatory suppression prevents phonological information from being rehearsed and entering the phonological store; thus preventing recall of information (Baddeley, 2000).

The episodic buffer zone is considered a multimodal storage component that has a limited capacity store, and is essentially controlled by the central executive. Although identified as the storage component of the central executive, the episodic buffer zone is a separate sub-

system (Baddeley, 2000), and is responsible for the integration of information between phonological STM and the visual-spatial sketchpad (Montgomery et al, 2010). Thus, the episodic buffer zone integrates information between working memory and LTM as an episodic representation (Baddeley, 2000). From a speech perspective, the episodic buffer zone allows for communication between the phonological loop and LTM. Consequently, the most important function of the episodic buffer zone is to retain a large amount of linguistic material at a particular point in time, for example, during connected speech, so that the information can be processed accordingly (Montgomery et al, 2010).

From the above discussion, it is clear that working memory plays an imperative role in language learning (Willis & Gathercole, 2001; Vance, 2008) as it facilitates the processing and storage of verbally based material throughout the language learning process so that it can be stored and retrieved from LTM (Montgomery, 2002; Vance, 2008).

Baddeley's (2000) model of working memory is illustrated in figure 2.1 below

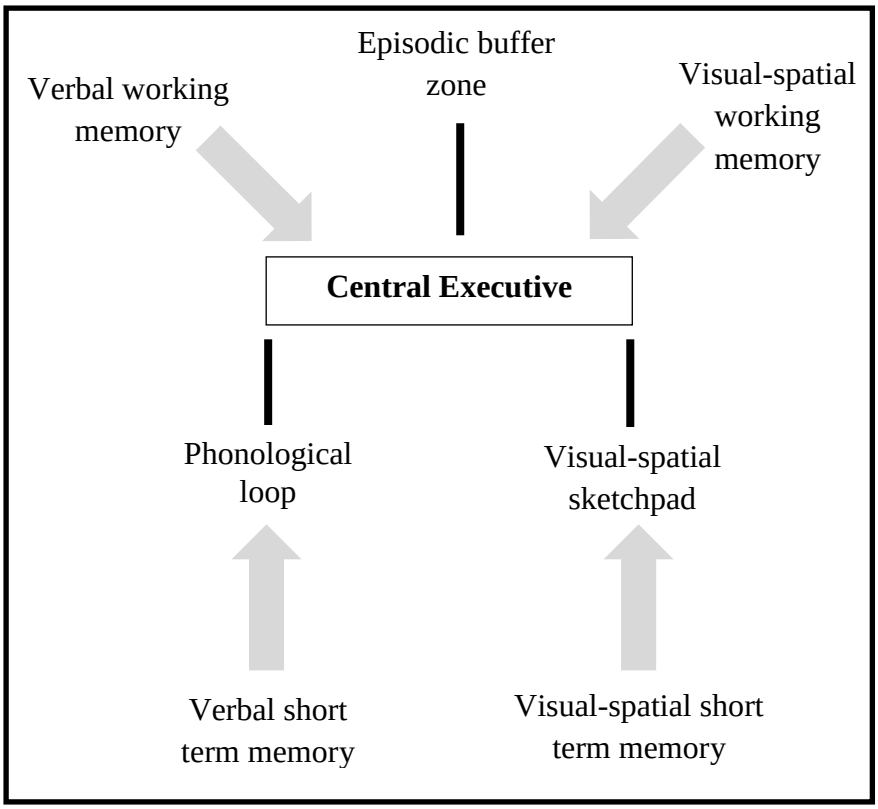

Figure 2.1: Baddeley's model of working memory (2000)

2.5.5. Working Memory and Language in Children with SLI

Children with SLI experience immense limitations in terms of language learning as they have difficulty storing, accessing, retrieving and coordinating incoming linguistic stimuli (Montgomery et al, 2010). These limitations subsequently lead to protracted language learning and development (Leonard et al., 2007). In comparison to their TD peers, children with language impairment require an increased amount of exposure to words before they are represented in their linguistic system (Leonard et al., 2007).

Research regarding the association between working memory and language impairment tends to focus on the topic of lexical development and new word learning (Avons, Wragg, Cupples & Lovegrove, 1998; Gathercole, Willis, Emslie & Baddeley, 1992; Montgomery, 2002; Gathercole, 2006). As lexical development is primarily associated with the ability to attach sound to meaning (Montgomery, 2002; Gathercole, 2006), the phonological loop plays an important role in language learning, especially with regards to lexical development (Vance, 2008; Montgomery et al, 2010). A child's ability to learn new words is dependent on the capacity with which they are able to hold speech input in phonological STM, so that long term phonological representations can be stored in LTM (Gathercole & Baddeley, 1990; Montgomery, 2002; Montgomery et al, 2010). For example, increased phonological loop capacity will lead to improved vocabulary learning. As a child's lexicon grows, new words are phonologically defined and are better organised within the mental lexicon. Thus, words with the same initial sounds are stored together (Luce & Pisoni, 1998). However, the lexical development of a child with SLI is poorer than that of their TD peers as they have difficulty encoding and storing phonological information in phonological STM (Leonard et al., 2007).

Not only does the phonological loop play an imperative role in lexical development, but also morphological and syntactic development. For example, the phonological loop is responsible for facilitating the phonological storage of a variety of syntactically and morphologically intact utterances within lexical LTM (Montgomery, 2002). From the age of 3, phonological STM is associated with the quality and quantity of speech output (Adams & Gathercole, 1995). Thus, better phonological STM processing leads to an increased mean length of utterance (MLU), increased use of syntactic structures, as well as improved lexical diversity.

These accounts indicate that working memory capacity is an adequate predictor of MLU in pre-school children.

It is evident that working memory is important not only for processing short-term information, but also for integrating this information with LTM so that planning, goal setting and task completion can be achieved (Montgomery, 2002). Due to their limitations with working memory, children with SLI experience a reduced ability to appropriately carry out aspects of attentional control (Montgomery et al, 2010). As a result, in comparison to their TD peers, children with SLI experience difficulty with task completion. Working memory is therefore of significant importance in school age children as a limited capacity to process and remember verbal input will result in poor speech processing, delayed acquisition of language concepts, as well as limited grammatical development (Montgomery, 2002; Vance, 2008).

Although children with language impairment present with working memory deficits, the theoretical and clinical association between working memory and SLI has not been widely investigated (Montgomery et al, 2010). It is for this reason that the assessment, diagnosis and intervention of learners with language impairment should include the influence of working memory (Montgomery et al, 2010).

2.5.6. Working Memory and Literacy Development

Immediate language processing during reading tasks occurs simultaneously with information retrieved from long term memory so that a mental model for the text can be obtained (Westby & Watson, 2004). Nation et al (2004) reported that working memory deficits lead to poor oral language skills and subsequently poor reading comprehension. Working memory plays a significant role in the ability to construct, maintain and update detailed and coherent representations of implicit and explicit information during comprehension activities (Westby & Watson, 2004). Thus, more elaborate mental representations lead to better comprehension and the ability to make inferences (Zwaan & Radvansky, 1998 cited in Westby & Watson, 2004). In addition to working memory, language components such as morphology and syntax are important for higher level processing that lead to age appropriate achievement on literacy tasks (Kimborough-Oller & Jarmulowicz, 2009).

2.5.7. Working Memory and Bilingualism

The interaction between working memory and additional language learning is not straightforward and has not been widely researched (Pascale & Engle de Abreu, 2011). In addition, the effect with which additional language learning impacts the working memory system appears to be unclear. Some authors suggest that there is parallel activation of all languages during speech production in bilingual individuals (e.g. Jared & Kroll, 2001; Costa, Roelstraete & Hartsuiker, 2006; Van Hell & Dijkstra, 2002). Therefore, during speech production, lexical conflict will be present among the different languages. In order to overcome this conflict, Bailystok (1999) suggested that cognitive mechanisms need to work together in order to process the target language while simultaneously inhibiting the conflicting language/s. This particular type of cognitive control stems from working memory and is considered to be advantageous in bilingual speakers. For example, bilingual children will potentially have the ability to perform better than their monolingual peers on inhibition tasks (Bailystok, Craik & Luk, 2008), as well as switch between tasks with ease (Bailystok & Martin, 2004). Pascale and Engel de Abreu (2011) suggested that a bilingual environment provides a positive opportunity for gaining appropriate cognitive control. However, even though cognitive control may be considered advantageous in bilingual speakers, vocabulary development is typically not on par with that of their monolingual peers (Carlson & Meltzoff, 2008).

In comparison to the above-mentioned findings, there are some researchers who report that bilingual learners are not necessarily cognitively stronger than their monolingual peers. For example, learners who speak more than one language experience a reduction in their overall exposure time to each language, and, as a result, their performance on linguistic tasks is somewhat compromised (Gollan, Fennema-Notestine, Montoya & Jernigan, 2007; Thordardottir, 2005). In addition, during speech production tasks, both languages are activated and as a result, the efficacy and speed with which the words are retrieved is somewhat delayed (Bailystok, Craik & Ryan, 2006).

Reports in the literature highlight the notion that working memory and language learning (in both monolingual and bilingual learners) are strongly related, and it is difficult to separate these two constructs (Engel de Abreu, Gathercole & Martin, 2011; Masoura & Gathercole,

2005; Cowan, Nugent, Elliott, Ponomarev & Saults, 2005). It is also evident that children draw on different working memory components when processing language and speech related tasks. Hence, as working memory and language proficiency are not inseparable, working memory tasks and assessment measures are not unbiased to linguistically diverse populations (Maimela-Arnold & Evans, 2005).

2.6. Assessment

Language proficiency underlies scholastic performance and employment opportunities (Myers & Botting, 2008). The aim of a speech-language assessment is to identify the presence of an impairment, to describe the language strengths and weaknesses of a learner, and to plan adequate intervention (Kohnert, 2008; Archibald & Joanisse, 2009; De Lamo White & Jin, 2011). Assessment results also need to conclude whether a learner's language related difficulties result from SLI, weak verbal working memory, or a combination of these two factors (Montgomery, 2002). Early identification of SLI by a qualified SLT will prevent academic, social and economic disadvantage (Kohnert, 2010; Montgomery et al, 2010). However, Zhang and Tomblin (2000), report that less than 20% of pre-school learners with SLI receive adequate assessment and intervention by SLTs. Early identification and assessment are pivotal as it is "difficult to close the gap" when learners with SLI fall behind their peers in terms of language and academic achievement (Schuele et al., 2007, p. 37). As academic achievement is influenced by oral language skills, it is imperative that valid screening and assessment measures are available to identify language impairment (Wiederholt & Bryant, 2001; De Lamo White & Jin, 2011). This is particularly true for EAL learners within the South African context (Jordaan, 2011).

Due to the heterogeneity and subtle nature of SLI, it is difficult to pin-point a key deficit that will enable adequate identification of this disorder (Archibald & Joanisse, 2009), and as a result, may be easily overlooked during the pre-school years (Redmond, 2005). Typically developing EAL learners who are educated at English medium schools typically present with similar language deficits as their English L1 language impaired peers (Linan-Thompson & Ortiz, 2009; Pena & Bedore, 2009). The cause of this similarity may stem from inappropriate

scaffolding and support for L2 language development within the classroom and community. As a result many EAL learners with language impairment are often under-identified as having a disorder as it is assumed that they merely have delayed second language acquisition (Kohnert, 2008). On the other hand, as EAL learners with language impairment present with similar language profiles as English L1 learners with language impairment, and they are at-risk for being over-identified as having language impairment (Schwartz, 2009; Kohnert, 2008).

It is evident that it is particularly difficult to identify language impairment among EAL learners, and there is limited research internationally that addresses language impairment in bilingual children (Bedore & Pena, 2008; Paradis, 2007; Armon-Lotem, 2010). Differential diagnosis of language impairment is vital when working with bilingual learners. Differential diagnosis is significant as language learning difficulties may stem from a true language learning disorder, a lack of language proficiency or a lack of support within the educational environment (Linan-Thompson & Ortiz, 2009; Montgomery, 2002).

Language assessment for EAL learners remains a controversial topic among many researchers (Linan-Thompson & Ortiz, 2009), despite the fact that bilingual children constitute the majority of a SLT's caseload (Gutierrez-Clellen & Simon-Cereijido 2009; Kohnert, 2010; Thordarottir, 2010; De Lamo White & Jin, 2011). This is problematic as assessment and intervention is compromised when a language barrier exists between a child and the clinician. Furthermore, there is a lack of training and knowledge among SLT's regarding appropriate assessment protocols for bilingual learners (De Lamo White & Jin, 2011). Within the South African context particularly, it has become increasingly difficult to identify language impairment in EAL learners. Minimal research pertaining to the development of African languages in the school age population, and a lack of availability of appropriate assessment tools contribute to the problems faced by South African SLT's working with EAL learners. These practical limitations have implications regarding identification of language impairment as these learners may be overlooked and under-identified during the school-age years as parents are more concerned with physical and cognitive disabilities (Schwartz, 2009). SLTs are thus faced with immense challenges

regarding the identification and assessment of culturally and linguistically diverse learners (Gutierrez-Clellen & Simon-Cereijido, 2009).

Behavioural assessments, such as standardised norm referenced language assessments, are typically used to assess monolingual English L1 learners with language impairment (Kohnert, 2010; De Lamo White & Jin, 2011). However, as a result of the cultural and linguistic diversity that exists in many countries, it is difficult to establish standardised assessment protocols for the identification of language impairment in EAL learners (Bedore & Pena, 2008; Gutierrez-Clellen & Simon-Cereijido, 2009; Schwartz, 2009; De Lamo White & Jin, 2011). Norm-referenced assessment tools are not appropriate for the assessment of culturally and linguistically diverse populations as the tests include cultural and linguistic bias, and the standardised sample size includes only a small proportion of bilingual learners (De Lamo White & Jin, 2011). Bias exists in language measures as responses are dependent on previous language experience. In addition, standardised assessment tools do not account for differences between simultaneous and successive bilingual learners (De Lamo White & Jin, 2011). Furthermore, linguistic influence and interference may exist between the languages that the child speaks (Kohnert, 2010). For example, the first language may influence the second language in terms of speech production, syntax, semantics and pragmatics, and vice versa (Kohnert, 2010; De Lamo White & Jin, 2011). De Lamo White and Jin (2011) and Gutierrez-Clellen and Simon-Cereijido (2009) reported that bilingual learners who are assessed using standardised measures should not be compared to the standardised norm of the test as results will yield inaccurate results regarding the child's language competence. There is a discrepancy in vocabulary development between the two languages and the majority of bilingual children are not proficient in their second language (Gutierrez-Clellen & Simon-Cereijido 2009). In addition, any grammatical differences that a child produces will be scored as errors on standardised tests (Gutierrez-Clellen & Simon-Cereijido, 2009). It is evident that assessment bias exists when evaluating the language competence of bilingual learners as there is often a misrepresentation of the learner's communication abilities resulting in a misdiagnosis of language impairment (Kohnert, 2010).

Language processing measures have been proposed as appropriate tools for the assessment of bilingual learners (Kohnert, 2010; De Lamo White & Jin, 2011). Cognitive processing (e.g., working memory) measures are favoured as responses are not related to language knowledge and therefore potentially offer unbiased assessment for the identification of language impairment (Ciolli & Seymour, 2004; De Lamo White & Jin, 2011). Cognitive processing is an important factor to consider as language knowledge and performance may be affected by an underlying deficit with this area (Montgomery, 2002; Snyder et al, 2002; Kohnert, 2008; Montgomery et al., 2010).

2.7. Sentence Repetition

Sentence repetition, as a measure of working memory has the potential to be used as a valid measure to identify EAL learners who are at risk for language impairment (Jordaan, 2011). Sentence repetition measures emerged in the 1960's and the basic premise behind this test was that the ability to repeat sentences with increasing length and complexity was dependant on an intact working memory system (Redmond, Thompson & Goldstein, 2011). However, research indicates that the ability to repeat sentences verbatim relies not only on working memory, but also linguistic proficiency. For example, when a sentence is long and expends the working memory system, linguistic knowledge stored in LTM is activated (Redmond, Thompson & Goldstein, 2011). Therefore, during sentence repetition, phonological forms and semantic representations of language need to be activated so that spoken words can be recognised and repeated accurately (Conti-Ramsden et al., 2001). In addition, the words used in the sentences need to be understood and the lexical forms of words need to be held in working memory. These processes all lead to accurate perception, encoding, retrieval and production of information from the phonological store (Henry & Millar, 1991). Thus, phonological STM and the episodic buffer zone are two components of working memory that are also involved in sentence repetition (Gathercole & Alloway, 2006; Vance, 2008). The phonological store is important for the ability to correctly repeat sentences with increasing length and complexity (Montgomery, 2002). Children with language impairment, who have an underlying working memory deficit, will perform poorly on word recall tasks as they do not have the skills necessary to store and rehearse verbal information (Ellis Weismer et al.,

1999; Montgomery, 2002; Vance, 2008), and are not able to repeat sentences that are beyond their current level of linguistic capacity (Conti-Ramsden at al., 2001).

The role of working memory in sentence repetition is starting to receive more attention in the literature (Conti-Ramsden et al., 2001; Archibald & Joanisse, 2009). However, there has been virtually no research on sentence repetition as a screening and identification tool for language impairment among EAL learners, particularly within the South African context. The findings of Jordaan's (2011) study have been outlined in chapter 1. In order to provide a follow-up investigation of results, the sentence repetition measure used in Jordaan's (2011) study was administered on a different population of EAL learners. The current study therefore investigated the validity of using a sentence repetition test to identify language impairment among EAL learners.

2.8. The Role of the Speech-Language Therapist in the South African Education System

> *"In South Africa, SLT's may have an important role not only in supporting individual learners, their families and educators in their language and literacy learning, but also through working as change agents who strive to improve the system and create a more optimal environment in which all learners can develop"* (Navsaria et al, 2011, p. 104).

The above quote highlights the fundamental role SLTs play within the educational context (Navsaria et al, 2011). SLTs have unique and valuable knowledge regarding the development of language and literacy in children (Farber & Klein, 1999; Hadley et al., 2000; Owens, 2004; Schuele et al., 2007; Kathard, et al., 2011), and possess the knowledge and skills necessary to integrate language and literacy development (Kathard, et al., 2011). This is especially important for addressing the needs of learners who have language impairment (Schuele et al., 2007), and those who speak English as an additional language (Zwiers, 2006). In ideal circumstances, an SLT working within an educational setting should be fully integrated in the classroom and take on the role of the language expert (Owens, 2004), consultant (Farber & Klein, 1999) and advocate (Schuele et al., 2007). This role will promote knowledge among educators regarding typical and atypical language development (Hadley et al., 2000). However, in order for language learning difficulties to be identified,

educators need to be able to accurately and reliably describe the academic performance of learners, in terms of language and literacy.

The support provided by SLTs in the mainstream educational setting will assist educators in their ability to differentiate between learners with language impairment and those who experience academic challenges as a result of L2 difficulties (Navasaria et al, 2011). Unfortunately, however, there are very few posts available in mainstream government schools in South Africa (Kathard, et al., 2011; Navsaria, et al., 2011). Therefore, SLTs are faced with a significant challenge in terms of their ability (and availability) to provide educators with the support necessary to overcome the barriers that are present in many linguistically and culturally diverse South African classrooms (Navsaria, et al., 2011). As SLI affects a child's ability to cope with language learning demands (Kohnert, 2010), as well as their literacy development (Scheule et al., 2007), educators are required to play a major role in the identification of learners whose language is not on par with that of their peers. It is therefore necessary, for the purposes of this study, to investigate the extent to which educators are able to identify learners with language learning deficits.

CHAPTER 3

METHOD

This chapter discusses the research design of the study, the descriptive statistics of the sample, the measures used to obtain the data, as well as the procedures and methods utilised for data analysis.

3.1. Research Aims

The main aim of this study was to explore the use of sentence repetition as a valid screening tool for the identification of language impairment in learners who speak and are learning in English as an additional language.

This aim was supplemented by the following sub-aims:

- To compare the performance of the learners from the current study with a peer group from Jordaan's (2011) study
- To correlate the learners' performance on the two sentence repetition measures and the reading comprehension measure
- To identify and describe EAL learners with language impairment
- To determine the extent to which educators are able to identify learners whose academic language proficiency is not on par with that of their peers

3.2. Research Design

This study falls within a non-experimental, quantitative, descriptive paradigm, and is cross-sectional in nature with both comparative and correlational components (Schiavetti & Metz, 2006).

Since the aim of this study was to investigate whether sentence repetition can be used as a valid measure to identify language impairment in EAL learners, a non-experimental design was appropriate for this research. A control group was not necessary and there was no need to control or manipulate an independent variable (Babbie, 2004). A quantitative research

paradigm was appropriate for this study as the investigations were conducted via hypothesis testing (Schiavetti & Metz, 2006). In addition, a quantitative investigation allowed for an empirical investigation that enabled the researcher to evaluate the correlation between test scores used in this study. Unbiased results were obtained which could be generalised to a larger population (Schiavetti & Metz, 2006). The research was descriptive as there was no experimentation or manipulation of variables, and the data was described using graphs and tables (Pannbacker, Lass & Middleton, 1993). In addition, a descriptive design enabled the researcher to make associations and correlations between results (Weiten, 2007). The design was cross-sectional as a large group of learners were evaluated at a single point in time. The study was comparative as the researcher was able to make group comparisons among the learners in this study with a previous study (Weiten, 2007).

3.3. Participants

3.3.1. Criteria for Selection

The sample was a non-probability convenient sample that consisted of 107 grade 2 EAL learners, educated at an English medium school in Gauteng. There was an even distribution of male and female learners (56 males and 51 females) in the sample.

The participants of this study did not have any reported or identified organic impairment that may have impacted on their language development, such as a physical, cognitive or visual impairment. However, children with more subtle language impairments were not excluded since the purpose of the study was to identify these learners. As the aim of this study was to identify language impairment in EAL learners, all of the participants spoke English as an additional language. Participants who spoke English as a first language were not included as they were not relevant to the purpose of this study. It is important to note that participant selection was not dependant on specific home language profiles (e.g., evaluating Sotho and Nguni L1 learners only) as the effect of specific languages was not a focus of this study. Information regarding the development of each learner, as well as their home language, was obtained from a parent questionnaire (Appendix G).

In Jordaan's (2011) study, results revealed that 5.2% of the sample was identified as having language impairment. This is slightly lower than the 7% that is typically recorded in the literature (Tomblin et al., 1997). Therefore, based on previous research, the researcher was able to predict that approximately 7% of the sample would have language impairment. As a result, the researcher was not likely to encounter problems with the participants in terms of the whole sample being typically developing or language impaired.

3.3.2. Sampling Procedure

The participants of this study were purposefully selected from a school in the Johannesburg area of the Gauteng province. The participants were educated at an English medium school where the majority of learners spoke English as an additional language. The principal of the school was approached to participate in the research. Parent information sheets and consent forms were distributed to the parents/legal guardians of the grade 2 learners (Appendix E). Only the learners whose parents returned the consent forms stating that they allowed their child to participate were included in this study. The response rate for the school was 96%. Assent was then obtained from the learners in order to confirm participation in this study.

Two learners were excluded from this study as they were identified and diagnosed with hearing impairment.

3.3.3. Description of Participants

Table 3.1 below provides an overview of the composition of the participants.

Table 3.1: An overview of the learner composition of the sample

Grade	Number of Classes	Number of EAL Learners	Mean Age of the Learners
2	3	107	8 years, 1 month

Table 3.2 provides a more detailed description of the participants in terms of their age and the primary home languages spoken.

Table 3.2: A Detailed Description of the Participants in Terms of the Number of Male and Female Participants and the Primary Home Language Spoken

Total Number of Male Participants	56	
Total Number of Female Participants	51	
Primary Home Language Spoken by the EAL Participants (n=107)	isiZulu	41
	seTswana	25
	seSotho	24
	xiTsonga	5
	isiXhosa	5
	sePedi	3
	tshiVenda	2
	Shona	1
	Afrikaans	1

When the first phase of data collection commenced, the school yielded a sufficient number of participants (n=107). The school was situated in a middle-class suburban area and the language demography of the school was reflective of the cultural and linguistic diversity of learners who reside in Gauteng. The majority of learners at the school spoke an African language. There was one learner whose family originated from Zimbabwe and spoke Shona as a first language. Most of the learners spoke isiZulu (n=14) as a first language, followed by Setswana (n=25) and SeSotho (including Northern and Southern Sotho) (n=24), and to a lesser extent isiTsonga (n=5), isiXhosa (n=5), sePedi (n=3), tshiVenda (n=2) and Afrikaans (n=1).

3.4. Research Instrumentation

The measures that were used to conduct this investigation included:

a. The Redmond (2005) Sentence Repetition Test
b. The Recalling Sentences Subtest from the Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4) (Semel Wiig & Secord, 2003)
c. The GORT-4 (Wiederholt & Bryant, 2001)
d. The DELV-CR (Seymour et al., 2003)

3.4.1. The Redmond Sentence Repetition Test (Redmond, 2005)

The Redmond (2005) Sentence Repetition test was chosen for the purpose of this study as it proved to be a sensitive measure of language processing among the participants in Jordaan's (2011) study. This test was also found to reliably distinguish EAL and English L1 learners with language impairment from their TD peers. In order to replicate the findings obtained from Jordaan's (2011) study, the Redmond (2005) Sentence Repetition test was administered on a different population of EAL learners.

The Redmond (2005) Sentence Repetition test provides a detailed analysis of a child's ability to recall verbal sentences verbatim. Traditional sentence repetition measures merely score the learner's response as being 'correct' or 'incorrect', a ceiling item exits and the test is discontinued after a predetermined number of errors (Redmond, 2005). The Redmond (2005) Sentence Repetition test does not have a ceiling and thus provides a more detailed account of a learner's language knowledge and use. The Redmond (2005) Sentence Repetition test comprises of 16 sentences, comprised of an average of 10-14 syllables each (Redmond, 2005). Furthermore, there are an equal number of active and passive tense sentences. When analysing a learner's response, a graded scoring system is implemented. The scoring system is constructed as follows: 2 points are awarded for a syntactically and semantically intact sentence, 1 point for three or fewer errors, and 0 points when there are 4 or more errors in the sentence.

For the purpose of the current study, after the 16 sentences were administered, the scores were added and a raw score was obtained (Redmond, 2005). An average of the raw scores was calculated and the SD was obtained. The peer group mean was used as a standard of comparison for the purpose of this study as the Redmond (2005) Sentence Repetition test was not standardised or normed on a South African EAL population. Jordaan (2011) reported that EAL children should only be compared to other EAL children with whom they share the same/similar context. In addition, bilingual peer comparisons for the identification of language impairment have been investigated in the literature (Bedore & Pena, 2008; Kohnert, 2010). Kohnert (2010) suggests that bilingual comparisons are a successful means in which to identify language impairment in EAL learners. In this way, bilingual learners would be compared to peers with and without language impairment in terms of their performance on particular language tasks (Kohnert, 2010; De Lamo White & Jin, 2011). These comparisons appear to reveal more accurate results when bilingual learners are compared within the same peer group. This is significant as bilingual-to-bilingual comparisons across a range of linguistic tasks should yield information regarding the language strengths and weakness of learners and differentiate those learners with language impairment (Kohnert, 2010). Furthermore, bilingual-to-bilingual comparisons within the same peer or learner group should account for bias in terms of variances in social and linguistic backgrounds. Therefore, for the purpose of the current study, the mean score for the EAL learners from the current study could be calculated and compared within the same EAL learner group. The learners who fell 1 SD below the peer group mean on the Redmond (2005) Sentence Repetition test were identified as being at-risk for language impairment. Although Bishop and McDonald (2009) recommend using 2 SD below the mean to identify at-risk learners, this method of identification is not plausible for all populations. For example, it is evident in chapter 4 (results section) of this study that a SD of 1 (as recommended by Rice, 2009) was more appropriate to identify the learners who were at-risk for language impairment. This is acceptable as many studies use a SD of 1-1.5 below the mean to identify at-risk learners (Rice, 2009).

It is important to note that a diagnostic criterion for the identification of language impairment in EAL learners could not be included in this study as such a measure does not exist. The identification of language impairment among EAL learners is difficult, especially within the South African context, as there is a lack of standardised tools and normative data available

for this population. Learners in the current study who were identified as being at-risk for language impairment, based on the results from the Redmond (2005) Sentence Repetition test, were further assessed on a more detailed language measure: the DELV-CR (Seymour et al., 2003) (this test is described in more detail in a later section). By using this particular language measure, the language profiles of the learners were described in detail and misdiagnosis of language impairment was avoided.

3.4.2. The Recalling Sentences Subtest from the CELF-4 (Semel et al, 2003)

The Recalling Sentences subtest from the CELF-4 (Semel et al., 2003) was administered in order to investigate the validity of using sentence repetition as a screening tool for the identification of language impairment in EAL learners. The Recalling Sentences subtest evaluates a learner's ability to listen to, and recall sentences of increasing length and complexity (Semel et al., 2003). Like the Redmond (2005) Sentence Repetition test, a learner is not awarded the maximum points if there are any deviations in terms of syntax, semantics and morphology. A graded scoring system is also implemented for the Recalling Sentences subtest. For example, 3 points are awarded for a semantically and syntactically intact sentence, 2 points are awarded if there is 1 error in the sentence, 1 point for 2-3 errors and 0 points for 4 or more errors (Semel et al., 2003). This subtest has a ceiling level which indicates that if a child obtains five consecutive zeros, the test should be discontinued. The raw score should then be calculated and converted to a standard score (Semel et al., 2003). However, for the purposes of this study the raw score was not converted to a standard score, as the CELF-4 (Semel et al., 2003) was not standardised on a South African EAL population. Therefore, it would not be appropriate to use the standard score and compare South African EAL learners to the standardised norms of the test. Instead, the mean raw score for the EAL learners was calculated and results were compared to the peer group mean.

3.4.3. The GORT-4 (Wiederholt & Bryant, 2001)

The GORT-4 is a norm-referenced, reliable and valid measure of reading competency (Wiederholt & Bryant, 2001). The aim of this measure is to evaluate rate, accuracy, fluency and comprehension during reading. This reading test can be administered on learners between the ages of 6 years, 0 months and 18 years, 11 months. Although the GORT-4 was developed in the United States of America, it can be used on culturally and linguistically diverse populations (Wiederholt & Bryant, 2001), and is thus deemed appropriate for use within the South African context. The GORT-4 was included as an assessment measure for the current study as the literature reports a relationship between language proficiency and reading comprehension (Nation, Clarke, Marshall & Durand, 2004). Thus, results obtained on the reading comprehension measure could provide additional information regarding the academic language proficiency of the participants.

The GORT-4 test consists of two parallel forms; Form A and Form B, which both contain 14 stories which increase in complexity (Wiederholt & Bryant, 2001). Each story has a corresponding set of 5 multiple choice comprehension questions. In this test, the learners are required to read each story out loud (Wiederholt & Bryant, 2001). The examiner/researcher then reads a set of questions and multiple choice answers while the child follows in their Student Book (Wiederholt & Bryant, 2001). In order to obtain a true reflection of reading comprehension, the comprehension questions do not contain the same syntax and semantics used in the text. Therefore, learners are not able to match words used in the question to the words used in the passage. An oral response mode is used and the examiner/researcher records the learner's responses. For the purpose of the current study, the oral response mode was beneficial as the grade 2 learners may not have been able to accurately write down their answers. The test is discontinued when a learner makes 3 or more errors on a set (Wiederholt & Bryant, 2001). For the purpose of the current study, only the comprehension score was determined and the raw score was calculated, however, it was not converted to a standard score as this test was not standardised on the South African EAL population (Wiederholt & Bryant, 2001).

3.4.4. The DELV-CR (Seymour et al, 2003)

The DELV-CR (Seymour et al, 2003) is a speech and language assessment tool that has a strong theoretical foundation in psycholinguistics. The test is comprised of four subtests (syntax, semantics, pragmatics and phonology) and assesses the processes underlying language development and is thus considered a valid measure for the assessment of academic language (Seymour et al, 2003). In addition, the DELV-CR (Seymour et al, 2003) has the capacity to assess for the clinical markers of SLI: for example, lexical organisation and retrieval, wh- questions and passive sentences (Seymour et al, 2003). A description of the DELV-CR (Seymour et al, 2003) domains can be found under Appendix A.

The DELV-CR (Seymour et al, 2003) was designed to address cultural and linguistic bias against speakers of African American English (AAE). Therefore, the aim of the test is to provide a valid measure of language processes in all dialects of English and there are no dialectical terms used in the test items. In addition, the picture stimuli and test items are culturally appropriate (Seymour et al, 2003), which makes it suitable for use within the South African context. The DELV-CR (Seymour et al, 2003) was standardised on children between the ages of 4.0 and 9.11 years; thus it is appropriate for use on grade 2 learners who are typically between the ages of 7 and 8 years. The participants involved in the standardisation procedure of the DELV-CR (Seymour et al, 2003) were from working class backgrounds in all regions of North America, and included AAE and Mainstream American speakers of English. Furthermore, the participants were matched according to their parental educational level, and one third of the children in each age and dialect group were diagnosed with language impairment (Seymour et al, 2003). The use of the DELV-CR (Seymour et al, 2003) as an accurate measure of language processing in South African children has been piloted in a number of studies (e.g., Kallenbach, 2006; Meirim, 2007; Rijhumal, 2008; Meirim, Jordaan, Kallenbah & Rijhumal, 2010). The results of these studies indicate that this test provides accurate information regarding language processing in EAL and English L1 learners. Furthermore, in Jordaan's (2011) study, it was found that that English L1 participants obtained similar results to the DELV-CR (Seymour et al, 2003) age equivalent groups. This result further supports the application and use of this particular language assessment tool in the South African context. A detailed description of the scoring criteria for the DELV-CR

(Seymour et al, 2003) is stipulated in the test manual. If a learner provides a correct response, they are awarded a score of 1 or 2 (depending on the criteria for each sub-test). An incorrect response or no response is recorded as 0. The sub-total for each sub-test can be calculated and a total score for the syntax, semantics and pragmatics subtests is obtained.

For the purpose of the current study, it was important that all learners who were identified as being at-risk for language impairment received a detailed language assessment so as to avoid a misdiagnosis of language impairment. It is for this reason that the 12 learners identified in the current study as being at-risk for language impairment based on the results of the Redmond (2005) Sentence Repetition test were further evaluated on the DELV-CR (Seymour et al, 2003). The phonology subtest was not included as articulation and phonology were not relevant to the current study. The results from the DELV-CR (Seymour et al, 2003) provided information regarding the manifestations of language impairment in the L2, which are described in detail in chapter 4.

3.5. Reliability and Validity

Validity is the extent to which a test measures what it is supposed to measure (Schiavetti & Metz, 2006; Flick, 2002). The validity of the DELV-CR (Seymour et al, 2003) as a measure of academic language has been discussed. Extensive research has been carried out on the sentence repetition measures, as well as the reading comprehension test, and the validity thereof is described in much detail in the test manuals. The validity of all of the measures in assessing EAL learners in the South African context has been addressed to some extent in this study by correlating the learner's performance on the measures as well as comparing results obtained by the learners in the current study with a group of EAL learners from Jordaan's (2011) study. Furthermore, two sentence repetition measures were included in the current study, and internal validity (Flick, 2002) proved to be evident between these two measures.

Reliability refers to the degree of self-consistency when the same test is administered on two different occasions, or by different examiners (Schiavetti & Metz, 2006). The researcher ensured that each measure was administered in accordance with the instructions stipulated in each respective test manual. Additionally, inter-rater reliability was established by assessing 30% of the participants by two examiners: one examiner administered the test, while both examiners scored it. The scores were then compared to ensure that the scoring was reliable. Using this method, reliability in administration and scoring was found to be 100%. In order to account for reliability in data capturing, entries were checked by the researcher's supervisor.

3.6. Ethical Considerations

Ethical clearance was obtained from the Human Research Ethics Committee (Non-Medical) at the University of the Witwatersrand (protocol number: H120502) (Appendix B). In addition, approval was obtained from the Gauteng Department of Education (DoE) to conduct the research in an educational setting (Appendix C). Informed consent and approval was obtained from the school principal of the selected school (Appendix D). As the participants of this study were under the legal age of eighteen, informed consent was obtained by their parents/legal guardians (Appendix E). Assent was also obtained from the learners who had been given permission by their parents/legal guardians to participate in the study (Appendix F) (Greig & Taylor, 1999). The information and consent forms, as well as the child assent form, outlined details specific to the current study, including the purpose and implications of the research. Information pertaining to confidentiality and anonymity was discussed, and the voluntary nature of participation was emphasised (the importance of these factors are outlined by Barrett, 1997). The information sheets clearly stated that the researcher would be available to respond to any questions or concerns, should they arise. No un-authorised personnel were present during the data collection process, and only the researcher and her supervisor have access to the raw data.

An ethical difficulty that arose from this research was the fact that that intervention could not be withheld from learners identified with language impairment. Furthermore, affordable intervention should be available for these learners. In order to overcome this issue, the

researcher informed the respective educators and parents/legal guardians of the learners who were identified with language impairment. This was done through written communication, and referral to appropriate and affordable resources was reflected. The researcher was available to consult with the educators and parents/legal guardians who requested it.

3.7. Procedure

Figure 3.1 below illustrates the procedures that were employed at each phase of data collection.

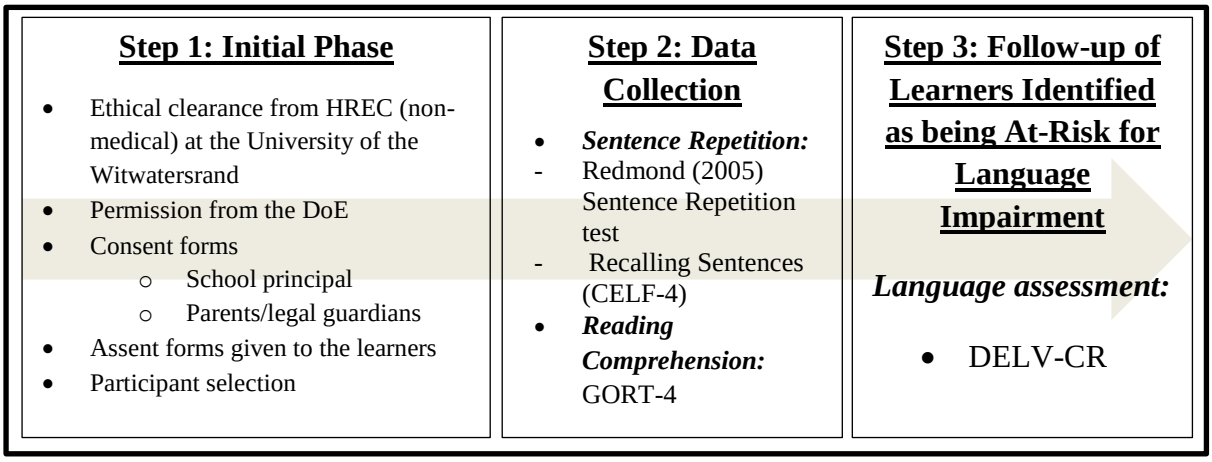

Figure 3.1: A diagrammatic representation of the procedures implemented at each phase of data collection

During the initial phase of data collection, the researcher obtained ethical clearance from the Human Research Ethics Committee (Non-Medical) at the University of the Witwatersrand and subsequently permission was obtained from the DoE to conduct the research at the selected school in Gauteng. The consent forms were then distributed to the school principal and parents/legal guardians of the grade 2 learners. Following participant selection, assent was obtained from the grade 2 participants.

Prior to commencement of data collection, the researcher discussed suitable times for testing with the grade 2 educators in order to ensure that there was minimal disruption to the academic programme. Each participant was then assessed on the Recalling Sentences subtest of the CELF-4 (Semel et al, 2003), the Redmond (2005) Sentence Repetition test and the GORT-4 (Wiederholt & Bryant, 2001). The testing time for each participant was approximately 30 minutes and each test was conducted sequentially for each participant.

Each Participant was assessed in a quiet room on the school property, during school hours. The raw scores were calculated for the sentence repetition measures and the reading comprehension test and were entered onto Microsoft Excel spread-sheets. The participant's name, surname, date of birth, gender, class, grade, and raw score for each measure was included on the spread sheet. The SD for each measure was calculated. Only the researcher and her supervisor had access to this information. The learners who fell 1 SD below the peer group mean on the Redmond (2005) Sentence Repetition test were identified as being at-risk for language impairment. These learners were further assessed on the DELV-CR (Seymour et al, 2003) in order to describe the manifestations of language impairment in the L2, and to minimise the risk of over-identification of language impairment.

3.8. Data Analysis

Descriptive statistics, namely, means, SDs and score ranges were calculated for each measure. These values were captured in tables and graphic representations were used where necessary. Parametric statistical procedures were used for quantitative analysis of the data (Schiavetti & Metz, 2006). The statistical analyses were conducted by a qualified statistician using the SAS 9.2 computer system.

3.8.1. Correlations between the Measures

The Pearson Correlation Coefficient was used to determine correlations between the measures. Correlations between the two sentence repetition tests have implications regarding the internal validity of these measures. Furthermore, correlations between sentence repetition and reading comprehension had implications for the use of sentence repetition as a measure of academic language proficiency.

3.8.2. The Identification and Description of Learners with Language Impairment

Learners who fell 1 SD below the peer group mean on the Redmond (2005) Sentence Repetition test were further evaluated on the DELV-CR (Seymour et al, 2003). This language assessment was conducted in order to diagnose language impairment and to describe the manifestations of language impairment in EAL learners.

3.8.3 Levels of Statistical Significance

All of the statistical correlations between and within groups were deemed significant if the probability of rejecting the null hypothesis was less than 5%. The null hypothesis was thus rejected if the difference or correlation was not significant (i.e. $p<0.05$).

CHAPTER 4
RESULTS AND DISCUSSION

The aim of this study was to determine whether sentence repetition measures can be used as a valid assessment tool to identify language impairment in EAL learners. This chapter documents the quantitative analyses conducted in order to address this question. The statistical results are reported and tables and graphs are presented where appropriate. This chapter also provides a qualitative description of the manifestations of language impairment in the 12 EAL learners identified in this study. The learners identified in this study were compared to the EAL learners in a similar educational context who were identified in Jordaan's (2011) study. Furthermore, the manifestations of language impairment among the participants of this study were compared to descriptions of language impairment reported in the literature.

The results of this study will be presented in accordance with the aims and in the following sequence:

- The performance of the grade 2 learners on all measures
- Comparison of results obtained on the Redmond (2005) Sentence Repetition test and the reading comprehension test with Jordaan's (2011) study
- Correlations between the measures
- Description of the learners with language impairment
- The extent to which educators were able to identify learners with SLI

4.1. Performance of the Grade 2 Learners on all Measures

The results of the two sentence repetition measures, as well as the reading comprehension measure were entered onto Excel spread-sheets. The mean and SD were calculated. The SD is an important factor to consider in the identification process. The majority of studies in the literature use a SD of 1 to 1.5 below the mean as the criterion for identifying at-risk learners (Rice, 2009). Therefore, the learners in this study who performed 1 SD or more below the peer group mean on the Redmond (2005) Sentence Repetition test were identified as being at-risk for language impairment. These learners were further assessed on the DELV-CR

(Seymour et al, 2003) in order to describe the manifestations of language impairment in English.

Table 4.1 below indicates the mean and SD for all of the grade 2 learners.

Table 4.1: The Total Mean and Standard Deviation on all Measures for all of the Grade 2 Learners

Variable	Number of Observations (n)	Mean	Standard Deviation	Minimum Score	Maximum Score
Redmond Sentence Repetition *(possible total=32)*	107	11.19	7.00	0	32. 00
Recalling Sentences *(possible total=96)*	107	32.76	10.32	11.00	64. 00
Reading Comprehension *(possible total for the adult population=70)*	106	5.65	4.7	0	23. 00

The above table provides information regarding the overall performance of the grade 2 learners on each measure. The range of scores for each measure (i.e. the difference between the lowest and the highest scores) (Howell, 2008) are large. This large range of scores subsequently affected the SD for each measure, respectively. The SD provides information regarding the average deviation of scores from the mean (Howell, 2008; Kaplan, 1987). As is characteristic in all studies of L2 learning (Paradis, 2009), there is wide variation in the performance of the participants of this study. This is evident in the large differences between the minimum and maximum scores (range) and in the large SDs.

Of particular interest for this study, is the mean scores obtained for the two sentence repetition measures. It is apparent from Table 4.1 that the mean score obtained for the Redmond (2005) Sentence Repetition test was lower than the mean score obtained for the Recalling Sentences subtest from the CELF-4 (Semel et al, 2003). The reason for the differences in the scores may be attributed to the nature of the sentences and the scoring system implemented for each test. For example, the Redmond (2005) Sentence Repetition test comprises of 16 sentences, each containing 10-14 syllables. As stipulated in the test

manual, the learners were awarded points according to the number of words they repeated correctly in each sentence (Redmond, 2005). The maximum score that could be obtained per sentence was 2 (Redmond, 2005). Thus, the maximum score that could be obtained for this particular test was 32. The learners of the current study obtained an overall mean of 11.19/32 (35%) on this test. In comparison, the Recalling Sentences subtest from the CELF-4 (Semel et al, 2003) is made up of 32 sentences, which increase in length and complexity. Like the Redmond (2005) Sentence Repetition test, and as stipulated in the test manual, the learners were scored according to the number of words repeated correctly in each sentence. The maximum score that a learner could achieve per sentence was 3. Thus, if all of the sentences were repeated correctly, a learner could achieve an overall score of 96. The learners of the current study obtained an average score of 32.76/96 (34%), which is comparable to the mean score obtained on the Redmond (2005) Sentence Repetition test. The differences in the scoring system for each test accounts therefore accounts for the apparent differences in the mean scores obtained on each measure, but they are in fact not substantially different.

4.2. Comparison of Results obtained on the Redmond (2005) Sentence Repetition Test and the Reading Comprehension Test with Jordaan's (2011) Study

The results of the current study have important implications for the identification of language impairment among EAL learners. The results of the study also provide a follow-up investigation of Jordaan's (2011) study. As the Redmond (2005) Sentence Repetition test and the reading comprehension test were of particular interest for this study, the researcher compared the means obtained by the grade 2 learners in the current study with the means obtained by the learners from the context 1 EAL learners in Jordaan's (2011) study (i.e. EAL learners taught by EAL educators) when they were in grade 2. This context was considered the most appropriate for comparison with the current study as all of the learners spoke English as an additional language and were taught within a similar educational context. The Recalling Sentences subtest from the CELF-4 (Semel et al, 2003) was not included in this comparison as Jordaan (2011) did not use this test in her study.

The comparison of results from the current study with Jordaan's (2011) study was done in order to determine whether similar results could be obtained. This would strengthen the validity of the findings in this study and would have implications for possible standardisation

of the Redmond (2005) Sentence Repetition test in the South African Context. The means and SDs for the Redmond (2005) Sentence Repetition test and the reading comprehension measure for each study are reflected in table 4.2 below.

Table 4.2: The Means and Standard Deviations of the Redmond (2005) Sentence Repetition Test and the Reading Comprehension Test for the Current Study and Jordaan's (2011) Study

Study	Statistics	Redmond (2005) Sentence Repetition Test	Reading Comprehension
The Current Study			
Total Grade 2 Learners (n=107)	**Mean**	11.19	5.65
	Standard Deviation	7.00	4.7
Jordaan's (2011) Study			
EAL Context 1 (n=55)	**Mean**	16.87	7.06
	Standard Deviation	6.83	6.70

The information reflected in table 4.2 above is represented graphically on figure 4.1 below

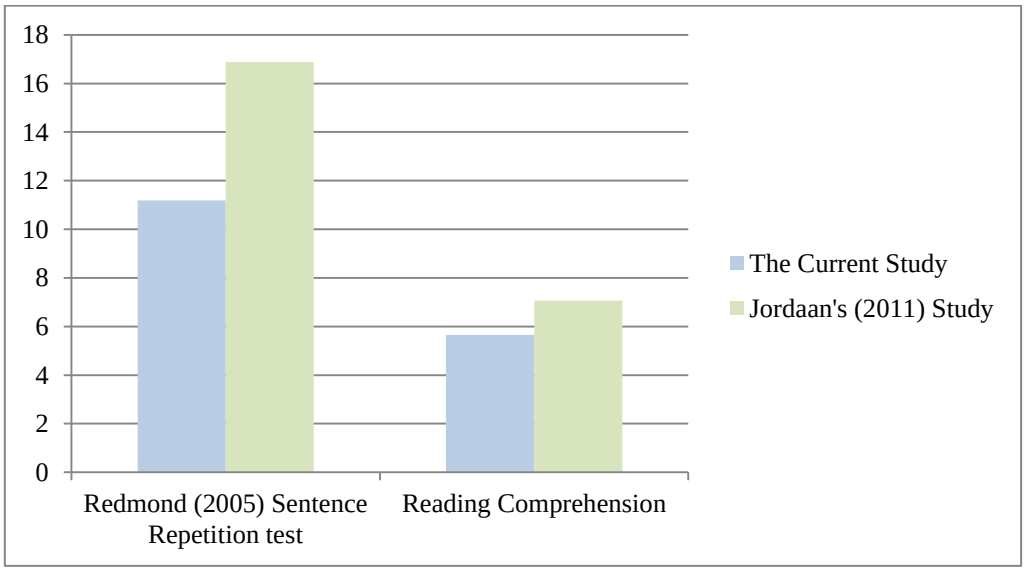

Figure 4.1: Graphic representation of the means obtained by the Grade 2 learners from the current study and Jordaan's (2011) study on the Redmond (2005) Sentence Repetition test and the reading comprehension test

The EAL learners in both studies did not perform well on either of the measures. However, the learners from the current study performed worse than the learners in Jordaan's (2011)

study. The means for the reading comprehension measure were low, particularly for the current study, as the majority of the learners were not able to move past the first two stories in the test. An explanation for the difference in test scores may be attributed to the time of assessment. The learners from Jordaan's (2011) study were assessed at the end of the grade 2 academic year; whereas the learners from the current study were assessed in the middle of the academic year. Therefore, the learners from Jordaan's (2011) study had more exposure to instruction and academic teaching materials, and had greater opportunity for incidental learning (Dockrell & Messer, 2004; Cummins & Yee Fun, 2007) than the learners from the current study. This finding provides evidence for the sensitivity of the measures to a number of variables, including the time of testing. It also emphasises use of the peer group mean as a basis for comparison when identifying learners who are at-risk for language impairment.

4.3. Correlations between the Measures

The results of the two sentence repetition measures were correlated in order to establish the internal validity of these two tests. Furthermore, correlations between sentence repetition and reading comprehension were conducted in order to determine the use of sentence repetition as a predictor of academic literacy. The Pearson Correlation Coefficient was used to conduct the correlations. Table 4.3 below reflects the correlations between all of the measures. Significant correlations are highlighted on the table.

Table 4.3: Pearson Correlation Coefficients for the Two Sentence Repetition Measures and the Reading Comprehension Measure for all of the Grade 2 Learners

	Redmond	**Recalling Sentences**	**Reading Comprehension**
Redmond	1.00	r=0.69	r=0.22
		Pr>r 0.001**	Pr>r 0.03*
Number of Observations	107	107	106
Recalling Sentences			r=0.34
			Pr>r 0.0004**
Number of Observations	107	107	106

** Significant at the 1% level; *Significant at the 5% level

The Pearson Correlation Coefficient tests reveal the following:

- The results on the Redmond (2005) Sentence Repetition test and Recalling Sentences subtest are highly correlated (r=0.69; Pr>r 0.001).
- The results on the Redmond (2005) Sentence Repetition test and reading comprehension are significantly correlated at the 5% level, but the correlation co-efficient is low (r=0.22; Pr>r 0.03)
- The results on the Recalling Sentences subtest and reading comprehension are significantly correlated (r=0.34; Pr>r 0.0004). The correlation that exists between the Recalling Sentences subtest and reading comprehension is thus fairly strong.

These results indicate that for the majority of the learners, the scores on the two sentence repetition measures were highly correlated. Although weak, correlations also existed between sentence repetition and reading comprehension. The correlations that exist between the two sentence repetition measures confirm the internal validity of these measures, which suggests that any sentence repetition test can be used as a screening tool for language impairment. Given that the Redmond (2005) Sentence Repetition test is quick and easy to administer, this may be the test of choice for many SLTs. The correlation that exists between sentence repetition and reading comprehension adds to the validity of sentence repetition as a measure of language processing, particularly among EAL learners.

The results obtained in the current study are similar to those obtained in Jordaan's (2011) study as she also found a correlation between sentence repetition and reading comprehension. This implies that the episodic buffer zone and phonological loop components of working memory, as assessed on sentence repetition, are related to reading comprehension. This finding correlates with the literature in that working memory is involved with executive control during the reading process (Seigneuric et al., 2000; Westby, 2004) For example, working memory is responsible for processing and storing incoming information, whilst simultaneously retrieving and integrating information from long term memory (Westby, 2004). The results of this study thus highlights the fact that working memory is a critical component for language learning (Gillam, Montgomery & Gillam, 2009), and there is a correlation between working memory capacity and literacy (Maimela-Arnold & Evans, 2005; Maimela-Arnold, Evans & Coady, 2008; Cowan, et al., 2005). This would further explain why the EAL learners from the current study and Jordaan's (2011) EAL context 1 learners

performed poorly on the sentence repetition measure, and subsequently on the reading comprehension test. In addition, the results of this study imply that limited working memory capacity and poor language proficiency affect the development of academic literacy when learning English through the medium of instruction. Thus, since there is a unique relationship between working memory and reading comprehension, one can deduce that sentence repetition, as a measure of working memory, has the potential to predict reading comprehension proficiency and potentially academic success.

4.4. Children with Language Impairment

4.4.1. Identification of Children with Language Impairment

It is clear from the literature that children learning English through the medium of instruction are disadvantaged not only in their development of English, but also in terms of their development of academic language. In Jordaan's (2011) study, she found that EAL learners with language impairment have significant difficulties learning in English and their academic language is not on par with that of their EAL peers. In addition, the results of her study indicate that there are similarities and differences among the language profiles of EAL learners with language impairment, and English L1 learners with language impairment.

The language profiles of the learners in the current study will be described in terms of specific areas of weakness in each language domain. These profiles will be compared to the literature in order to describe the manifestations of language impairment. The language profiles will also be compared to the results obtained in Jordaan's (2011) study in order to describe language impairment in the L2.

4.4.2. The Mean Raw Scores and SD's for the Redmond (2005) Sentence Repetition Test

Table 4.4 below depicts the mean raw scores and SD's obtained by the learners of the current study on the Redmond (2005) Sentence Repetition test.

Table 4.4: Mean Raw Scores and Standard Deviations for the Redmond (2005) Sentence Repetition Test

Mean Raw Score (n=107)	**Standard Deviation**	**1 SD Below the Mean**	**1.5 SD Below the Mean**	**2 SD Below the Mean**	**Selection Criteria**	***Number of Learners Identified as At-risk for Language Impairment***
11.19	7.0	4.19	0.69	-2.81	Raw scores below 4.	*12*

The selection criterion for language impairment was 1 SD below the peer group mean on the Redmond (2005) Sentence Repetition test. In this way, 12 of the 107 (11%) participants in this study were identified as at risk for language impairment. This incidence is higher than the 7% typically described in the literature (e.g., Tomblin et al., 1997).

The SD proved to be a critical component in the identification of EAL learners who were at-risk for language impairment. Regarding the Redmond (2005) Sentence Repetition test, the total possible score that one can achieve is 32. As depicted in table 4.4 above, the grade 2 mean for this measure was low, and the standard deviation was large. Although Bishop and McDonald (2009) recommended using 2 SD below the mean to identify language impairment, the results of the current study indicate that a SD of 2 is too high as it is not possible to use test scores that fall within negative numbers. It is also evident that a SD of 1.5 is not suitable for the current study as not all of the learners with a language difficulty would have been identified (i.e. only 2.8% of the learners with language impairment would have been identified). Thus, by using a SD of 1, all of the learners who were at-risk for language impairment were appropriately identified. The fact that a large number of learners were identified may be due to the presence of other risk factors for SLI, such as limited support for the development of the first and second languages in the classroom, as well as delays in early identification of learners with atypical language development. However, this conclusion remains speculative as classroom observations were not conducted and a description of specific teaching strategies and practices were beyond the scope of this study.

Based on the results obtained on the Redmond (2005) Sentence Repetition measure, the learners who were identified as being at-risk for language impairment were further evaluated on the DELV-CR (Seymour et al, 2003), as one of the secondary aims of this study was to describe the language profiles of EAL learners with language impairment. A detailed analysis of the results obtained on each domain of the DELV-CR (Seymour et al, 2003) will assist in understanding the expressive and receptive language difficulties experienced by EAL learners with language impairment.

Only the learners identified as at-risk for language impairment from the current study were assessed on the DELV-CR (Seymour et al, 2003). In comparison, all of the participants in Jordaan's (2011) study were evaluated on this language measure. The language impaired learners in the current study were therefore compared to the typically developing and language impaired EAL learners in Jordaan's (2011) study. Although the sample of language impaired children in the current study was relatively small, the results are consistent with those of Jordaan's (2011) sample. Table 4.5 below depicts the total raw scores obtained on each domain on the DELV-CR (Seymour et al, 2003) by the language impaired learners in the current study and the typically developing and language impaired learners in Jordaan's (2011) study.

Table 4.5: The Total Raw Scores Obtained on each domain of the DELV-CR by the Learners from the Current Study and Jordaan's (2011) Study

	Statistics	**Jordaan's (2011) Study- EAL Context 1 Typical Learners (n=55)**	**Jordaan's (2011) Study- EAL Context 1 Language Impaired Learners (n=3)**	**The Current Study- Language Impaired Learners (n=12)**
DELV-CR Domain				
Syntax *(possible total=32)*	**Mean**	22.4 (70%)	15.67 (49%)	17.3 (54%)
	SD	4.3		4.67
Pragmatics *(possible total=24)*	**Mean**	17.3 (72%)	7.67 (32%)	11.58 (48%)
	SD	4.5		4.87
Semantics *(possible total=46)*	**Mean**	27.18 (59%)	17 (37%)	20 (43%)
	SD	5.48		5.12

It appears that the learners identified with language impairment in the current study performed better overall on the DELV-CR (Seymour et al., 2003) domains than the language impaired context 1 participants from Jordaan's (2011) study. This difference may be attributed to the fact that only 3 EAL context 1 participants from Jordaan's (2011) study were identified with language impairment, in comparison to the 12 EAL participants from the current study. Nonetheless, as is evident from the mean scores in Table 4.5, the language impaired learners in the current study and those in Jordaan's (2011) study, performed similarly and worse than the peer group on all of the DELV-CR (Seymour et al., 2003) domains. It is evident that EAL learners in general require support in their development of English. EAL learners with language impairment appear to be further disadvantaged. It is therefore critical that these learners are identified so that the appropriate level of support can be provided.

The fact that the learners from the current study performed similarly to the language impaired learners from Jordaan's (2011) study also indicates that sentence repetition measures can be used to screen for learners at-risk for language impairment. The phonological loop (Dolloghan & Campbell, 1998), and the episodic buffer zone are both important components of cognitive processing that are involved in sentence repetition (Gathercole & Alloway, 2006; Vance, 2008), and appear to be related to language processing. Furthermore, this finding highlights the fact that the peer group mean is an important factor to consider when identifying learners who are at-risk for language impairment.

4.4.3. Description of the Performance of the Learners Identified with Language Impairment

Table 4.6 below depicts the raw scores obtained by the learners from the current study identified as at-risk for language impairment. The learners have been allocated numbers. The learners who scored below the peer group mean on the DELV-CR (Seymour et al, 2003) domains, as obtained by Jordaan (2011), have been highlighted.

Table 4.6: Total Raw Scores Obtained by Each Child Identified as At-Risk for Language Impairment on the DELV-CR and the sentence repetition measures

Participant	**Syntax Domain** ***(possible total=32)***	**Pragmatics Domain** ***(possible total=32)***	**Semantics Domain** ***(possible total=32)***	**Raw Score Obtained on Redmond Sentence Repetition Test**	**Raw Score Obtained on the Recalling Sentences Subtest**
1	14	11	15	0	21
2	22	11	19	1	29
3	11	1	17	0	14
4	15	13	21	2	28
5	18	12	23	2	19
6	21	19	19	2	27
7	23	14	30	1	27
8	17	4	14	1	14
9	12	11	17	2	22
10	11	13	14	0	24
11	21	14	26	3	25
12	23	16	25	3	23
Grade 2 Peer Group Mean (Jordaan, 2011)	**17.3**	**11.58**	**20**	**The Current Study Peer Group Mean=11.19**	**The Current Study Peer Group Mean=32.76**

Of the 12 learners identified as at-risk for language impairment, 6 performed below the peer group mean on the syntax domain, and 5 and 7 learners performed below the peer group mean on the pragmatics and semantics domains respectively.

Four participants (1, 3, 8 and 9) fell below the peer group mean on all of the domains of the DELV-CR (Seymour et al, 2003). Participants 2 and 10 fell below the peer group mean on two of the language domains. Participant 4 fell below the peer group mean on the syntax domain only, whereas participant 6 fell below the mean on the semantics domain only. Four of the participants (5, 7, 11 and 12) scored above the peer group mean on all of the domains, indicating that these participants may not have SLI. This finding is consistent with the literature claiming that EAL learners are often over-identified as having language impairment which leads to misdiagnosis (De Lamo White & Jin, 2011). This finding highlights the importance of a follow-up assessment in order to avoid misdiagnosis of language impairment. It is possible that the sentence repetition tests are over-sensitive, but it is also possible that some children may have working memory deficits (as assessed on sentence repetition) that do

not impact on their oral language proficiency. Given the above findings, 8 of the 107 (7.5%) participants of the current study have language impairment. This finding is consistent with the literature in that 7% of a population has language impairment (Tomblin et al., 1997).

All of the learners identified as at-risk for language impairment fell below the peer group mean on both of the sentence repetition measures. This result is consistent with the finding that the two sentence repetition measures are highly correlated. However, it should be noted that the peer group mean on the CELF-4 (Semel et al, 2003) sentence recall measure was 32.76, while the SD was 10.32. Thus a score of 1SD below the mean would be 22.44. If this test were used to select children at risk for language impairment and a criterion of 1SD below the peer group mean was used, only 5/107 (4.7%) of the grade 2 children and only 4/8 (50%) children identified as impaired by both the Redmond (2005) Sentence Repetition test and DELV-CR (Seymour et al, 2003) tests would have been classified as language impaired. The CELF- 4 (Semel et al, 2003) sentence recall test thus seems less sensitive than both the DELV-CR (Seymour et al, 2003) and the Redmond (2005) Sentence Repetition test, which may be over-sensitive in identifying children at–risk for language impairment. These findings thus indicate that the Redmond (2005) Sentence Repetition test can be used a screening tool together with a more detailed language battery to ensure that the child has been correctly identified.

The performance of the language impaired children on each domain of the DELV-CR (Seymour et al, 2003) is described below.

4.4.3.1. Performance of the language impaired children on the syntax domain

Delayed syntactic development is a global deficit among monolingual and bilingual speakers with SLI (Schwartz, 2009). Six/eight (75%) participants of this study identified as language impaired had difficulty understating complex wh- questions, as well as passive sentences. This result was also observed in Jordaan's (2011) study and is further supported by the literature (e.g., Deevy & Leonard, 2004; Marinis & van der Lely, 2007; Schwartz, 2009; Leonard et al., 2006). A deficit in working memory capacity has been proposed as a possible

cause for difficulty processing and thus understanding complex wh- questions (Deevy & Leonard, 2004; Montgomery, 2000) and passive sentences (Marinis & van der Lely, 2007).

Correct article use (e.g., *a* versus *the*) was also difficult for the language impaired learners from the current study. Rice and Wexler (1996) reported that children with SLI have limited article use in their expressive language. Furthermore, Paradis (2007) reported that morpho-syntactic complexity of a language affects the development and use of articles. The result of the current study implies that the EAL learners had limited knowledge regarding the underlying grammatical rules that regulate correct use of articles within specific contexts in English (Seymour et al, 2003). Research indicates that the acquisition of articles follows the same pattern in EAL speakers as it does in English L1 speakers (Schafer & de Villiers, 2000). However, it should be noted that articles are not present in the African languages and thus, when using English, EAL learners may not be familiar with correct article use (Jordaan, 2011).

4.4.3.2. Performance of the language impaired children on the pragmatics domain

Five of the eight EAL learners identified with language impairment in the current study had pragmatic difficulties. This correlates with the literature regarding delayed pragmatic development in children with language impairment (Schwartz, 2009). Studies indicate that children with SLI are not able to effectively use language for communication, which subsequently leads to problems with socialisation (Schwartz, 2009). Children with SLI are said to have poor flexibility with their language and thus their pragmatic development is subsequently delayed (Schwartz, 2009).

Therefore, poor performance on the pragmatics domain stems from a deficit in expressive grammar and syntax. In addition, inadequate responses may be due to limited understanding of the question (Schwartz, 2009).

The results from Jordaan's (2011) study correlate with the findings from the current study as she also concluded that poor performance on the pragmatics domain could result from an

underlying syntactic deficit, and not necessarily a pure pragmatic deficit. These findings are further supported by the literature. For example, Craig (1985) reported that the cause of pragmatic deficits in children with SLI is a consequence of underlying structural deficits in language. Thus language impaired learners will perform poorly on the communicative role-taking sub-test of the DELV-CR because they are unable to formulate structurally intact statements and questions.

Narrative discourse is also affected in children with SLI (Schwartz, 2009). Narratives produced by children with language impairment typically lack structural complexity and are not structured in a coherent manner (Schwartz, 2009). For example, morpho-syntactic errors are evident, important information is omitted, and there is poor sequencing of events (Botting, 2002; Norbury & Bishop, 2003). These errors were observed in the language impaired learners from the current study. Furthermore, the learners had difficulty making appropriate reference to characters, as well as formulating temporal links between events in the narrative. The language impaired learners also struggled to formulate questions using appropriate wh- question words. These findings are consistent with the literature and results from Jordaan's (2011) study.

4.4.3.3. Performance of the language impaired learners on the semantics domain

Children with language impairment have delayed expressive and receptive semantic development (Bedore & Pena, 2008; Kohnert et al, 2009; Schwartz, 2009) which is caused by impaired organisation and retrieval of words in the lexicon (Schwartz, 2009).

The Semantics domain of the DELV-CR (Seymour et al, 2003) evaluates lexical organisation and retrieval, fast-mapping and the quantifier "every" within the context of complex sentences (Seymour et al, 2003). According to the literature, many children with SLI have deficits in these areas (McGregor, 1997; McGregor & Windsor, 1996). The findings of the current study is therefore consistent with the literature as 7/8 learners from the current study and the language impaired learners from Jordaan's (2011) study did not perform well on the semantics domain of the DELV-CR (Seymour et al, 2003). Verb learning appears to be a challenge for EAL learners with language impairment, and this may be due to the complexity of the verb system in the English language (Jordaan, 2011).

Schwartz (2009) reported that 97% of children with SLI have deficits with verb morphology. Overall, the participants of the current study performed poorly on the fast-mapping (for real and novel verbs) subtests. This result is thus consistent with the literature. Verb and preposition contrasts were also a challenge for the participants of this study. It is therefore apparent that a deficit with lexical organisation and retrieval affects the ability to learn and store new words in the lexicon. The participants' difficulty with the quantifiers subtest may be attributed to a deficit in underlying knowledge of syntactic structures. This affects correct use and interpretation of the quantifier "every" (Jordaan, 2011).

The findings obtained in the current study, as well as Jordaan's (2011) study is therefore consistent with the literature regarding the slow rate of lexical development among children with language impairment (Schwartz, 2009).

Semantic development is critical during the school-age years, especially with regards to the language used in the classroom to develop the academic language proficiency of the learners (Jordaan, 2011). Given the finding that EAL learners, with or without language impairment, present with delayed semantic development, indicates that educators need to play an active role in the facilitation of semantic development. SLTs should therefore be involved in the facilitation process and provide educators with the skills to support the development of semantics among the learners in the class, specifically those who have a LLI.

The above results indicate that there is an overlap in the language profiles of monolingual children with language impairment and bilingual children with language impairment. Although it is evident in the literature that EAL learners present with similar language profiles as English L1 learners with language impairment, the current study aimed to prevent misdiagnosis and over-identification of EAL learners with language impairment.

4.4.4. Reading Performance of Learners Identified with Language Impairment

Table 4.7 below provides a summary of the means, SD and range of scores obtained by the peer group mean and the language impaired learners.

Table 4.7: Summary of the Means, SD and Range of Scores obtained by all of the Grade 2 Learners and the Language Impaired Learners on the Reading Comprehension Measure

Reading Comprehension Measure (GORT-4)	*Possible total in the adult population=70*
Peer Group Mean	5.7
Range of Scores	0-23
SD	4.7
Mean for Language Impaired Learners	2.5
Range of scores for Language Impaired Learners	0-6
SD	1.89

The reading comprehension scores of the learners identified with language impairment are depicted in table 4.8 below. The learners who performed lower than the peer group mean have been highlighted.

Table 4.8: Reading Comprehension Scores of the Children Identified with Language Impairment

Participant	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
Reading Comprehension Score	6	1	2	5	2	4	2	0	2	0	4	2

There was a large range of scores obtained by the grade 2 learners on the GORT-4 (Wiederholt & Bryant, 2001). Overall, the minimum score obtained was 0 and the maximum score was 23. The scores obtained by the majority (11/12) of the learners identified as language impaired on the Redmond sentence repetition measure were below the grade mean, indicating significant reading comprehension problems. Thus although some of them did not have oral language problems, as assessed on the DELV-CR, they did display reading comprehension deficits relative to the peer group.

Language based skills, such as reading comprehension, is a secondary deficit that stems from language impairment (Schuele et al., 2007; Juele, 1988). All but one of the language impaired participants in this study obtained reading comprehension scores that were below the peer group mean. This result implies that language impairment may have a negative

impact on reading comprehension. Furthermore, this finding confirms the relationship between the sentence repetition measure and reading comprehension.

One participant, (participant 1), from the current study obtained a reading comprehension score that was above the peer group mean. This result indicates that there are exceptions, and that some children with language impairment may not have difficulties with reading comprehension. Nation et al. (2004), and Bishop and Adams (1990) report that not all learners with language impairment will have subsequent reading comprehension difficulties, thus confirming that, although there is strong theoretical evidence for the relationship between oral language skills and reading comprehension (Juele, 1988), there are some exceptions. This finding further highlights the fact that individual variation is prevalent among EAL learners. Similar results were obtained in Jordaan's (2011) study, whereby the majority (6/7) of language impaired participants had a subsequent deficit with reading comprehension. However, reading comprehension deficits were not evident in all of her participants.

Another interesting finding from the current study is that some learners who scored below the peer group mean for reading comprehension did not have language impairment. This implies that not all children with reading comprehension deficits are language impaired, but also lends credence to the possibility that some children with SLI have masked deficits which are not picked up during testing (Scarborough & Dobrich, 1990). The mean raw score for the reading comprehension measure in the current study was low, and as previously discussed, the majority of learners were not able to move past the first two stories in the test. This finding indicates that most of the 107 participants from the current study have delayed reading comprehension development.

It is clear that, in addition to not being able to use language effectively for academic purposes, most children with language impairment are further disadvantaged by poor reading comprehension skills. Working memory capacity is not only important for language processing in general, but also during reading comprehension tasks (Westby & Watson, 2004). For example, language processing during comprehension tasks is dependant on working memory capacity. Working memory plays a vital role in the ability to construct, maintain and update information during reading tasks (Westby & Watson, 2004). The results obtained from the current study indicates that sentence repetition, as a measure of working

memory, has the capacity to predict the academic proficiency of EAL learners with language impairment in the foundation phase of formal education.

4.5. Theoretical and Practical Implications for the use of Sentence Repetition to Screen for Language Impairment among EAL Learners

The findings of the current study provide important information regarding the theoretical and practical implications of using sentence repetition to screen for language impairment among EAL learners. On a theoretical level, it is apparent that a working memory measure, such as sentence repetition, can be used as a valid tool to screen for EAL learners who are at-risk for language impairment. Sentence repetition measures incorporate the functioning of the phonological loop and the episodic buffer zone of working memory. The phonological loop is responsible for the immediate processing of verbal input (Montgomery, 2002), whereas the episodic buffer zone is responsible for retaining information so that is can be effectively processed (Montgomery, Magimaraj & Finney, 2010). The functioning of these two components influence the development of language and subsequently linguistic proficiency (Montgomery, 2002; Snyder et al, 2002; Cown et al., 2005; Masoura & Gathercole, 2005; Maimela-Arnold et al, 2008; Engel de Abreu, Gathercole & Martin, 2011). Furthermore, working memory capacity has an influence on reading comprehension skills (Westby & Watson, 2004). According to the literature, working memory is an underlying factor that results in individual variation among the language profiles of EAL learners, and is considered to be one of the underlying causes of SLI (Linan-Thompson & Ortiz, 2009). The findings of the current study are in line with the literature as the sentence repetition test proved to be a valid measure to screen for learners who were at-risk for language impairment, as well as identify those learners who fell below the peer group mean on the reading comprehension measure. The ability to recall sentences relies on the interaction between the linguistic system and working memory capacity (Reisberg, 2006; Maimela-Arnold et al, 2008; Archibald & Joanisse, 2009; De Lamo, White & Jin, 2011). EAL learners in general tend to have inadequate knowledge and understanding of English syntax and semantics, and thus perform poorly on verbal working memory tasks administered in English (Montgomery, 2002). This result is evident in the low means obtained on the sentence repetition measure. Furthermore, when evaluated on a sentence repetition task, EAL learners display ineffective

use of their attention skills, which leads to weak storage of information in working memory (Montgomery, 2002). The sentence repetition measure used in the current study was able to identify learners who were at-risk for language impairment. This result has important implications for the development of screening protocols for EAL learners within the South African context. However, the sentence repetition measure also identified learners who did not have language impairment. This was evident in the results obtained on the DELV-CR (Seymour et al, 2003) as they performed above the peer group mean on all of the language domains. This finding has implications for follow-up assessment in order to prevent over-identification and misdiagnosis of language impairment among EAL learners.

The above findings, and the apparent interaction between working memory and the linguistic system, have theoretical implications for the underlying cause of SLI. The two main causes for SLI, as outlined in chapter 2, focus on the cognitive processing and linguistic representation theories. The cognitive processing theory, which is of particular importance for the current study, focusses on disordered working memory and inadequate processing speed as a cause for SLI (Schwartz, 2009; Montgomery et al., 2010). The results of the study are consistent with the literature in that the learners identified with language impairment displayed working memory skills that were lower than the peer group mean, as evident on the results obtained on the Redmond (2005) Sentence Repetition test. On the other hand, when evaluated on the DELV-CR (Seymour et al, 2003) 8/12 learners presented with underlying linguistic deficits. This result is consistent with the linguistic representation theory which states that learners with language impairment have delayed/disordered development of linguistic structures. The fact that sentence repetition, as a measure of working memory, proved to be a valid measure to identify learners with language impairment, who were later diagnosed using the DELV-CR (Seymour et al, 2003) provides support for the interaction between working memory and linguistic representation. It is therefore evident that cognitive processing and linguistic representations of language cannot be separated and language development is dependant on the interaction between these two systems.

However, the findings of the current study, specifically with regards to the learners identified with language impairment, raises two important questions. First, why did some learners (4/12) score below the peer group mean on the Redmond (2005) Sentence Repetition test and not present with language learning difficulties when assessed on the DELV-CR

(Seymour et al, 2003)? Second, could working memory deficits not in fact affect language? These are important factors to consider as models of cognitive processing are generally applied when describing the cause for SLI. Owens (2008) reported that the model of cognitive processing varies among individuals. Furthermore, the exact relationship between cognitive processing and linguistic representation is still an area of uncertainty, especially among bilingual learners (Shatz, 2009; Hulstijn, 2007). In order to evaluate the relationship between cognitive processing and linguistic representation of language, one would need to investigate how the EAL learners perform when assessed in their L1. This is an implication for future research in the area of working memory and language impairment among EAL learners.

Individual variation among EAL learners has also proven to be an interesting and significant finding for this study. Individual variation specifically among EAL learners, as discussed in chapter 2, may be attributed to a variety of factors, including intelligence and learning style, information processing strategies and motivation, as well as factors relating to the educational environment (Kohnert, 2010). The development of an additional language is a dynamic and complex process, and it is therefore difficult to pinpoint individual resources and learning styles that lead to such variation (Jordaan, 2011). Although the Redmond (2005) Sentence Repetition measure has proven to be a valid measure in the identification of learners who are at-risk for language impairment, the fact that individual variation is so significant among EAL learners, and the time of testing appears to influence test performance, it would be difficult to standardise the Redmond (2005) Sentence Repetition test (or any other sentence repetition measure) on the South African population. Thus, the peer group mean remains the most relevant basis for comparison when identifying learners who are at-risk for language impairment.

The use of sentence repetition as a valid measure to identify EAL learners with language impairment also has positive practical implications. For example, sentence repetition measures are quick and easy to administer (Redmond et al., 2011). The administration time for a sentence repetition measure is approximately 15 minutes. This is useful when screening a large population of learners; for example, an entire class or grade. Furthermore, the scoring system implemented for this test is straightforward (Redmond et al., 2011). However, when using sentence repetition to screen for language impairment among a large group of learners, it is important to consider the peer group mean as a basis for comparison.

4.6. Educators' Ability to Identify Learners with Language Impairment

Assessment and intervention of learners with language impairment comprises of a holistic approach, and thus teacher input is important in order to monitor language use and progress in the classroom (Semel et al, 2003). Information relating to a learner's academic performance provides SLTs with valuable information pertaining to a child's communication profile in terms of their language strengths and weaknesses within a natural environment (Semel et al, 2003). The literature also outlines the important role educator's play in the development of academic language in the educational setting. The development of academic language is of significant importance for school-age children, and learners with language impairment require additional support in the classroom in order to learn and use language for academic purposes (Scarcella, 2011).

The three educators initially agreed to participate in the study by completing academic rating scales for each learner (Appendix H). However, due to prior academic commitments and time restrictions, they were unable to complete the rating scales at the time of data collection. Nevertheless, the educators provided verbal consent to partake in an informal interview with the researcher. During this interview, an attempt was made to gain information about the academic language and subsequent academic performance of the language impaired learners. The educators did not identify all of the learners who were weaker than the peer group. In addition, they identified some learners as being 'weak' who scored within, and above, the peer group mean on the Redmond (2005) Sentence Repetition test. The three grade 2 educators provided little information regarding the academic performance of the learners identified with language impairment, and merely commented on conversational language of these learners. This raises the important question of whether educators are able to identify learners with language impairment. Another important question that stems from this finding is whether educators are able to support learners within their class who have a LLI. As outlined in the literature review, Navsaria, et al (2011) reported that South African educators are challenged by large teacher-learner ratios and are thus unable to provide individual support to all of the learners who experience barriers to learning, for example, learners with a LLI. In the current study there was an average of 36 learners per class, which makes it increasingly difficult for educators to identify learners with specific language difficulties and to provide each child with individual attention where necessary. An investigation into the identification of learners with language difficulties and the subsequent support that is

provided to these learners is beyond the scope of the current study. These areas warrant further investigation in South African classrooms. Navsaria et al (2011) reported that teachers require additional support and training in order to assist learners who experience barriers to learning. This is especially important for linguistically and culturally diverse classrooms, where children are not only learning the language of instruction through the language of instruction (Cummins, 2000), but may also have an underlying LLI that prevents adequate development of language for academic purposes. It is therefore evident that educators require support from SLTs to identify and support learners with language learning difficulties within the educational setting.

CHAPTER 5

CONCLUSION

The results of this study shed light on the protocols that can be implemented by SLTs to identify and assess EAL learners with language impairment. This is especially significant for the multilingual South African context where there is limited availability of valid assessment tools.

5.1. Implications for Language Assessment Protocols of Bilingual Learners

SLTs working within the South African context are faced with a number of challenges when it comes to language assessment protocols of culturally and linguistically diverse learners. The identification of SLI proves to be somewhat challenging (Nation et al., 2004), especially among EAL learners. As a result, a number of children with SLI go undetected within the education system (Gibrau & Schwartz, 2008). There is a need, not only nationally, but internationally for measures that will reliably and validly identify EAL learners with language impairment (Gibrau & Schwartz, 2008). This is especially true for the South African context where more than half of the population speaks a home language other than English, and as mentioned previously, there are virtually no valid assessment tools available to identify language impairment in these learners. According to Statistics South Africa (2011), it is estimated that only 9.6% of the population speak English as a L1. Of the eleven official languages, isiZulu is the most common, with just over 20% of the population speaking this language as their L1, followed by isiXhosa at 16%. These statistics highlight the need for identification and assessment tools and protocols to be implemented to identify language impairment among these learners.

The results of this study suggest that the Redmond (2005) Sentence Repetition test proved to be a valid measure for the screening and identification of language impairment in EAL learners, provided that the learners are compared to a peer group mean within the same/similar educational context. Furthermore, the internal validity that exists between the two sentence repetition measures used in this study provides further evidence for the sensitivity of a sentence repetition task in identifying at-risk EAL learners. Additionally, the

correlation that exists between sentence repetition and reading comprehension scores indicates that sentence repetition measures also predict academic language proficiency.

As Zulu is the most common L1 spoken in South Africa (Statistics South Africa, 2011), it is worth investigating whether a sentence repetition measure can be developed in this African language. The development of sentence repetition measures in African languages will allow for the majority of South African learners to be assessed in their home language, which, according to best practice guidelines, is necessary for bilingual learners (Roseberry-Mc Kibbon, 2007; Thordardottir, 2010). Furthermore, the development of a sentence repetition measure in an African language; for example, Zulu, would allow for future research into the cause of SLI in EAL learners, and whether the constructs of cognitive processing and linguistic representation can, in fact, be separated.

Given the fact that the majority of the South African population speaks English as an additional language, and sentence repetition is a valid screening tool for language impairment, it would be ideal to implement standardisation procedures for this test. However, as previously highlighted, as a result of the individual variation and contextual factors that affects the development of English among EAL learners, it is not possible to standardise this test on the South African population, and peer group comparisons remain the most appropriate way to identify at-risk learners.

The diagnosis and description of language impairment in EAL learners is also important. The DELV-CR (Seymour et al, 2003) proves to be an appropriate measure for this task. The domains that constitute the DELV-CR (Seymour et al, 2003), and the subtests thereof, evaluate the skills that are typically disordered in children with language impairment. Furthermore, The DELV-CR (Seymour et al, 2003) can be used on linguistically and culturally diverse learners to diagnose language impairment, as well as describe the manifestations of language impairment in EAL learners.

5.2. Implications for the Role of Speech-Language Therapists in Education

It is evident from the results of this study, as well as Jordaan's (2011) study that EAL learners with language impairment are disadvantaged by their EAL status, specifically in terms of their development of language for academic purposes. Although bilingual learners often experience a shift in language dominance during the school-age years, this is not to say that the L2 should not receive support within the intervention programme (Kohnert, 2008). Kohnert (2008) reported that intervention for bilingual learners should focus on the support and development of the home language, as well as the LoLT (Kohnert, 2008). This will allow for success with the intervention programme, as well as within the educational environment. However, internationally, the majority of SLTs speak English as a L1 and are often not proficient in an additional language/s (De Lamo White & Jin, 2011). This is true for the South African context, where a limited number of SLTs are able to provide intervention in the African languages. However, best practice guidelines continue to indicate that intervention for bilingual learners should be provided in both languages (Jordaan, 2011). By limiting the intervention programme to the majority language only, this may have negative consequences for interpersonal relationships (Kohnert et al., 2005). The above discussion indicates that not only is the assessment of bilingual learners a challenge for SLTs within the South African context, but also intervention. This has significant implications for the training programmes offered to SLTs in the South African context (Jordaan, 2011).

The results of this study also highlight the important role SLTs have in the education system in terms of the identification of language impairment in EAL learners. In order for SLT services to be successful within the educational setting, educators and SLTs need to work together and share a collaborative role within the classroom. Educators need to understand the important role of language and how it affects the development of literacy and the comprehension and use of academic language (Wium & Louw, 2011). Furthermore, Ritzman, Sanger & Coufal (2006) suggest that SLTs and educators should address any academic challenges that may be present in the classroom. In addition, Jordaan (2011) proposed that the language demands of the curriculum be analysed so that appropriate planning of programmes can be conducted. For example, within the South African context specifically, educators need to understand how competency and proficiency in the L1 affects the development of the L2, as well as how the LoLT affects the development of academic language (Wium & Louw, 2011). The results of this study provide support for teachers and

SLTs working in close collaboration to meet the language and academic needs of learners (O'Connor & Geiger, 2009). As many South African learners acquire oral language and literacy skills in an additional language (Motshekga, 2010), support needs to be given in both English and the learner's home language/s (Wium & Louw, 2011). In this way, SLTs would be able to provide educators with the knowledge and skills that will enable their learners to develop language for academic purposes, especially among the EAL population and those with an underlying LLI. The identification of language impairment tends to be based on academic achievement and reading proficiency (Gibrau & Schwartz, 2008). The findings from the current study reveal that educators had difficulty identifying learners with LLI and pin-pointing specific areas of deficit that impact on language learning in the classroom. SLTs can therefore assist educators with their ability to identify learners who may be struggling with academic language and thus make the appropriate referrals for these learners. In this way, subsequent academic difficulties can be prevented among the learners who require additional educational support (Owens, 2010).

It is evident that SLTs have the potential to contribute towards the academic development of all learners in South Africa (Jordaan, 2011). Currently in South Africa, the majority of SLTs are employed by the Department of Health (Kathard et al., 2011). Children under the age of six are able to access services of SLTs in the public health sector. Unfortunately, school age children are not able to benefit from such services unless they have an accompanying health condition. SLTs who provide services to the education sector work at schools for learners with special education needs (Kathard et al., 2011). As SLTs have an important role to play within an educational setting, there is a need for therapists to be integrated in the mainstream education setting in South African schools. However, SLTs are currently not given the opportunity to provide the appropriate and necessary support within the education sector (Kathard et al, 2011). Therefore, SLTs are currently faced with a significant challenge in terms of their ability (and availability) to provide educators with the support necessary to overcome the barriers that are present in many linguistically and culturally diverse South African classrooms (Navsaria, et al., 2011).

In order for SLTs to be offered employment posts, the Department of Education needs to recognise its responsibility to support learners and their respective educators. This is especially important education contexts where language and literacy is underdeveloped

(Kathard et al, 2011). In order to overcome this challenge, Kathard et al (2011) suggests that every full service school should employ an SLT and there needs to be collaboration with district-based teams. However, it may not be practical or possible for an SLT to support every teacher within an entire district (Wium & Louw, 2011). Therefore, SLTs should collaborate with district facilitators. In this way, support will be provided to educators by district facilitators whose primary role is to support educators with the implementation of the curriculum (Wium & Louw, 2011). District facilitators need to be supported by SLTs in order to provide on-going in-service training to educators regarding language and literacy skills and development (Wium & Louw, 2011). In addition to adhering to a collaborative model, SLTs can provide annual continued professional development (CPD) workshops related to language development and the acquisition of academic language.

It is evident that the role of a SLT in Basic Education is two-fold. Firstly, SLTs play an imperative role in improving language and literacy outcomes within the educational setting. In this way, academic achievement is supported that will lead to adequate employment opportunities. Second, SLTs form part of an educated workforce; therefore, in order to ensure a future need and relevance of SLTs, opportunities provided to work within the education sector should be taken up by SLTs (Kathard et al., 2011).

5.3. Limitations of the Study

Although the researcher has made every effort to represent the South African EAL population in this study, the generalisability of the findings may be compromised by several factors. Firstly, the data was collected from one school in Gauteng and the sample consisted of 107 learners. This sample is a less accurate estimation of the EAL population in Gauteng, and South Africa as a whole. However, to make the sample as representative as possible, the participants came from linguistically diverse backgrounds and the criteria of selection for participants was not limited to one language group only; for example, Nguni L1 learners only. English L1 learners were excluded from this study and the selection criteria for participants was strictly adhered to. Therefore, the results of this study can be generalised to the population from which it was drawn. In addition, the findings of this study in terms of the

results obtained for the Redmond (2005) Sentence Repetition test, and the descriptions of language impairment in EAL learners, were compared to Jordaan's (2011) study. Similar results were obtained from the two studies, which further indicates that the findings from the current study can be generalised to the broader EAL population.

The second limitation of this study refers to the application of the GORT-4 (Wiederholt & Bryant, 2001), which was used to evaluate the reading comprehension skills of the participants. The GORT-4 (Wiederholt & Bryant, 2001) consists not only of a comprehension component, but also a decoding component. Although the results of the study indicate that delayed oral language development has a negative impact on literacy acquisition, the evaluation of the decoding skills of the participants would have provided more detailed information regarding their reading accuracy, which further impact on comprehension skills. The reading accuracy scores may have explained the variations that existed in reading comprehension results among the language impaired learners.

5.4. Implications for Future Research

"Education is the great engine to personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mine worker can become the head of the mine, that the child of (a) farm worker can be the president of a great nation" (Mandela, 2012, p.1).

The above quotation highlights the importance of education. However, if learners with an underlying LLI go undetected within the education system, their potential for academic success is affected. The findings of the current study indicate that SLTs need to be integrated within mainstream classrooms in order to provide support to educators in their ability to develop the academic language of the learners, as well as to identify learners whose academic performance is not on par with that of their peers. Of significant importance, however, is the identification of those learners who are performing below the peer group mean, and who may be at-risk for LLI. Sentence repetition proved to be a valid measure to identify learners with language impairment in the current study. It is anticipated that sentence repetition will continue to be an active area of research, particularly with regards to EAL learners. It is

recommended that future research investigate whether a sentence repetition tool can be developed in an African language and whether this tool yields valid results for the identification of bilingual learners at-risk for language impairment.

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APPENDICES

Appendix A: Description of the DELV-CR Test Domains and Subtests

1. Syntax

Syntax refers to the set of rules that govern the structure of phrases and sentences in a language (Owens, 2005). The aim of the "Syntax Domain" is to evaluate whether a learner has linguistic knowledge regarding the underlying system of rules governing language, and whether their knowledge and use of linguistic structure is age appropriate (Seymour et al, 2003). This sub-test specifically evaluates the understanding of implicit grammatical relationships in passive sentences, questions and articles appropriate (Seymour et al, 2003).

a. Wh- Questions

The '*wh*- questions items' assesses a learner's ability to understand three main aspects of *wh*-questions (Seymour et al., 2003). The first aspect is the ability to answer questions that contain *wh*- question forms (e.g. *who* ate *what?*). The second is the ability to understand questions that contain clauses (e.g. *what* did she *say* she bought?). The third aspect evaluates whether a learner is able to comprehend a question in the context of multiple clauses (e.g. *how* did the boy *who sneezed* drink his milk?) (Seymour et al., 2003).

b. Passive Items

The 'Passive Items' subtest evaluates a learners understanding of the construction of passive sentences (Seymour et al., 2003). The understanding of passive sentences is dependent on grammatical knowledge, as, unlike active sentences, the information presented in passive sentences is not explicitly stated. Thus, a learner's ability to understand and produce passive sentences is dependent on their grammatical development (Horgan, 1978). Passive sentences play a role in the development of academic language, especially with regards to written language tasks (Cummins, 2000). The results obtained from the 'Passive Items' provides information regarding the development of grammar and awareness of sentence structure (Seymour et al., 2003).

c. Articles

The 'Articles Items' subtest evaluates a learner's understanding of grammar and the rules that govern correct article use (e.g. *the* vs. *a*) (Seymour et al., 2003). Correct article use is

dependent on integration of knowledge and ability to identify how a particular object is defined appropriate (Seymour et al., 2003).

2. Pragmatics

The "Pragmatics Domain" of the DELV-CR aims to evaluate a learner's ability to use language in social contexts (Seymour et al., 2003). The pragmatics domain comprises of three subtests; communicative role-taking, narrative discourse and question asking (Seymour et al, 2003). These subtests evaluate a learner's ability to interpret meaning that is not explicitly stated, as well as to make appropriate social inferences appropriate (Seymour et al., 2003).

d. Communicative Role-Taking

The 'communicative role-taking items' evaluates a learner's ability to identify which speech acts should be used in particular social situations (Seymour et al, 2003). For example, reporting an event, requesting an item/information, or prohibiting an action. Thus, this sub-test provides information regarding knowledge of communicative intent. The correct use of morpho-syntactic structures is not critical for the scoring of this subtest; the scoring of this subtest is based solely on the ability to demonstrate an awareness of appropriate pragmatic forms (Seymour, et al., 2003).

e. Narratives

Narrative development is important during the school-age years as learners need to acquire the skills necessary to make sense of their experiences (Bruner, 1986 cited in Seymour et al., 2003). In addition, Haynes & Shulman (1998) report that narrative development is in an integral part of academic language learning as the majority of texts used in pre-school through to third grade are structured in the form of narratives. Narratives should comprise of two core components; namely, centering and chaining (Owens, 2005). Centering is the ability to link the components of the narrative in terms of the characters, actions, scenes and situations. Chaining refers to the ability to sequence the events of the narrative in a coherent manner (Owens, 2005). These components are both evaluated in the 'narrative items' subtest. Theory of mind is an important component of pragmatic development. Theory of mind refers to the ability to understand mental states of oneself and others (Quill, Bracken, Fair & Fiore, 2000). These mental states include intents, thoughts and feelings (Quill et al., 2000). The theory of mind item of the "Pragmatics Domain" ties in with the 'narrative items' and evaluates the ability of the learner to make reference to the mental states of characters within

the narrative, as well as display an understanding of the reason for the character's feelings (Seymour et al., 2003). For example, in the test item, the learner is required to justify a character's mistaken response (i.e., expressing a false belief of the character) appropriate (Seymour et al., 2003).

f. Question Asking

Pragmatic development during the school-age years focuses in the interaction between language and socialization (Stephens, 1988 cited in Owens, 2005). For example, within the educational context, there is a shift from language for social purposes, to language for academic purposes (Owens, 2005). Learners are required to engage in turn-taking activities and answer a teacher's question with a high degree of specificity (Owens, 2005). Therefore, the "Pragmatics Domain" comprises of 'question asking items'. This subtest evaluates a learner's ability to formulate a specific question that will enable them to gain specific information (Seymour et al., 2003). The subtest also requires the learner to formulate questions using the following question forms: "who, what, where, why, how and double *wh*-questions" (Seymour et al., 2003, p. 29). The development of question asking skills requires development of the fundamental grammatical structures that are the core for question asking during the preschool years (Brown, 1968). It is important that a learner has knowledge of syntax in order to appropriately formulate a question, as well as to appropriately respond to such questions (Owens, 2005; Brown, 1968). The learner also needs to be sure of the information he/she wishes to receive as well as which question form is most appropriate in order to gain the desired information (Berko-Gleason, 1997).

3. Semantics

Conventional vocabulary assessment measures tend to be culturally biased and merely focus on how many words a learner knows. In contrast, the "Semantics Domain' of the DELV-CR evaluates a learner's semantic development in terms of their word organisation and retrieval, quantification, as well as their fast-mapping skills (Seymour et al., 2003).

g. Verb and Preposition Contrasts

The 'verb and preposition contrast items' make up the first subtest of the semantics domain and its aim is to evaluate a learner's understanding of verbs with similar meanings (Seymour et al., 2003). The verbs used in this subtest are related to every-day activities, such as

grooming, eating, breaking and dressing. Using illustrations, the test items prompt a response from the learner; for example, "this man isn't walking, he's *crawling*".
The preposition contrast items evaluate the understanding of different types of prepositions, such as spatial (*under* the chair), abstract (*at* night), and grammatical (listens *to* the radio) (Seymour et al., 2003).

As a whole, this subtest evaluates the manner in which a learner organises and retrieves words from their lexicon (Seymour et al., 2003). Lexical organisation and word retrieval are imperative skills for a school-age child as the lexicon should be organised in a hierarchical manner in order to ensure efficient word retrieval, despite differences with linguistic and cultural backgrounds among learners (Seymour et al., 2003).

h. Quantifiers

The 'Quantifier Items' subtest evaluates a learner's understanding of the word "every" and how this word can alter the meaning of a sentence (Seymour et al., 2003). The concept of quantification comprises of terms such as "every, all, each, some, only"; these terms form part of our every-day discourse and are commonly found in mathematical word problems. Strauss, Roeper, Pearson & Seymour (2003) reported that learners who do not correctly interpret "wh-" questions fail to understand the concept of quantification. This has an implication for language learning as quantifiers such as "every" tend to be either ignored or over-interpreted (Philip, 1995). For example, in the test items, there is a picture of three boys with boats, and one boy without a boat. When prompted with the question, "does every boy have a boat?", many learners between the ages of four and seven interpret this question as "do boys have boats?" and thus respond "yes". This error is also commonly seen among children with language impairment (University of Massachusetts Working Group on African American English cited in Seymour et al, 2003). Quantifiers play an important role in reasoning skills and problem solving (Seymour et al., 2003).

i. Fast-Mapping

Vocabulary development is imperative throughout the school-age years and it is said that pre-school and school-age children employ the strategy of 'fast-mapping' that enables them to infer a connection, after only one exposure, between a word and its referent (Owens, 2005). Fast-mapping skills are influenced by word and world knowledge. The 'fast mapping items' subtest of the DELV-CR evaluates the ability of a learner to use context to extract the

meaning of a new word (Seymour et al., 2003). Fast mapping is a skill that is present in all TD children, despite differences in cultural and linguistic backgrounds. The subtest is divided into two sub-sections; the first section uses real verbs, whereas the second section uses novel verbs (e.g. lelling, zanning) to evaluate whether the learner is able to use context in terms of syntactic cues (e.g. word order) and morphological markers to extrapolate word meanings (Seymour et al., 2003).

Appendix B: Ethics Clearance Certificate

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON MEDICAL)
H120502 Marshall

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H120502**
PROJECT TITLE	"The Identification of Language Impairment in English Additional Language Learners"
INVESTIGATOR(S)	Ms H M Marshall
SCHOOL/DEPARTMENT	Speech Language Pathology and Audiology
DATE CONSIDERED	18 May 2012
DECISION OF THE COMMITTEE	Approved Unconditionally
EXPIRY DATE	31 May 2014
DATE 12 July 2012	**CHAIRPERSON** (Professor T Milani)

cc: Prof. H Jordaan

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

Signature **Date** 25 / 07 / 2012

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix C: Gauteng Department of Education Approval

education
Department: Education
GAUTENG PROVINCE

For administrative use:
Reference no. D2013/16

GDE RESEARCH APPROVAL LETTER

Date:	18 April 2012
Validity of Researcher	18 April 2012 to 30 September 2012
Name of Researcher:	Marshall HM
Address of Researcher:	Number 5,9th Avenue
	Rivonia
	2128
Telephone Number:	011 803 5612/072 132 3290
Fax Number:	None
Email address:	hailsmarshall@gmail.com
Research Topic:	Identification of language impairment in English additional Language learners.
Number and type of schools:	1 primary school
District/s/HO	Johannesburg North

Re: Approval in Respect of Request to Conduct Research

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

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

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*

Making education a societal priority

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0560
Email: David.Makhado@gauteng.gov.za
Website: www.education.gpg.gov.za

4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

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

Kind regards

Dr David Makhado

2012/04/18

Director: Knowledge Management and Research

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0560
Email: David.Makhado@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix D: Principal Information Sheet and Consent Form

Dear Principal,

My name is Hayley Marshall and I am conducting research for a Master's degree in Speech Language Pathology at the University of the Witwatersrand. I am researching the identification of language disorders in learners who speak English as an additional language. The study is entitled: *Identification of language impairment in English additional language learners.* I would like to invite your school to participate in this study.

The parents of the learners who are currently in grade 2 will be given information sheets and consent forms. They will also be asked to complete a questionnaire about their child's language development and the languages that they speak. This questionnaire will take approximately 5 minutes to complete.

The learners who participate in this study will be given a simplified description of the study and verbal consent to participate will also be requested.

If the parents allow their child to participate, and the child gives consent, they will be tested on two sentence repetition measures. On these measures, the child will repeat sentences that are read to them by the researcher. The child will also be tested on an oral reading test in which he/she reads short passages and answers some questions. It is estimated that the total testing time per child in 30 minutes. The tests will be completed at the school during school hours. I will discuss suitable times with the teachers so that there is minimal disruption to the academic programme.

If a child is identified as having problem, they will receive a language assessment and I will contact the parents to discuss the results and need for speech-language therapy. It is anticipated that the results of this study will provide important information about identifying language problems in learners who speak English as an additional language. Participation in this study is completely voluntary. Children are free to refuse to participate and to withdraw at any time during the study. They will not be penalised or disadvantaged in any way. Furthermore, no identifying information of the school, teachers or learners will be included in the research report. Anonymity and confidentiality will be strictly adhered to.

Your cooperation is greatly appreciated. Please do not hesitate to contact me on 072 132 3290 should you have any questions or concerns.

Kind regards,

_____ _____

Hayley Marshall (Master's Student) Prof. Heila Jordaan (Supervisor)

Masters Student Supervisor

Project: *"Identification of language impairment in English additional language learners".*

I hereby give permission to the researcher to conduct the above-mentioned study at _____ (name of school).

Principal: _____ (name)

Signature: _____

Date: _____

Appendix E: Parent/Guardian Information Sheet and Consent Form

Dear Parent/Guardian,

My name is Hayley Marshall and I am conducting research for a Master's degree in Speech Language Pathology at the University of the Witwatersrand. I am studying the identification of language problems in learners who speak English as an additional language. The project is entitled: *Identification of language impairment in English additional language learners.* I would like to invite you to allow your child to participate in this study.

The study involves your child doing an oral reading test in which he/she reads short passages and answers some questions. Your child will also repeat sentences. The estimated testing time will be 30 minutes and they will be completed at the school during school hours. I will discuss suitable times with the principal and class teachers so that your child's academic programme is not disrupted in any way. If the results of the tests reveal that your child may a language problem, I will further assess their language and discuss possible solutions with you.

It is anticipated that the results of this study will provide information about tests that can be used identify learners who have a language problem. If you allow your child to participate, please complete the formal consent form and return it to your child's class teacher. It would also be greatly appreciated it if you could complete the attached questionnaire on your child's language development and the language/s that you speak at home. It will take you about 5 minutes to complete the questionnaire.

Participation in this study is completely voluntary. You are not under any obligation to allow your child to participate. If you decide not to participate, or wish to withdraw your child at any time during the study, you and your child will not be penalised or disadvantaged in any way. In addition, all the test results will remain strictly confidential. Your child's identity will only be known to me.

If you have any questions, please do not hesitate to contact me through your principal. I will gladly respond to your questions to the best of my ability.

Your cooperation and contribution to this study would be greatly appreciated.

Kind regards,

_____	_____
Hayley Marshall	Prof. Heila Jordaan
Masters Student	Supervisor

Study: *"Identification of language impairment in English additional language learners".*

Formal Consent Form

I, _____ (name and surname) hereby consent to allow my child _____ (name and surname) to participate in this study. In addition, I grant Hayley Marshall the permission to use my child's responses in the write up of the study and in subsequent publications or presentations. I am aware that I am not obliged to allow my child to participate and I am allowed to withdraw my child from the study at any time, and there will be no negative consequences towards myself or my child. I understand that my child's privacy will be maintained as they will remain anonymous and all responses will remain confidential. I am also aware that I can contact the researcher should I have any questions or concerns.

Signature: _____

Date: _____

Principal: _____ (name) _____ (signature)

Date: _____

Appendix F: Child Assent Form

Project: *"Identification of language impairment in English additional language learners".*

Hello, my name is Hayley Marshall. I am studying at University and I am working on a big project. I would like you to be a part of my project. The project is about children who speak English at school, just like you. I need you to read some short stories to me and answer some questions. You are also going to say some sentences that I read to you. None of this is for marks and you don't have to do these activities if you don't want to. If you start these activities and decide you don't want to do them anymore, just tell me and you can stop. You will not be in trouble if you decide to stop.

Will you help me with my project?

YES / NO

My name is: _____

The date today is: _____

Appendix G: Parent Questionnaire

Project: *The identification of language impairment in English additional language learners*

Date: _____

Parent's Name: _____ Child's Name: _____

General Health

1. Is your child healthy? **YES NO**

2. Has your child suffered any illnesses or ever been hospitalised?

_____

3. Is your child taking any medication? If yes, what medication?

_____

4. Please list any other relevant information about your child's health (include whether your child wears hearing aids or has a visual impairment): _____

_____

Language

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

6. Which other languages are spoken in your home and who speaks these languages?

Other languages spoken	Spoken by

7. How old was your child when he/she started speaking their home language?

_____

8. How would you describe your child's development in his/her home language? (Please circle the relevant answer)

a. The same as other children

b. Slower than other children

8.1. If it was slower than other children, please provide more information: _____

_____

_____

9. How old was your child when he/she was first exposed to English? _____

10. Did your child attend pre-school or grade R? (please circle the relevant answer)

YES NO

a. If yes, for how many years? _____

b. Which language was spoken by the teachers? _____

Thank you for completing this questionnaire, it is greatly appreciated. Please give this completed questionnaire and the completed consent form to your child's class teacher.

Thank you.

Appendix H: Teacher Information Sheet and Consent Form

Dear Teacher,

My name is Hayley Marshall and I am conducting research for a Master's degree in Speech Language Pathology at the University of the Witwatersrand. I am studying the identification of language problems in learners who speak English as an additional language. The project is entitled: *Identification of language impairment in English additional language learners.* I would like to invite you to participate in this study.

If you agree to participate in this study, you will be requested to complete a language rating scale for each grade 2 learner in your class who participates in this study. The rating scale will take approximately 5 minutes to complete for each learner. The parents of the learners who are currently in your class will be given information sheets and consent forms and will be asked to complete a questionnaire about the child's language development and the languages that they speak. The learners who participate in this study will be given a simplified description of the study and verbal consent to participate will also be requested.

If the parents allow their child to participate, and the child gives consent, they will be tested on two sentence repetition tests. On these tests, the learners will repeat sentences that are read to them by the researcher. The learner's reading abilities will also be assessed by asking them to read a series of short stories and answer questions verbally. The estimated testing time for each child will be 30 minutes. As the testing will be conducted during school hours, I would like to discuss suitable times with you so that there is minimal disruption to the academic programme.

Participation in this study is completely voluntary and you are free to refuse to participate or withdraw from the study at any time. You will not be penalised or disadvantaged in any way. Furthermore, all responses are strictly confidential and anonymity is assured.

Your cooperation will be greatly appreciated. Please complete the attached consent form and return it to the school principal. If you have any questions, please do not hesitate to contact me through your principal.

Kind regards,

_____	_____
Hayley Marshall	Prof. Heila Jordaan
Masters Student	Supervisor

Project: *"Identification of language impairment in English additional language learners".*

Study: *Identification of language impairment in English additional language learners".*

Formal Consent Form

I, _____ (name and surname) hereby consent to participate in this study. In addition, I grant Hayley Marshall the permission to use my responses in the write up of the study and in subsequent publications or presentations. I am aware that I can refuse to participate in this study and I am allowed to withdraw from this study at any time. If I decide not to participate, I will not be penalised or disadvantaged in any way.

I acknowledge that my privacy will be maintained as I will remain anonymous and my responses will remain confidential. I am also aware that I can contact the researcher if I have any questions or concerns.

Signature: _____

Date: _____

Appendix I: Raw Scores for the Redmond (2005) Sentence Repetition test, Recalling Sentences Subtest from the CELF-4 and the Reading Comprehension Test

Participant	Gender	Class	Redmond Sentence Repetition	Recalling Sentences	Reading Comprehension
1	M	2N	28	45	4
2	M	2N	10	37	1
3	F	2N	11	35	2
4	F	2N	12	24	2
5	F	2N	21	35	2
6	F	2N	12	41	2
7	M	2N	6	27	0
8	F	2N	24	47	8
9	M	2N	1	14	0
10	M	2N	19	64	4
11	M	2N	6	30	1
12	M	2N	15	49	23
13	F	2N	15	35	10
14	F	2N	17	39	6
15	F	2N	8	31	7
16	F	2N	14	28	9
17	F	2N	2	22	2
18	F	2N	26	47	5
19	M	2N	18	32	6
20	M	2N	11	15	0
21	M	2N	5	38	9
22	M	2N	19	40	4
23	M	2N	32	49	6
24	M	2N	11	27	2
25	F	2N	13	44	14
26	M	2N	13	38	4
27	M	2N	11	23	0
28	M	2N	0	24	0
29	M	2N	3	25	4
30	F	2N	17	47	4
31	F	2N	5	19	1
32	M	2N	17	40	6
33	M	2N	9	28	1
34	F	2N	11	38	5
35	F	2N	3	23	2
36	F	2N	19	43	1
37	M	2T	3	18	1
38	F	2T	12	31	2
39	M	2T	19	33	13
40	M	2T	1	29	1

41	M	2T	9	30	4
42	F	2T	6	30	2
43	M	2T	19	45	0
44	F	2T	23	48	13
45	F	2T	9	31	12
46	F	2T	8	40	12
47	F	2T	7	39	12
48	M	2T	11	29	4
49	M	2T	12	33	5
50	F	2T	0	14	2
51	M	2T	5	23	9
52	F	2T	6	18	2
53	M	2T	12	28	1
54	F	2T	8	32	12
55	M	2T	7	37	16
56	M	2T	7	33	5
57	F	2T	5	18	1
58	F	2T	2	28	5
59	M	2T	10	40	10
60	F	2T	6	33	11
61	M	2T	2	19	2
62	M	2T	5	31	1
63	F	2T	10	54	14
64	M	2T	19	44	4
65	F	2T	9	40	13
66	F	2T	2	27	4
67	F	2T	1	27	2
68	M	2T	8	32	2
69	M	2T	10	41	17
70	M	2T	20	57	5
71	M	2G	21	39	13
72	M	2G	11	35	12
73	M	2G	17	53	10
74	F	2G	10	26	1
75	M	2G	23	48	15
76	F	2G	8	26	13
77	F	2G	16	40	12
78	M	2G	16	46	2
79	F	2G	17	36	2
80	F	2G	21	30	6
81	F	2G	11	33	14
82	M	2G	26	31	5
83	F	2G	9	26	5
84	M	2G	7	20	3
85	F	2G	8	20	9
86	M	2G	6	24	1
87	F	2G	7	11	
88	F	2G	18	43	5

89	F	2G	11	31	8
90	F	2G	5	22	8
91	F	2G	6	25	5
92	M	2G	17	38	6
93	F	2G	0	21	6
94	F	2G	10	38	2
95	M	2G	6	35	4
96	M	2G	8	17	2
97	M	2G	5	19	5
98	F	2G	6	24	4
99	M	2G	4	15	7
100	M	2G	9	30	2
101	M	2G	19	47	6
102	M	2G	11	29	5
103	M	2G	27	47	2
104	M	2G	13	38	5
105	M	2G	12	36	4
106	F	2G	9	20	12
107	F	2G	10	31	2