



**Language assessment practices in the diagnosis of
Specific Language Impairment in school-aged
children from Culturally and Linguistically Diverse
backgrounds: A scoping review**

by
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Declaration

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ABSTRACT

Background: As cultural and linguistic diversity increases due to the rise of global migration, the emphasis on providing equitable speech therapy services intensifies. The diverse nature and complexity of each language makes it challenging for clinicians to accurately diagnose Specific Language Impairment (SLI) in children from diverse backgrounds. It has been an active topic in the literature for more than a decade, yet appropriate countrywide assessment practices have still not been clearly defined, due to the cultural and linguistic diversity (CLD) of South Africa. Speech language therapists (SLTs) face universal challenges regarding the lack of appropriate and comprehensive assessment measures that accurately represent the CLD population and are unbiased. The challenges further include navigating diagnostic procedures for use by clinicians who do not possess proficiency in their client's home language, as well as a shortage of explicit guidelines.

Research aim: Given the limited clinical guidelines available to assess this population, the scoping review aimed to determine the extent of available research regarding language assessment practices for the diagnosis of SLI in CLD school-aged children. The study further aimed to investigate the perception of South African SLTs concerning the feasibility of the assessment practices identified in the review.

Method: The scoping review consisted of two phases. Phase one comprised the literature review investigating language assessment practices for the diagnosis of SLI (steps one to five). Thereafter, Phase two, the consultation phase (step six), was conducted using questionnaires. Eight South African SLTs working within the private and state sectors with school-aged learners from CLD backgrounds participated in the stakeholder consultation phase.

Findings: A total of 32 articles were reviewed and included in the scoping review. The following themes were identified based on the literature: criteria for the diagnosis of SLI, procedure of assessment, and language assessment tools for the diagnosis of SLI. Although the eight SLTs who were consulted shared standard criteria for diagnosis, there were differences in the procedures and materials used for assessments.

Conclusion: This scoping review provides summarised evidence from existing literature about assessment practices and drawing together the experiences of South African SLTs, who have resorted to informal language assessment approaches by amending existing tests to be more culturally inclusive. The current review highlighted the need for CLD-appropriate

language assessment resources and specific evidence-based guidelines for the diagnosis of SLI in children from CLD backgrounds. These resources should optimally include contextually relevant norms in each language, which would ensure a more precise determination of diagnostic criteria cut-off points on language assessments.

Keywords: Specific language impairment (SLI), language assessment, speech-language therapist (SLT), culturally and linguistically diverse population (CLD).

ABSTRAK

Agtergrond: Soos taal- en kultuurdiversiteit toeneem as gevolg van die toename in globale migrasie, neem die druk om billike spraakterapiedienste te verskaf ook toe. Die uiteenlopende aard en kompleksiteit van tale stel aan klinici die uitdaging om by kinders van uiteenlopende agtergronde Spesifieke Taalafwyking (STA) met akkuraatheid te diagnoseer. Vir meer as 'n dekade is dit 'n aktiewe besprekingspunt in die vakliteratuur en tog is toepaslike landswyse assesseringspraktyke nog nie duidelik omskryf nie, heelwaarskynlik as gevolg van die taal- en kultuurdiversiteit (TKD) van Suid-Afrika. Spraak-taalterapeute (STT) het universele uitdagings ten opsigte van die gebrek aan toepaslike en omvattende assesseringsmateriaal wat verteenwoordigend is van die TKD bevolking en ook onbevooroordeeld is. Verdere uitdagings is die navigasie van diagnostiese prosedures in gevalle waar die klinikus nie vaardig is in die kliënt se huistaal nie, asook die tekort aan uitdruklike riglyne.

Navorsingsdoelwit: Gegewe die beperkte riglyne vir assessering van die TKD bevolking, het hierdie verkennende oorsig ten doel gehad om te bepaal wat die omvang is van beskikbare navorsing ten opsigte die diagnose van STA in TKD kinders van skoolgaande ouderdom. 'n Verdere mikpunt was om ondersoek in te stel na die persepsie van Suid-Afrikaanse STT ten opsigte van die bruikbaarheid van die assesseringspraktyke wat in die oorsig van die vakliteratuur geïdentifiseer is.

Metode: Die verkennende oorsig het uit twee fases bestaan. Fase een beslaan die literatuur-oorsig wat ondersoek instel na assesseringspraktyke vir die diagnose van STA (stappe een tot vyf). Vervolgens is Fase twee, die konsultasie-fase (stap ses) deur middel van vraelyste uitgevoer. Agt Suid-Afrikaanse STTs wat in sowel die private as die staat sektor werk met leerders van skoolgaande ouderdom uit TKD agtergrond het aan die studie deelgeneem.

Bevindings: Altesaam 32 artikels is nagegaan en by die verkennende oorsig ingesluit. Die volgende temas is op grond van die literatuur geïdentifiseer: kriteria vir die diagnose van STA, assesseringsprosedure, en taalassesserings hulpbronne vir die diagnose van STA. Daar was uiteenlopendheid ten opsigte van kriteria vir diagnose sowel as assesseringsmateriaal. Die studies het egter almal 'n soortgelyke benadering tot die prosedure vir assessering getoon. Die agt STT het dieselfde diagnose ondervind gedurende hul diagnostiese kriteria maar die prosedure en materiaal vir assessering het verskil.

Gevolgtrekking: Die huidige studie bring die behoefte aan TKD-toepaslike hulpbronne vir taalassessering met die oog op die diagnose van STA aan die lig. Die tekse word gebruik by

informele taalassessering die huidige tekse was aangepas om meer kultureel positief te wees. Die noodsaaklikheid vir TKD-toepaslike hulpbronne en spesifieke bewysstukke was genoem in die studie. Waar kinders van TKD aagtergronde assesser was. Kontekstuele hulpbronne norme in elke taal moet ingesluit word. En hierdeur word 'n meer akurate diagnostiese afsnypunt behaal.

Sleutelwoorde: Spesifieke taalafwyking (STA), taalassessering, spraak-taalterapeut (STT), taal- en kultuurdiversiteit (TKD).

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Table of Contents

Declaration.....	ii
Abstract.....	iii
Abstrak.....	v
Acknowledgment.....	vii
Chapter 1: Introduction.....	2
Chapter 2: Literature Review.....	5
Chapter 3: Methodology.....	15
3.1 Study design.....	15
3.2 Methodological framework.....	15
3.2.1 Identifying the research question.....	16
3.2.2 Identifying relevant studies.....	16
3.2.3 Study/ Source of Evidence selection.....	18
3.2.4 Charting the data.....	20
3.2.5 Collating, summarising and reporting results.....	21
3.3. Phase two: Step 6 - Stakeholder consultation.....	23
3.3.1. Development of the questionnaire.....	23
3.3.2. Selection criteria.....	25
3.3.3. Recruitment method.....	25
3.3.4 Study Procedure.....	26
3.4 Ethical considerations.....	27
Chapter 4: Results.....	28
4. 1. Phase one: A literature review.....	28
4.1.1. Literature search.....	28
4.1.2. Descriptive summary of included studies.....	31
4.1.3.1 Criteria for the diagnosis of SLI.....	34
4.1.3.2. Procedure of assessment for SLI.....	35
4.1.3.3. Language assessment tools.....	36
4.2. Results of Stakeholder Consultation.....	37

4.2.1. Theme 1: Criteria for the diagnosis of SLI.....	38
4.2.2 Theme 2: Procedure of assessment for SLI.....	39
4.2.3 Theme 3: Language assessment tools	40
4.3 Stakeholder recommendations.....	40
Chapter 5: Discussion	42
Chapter 6: Conclusion.....	48
Research and Clinical Implications.....	48
Strengths and Limitations.....	49
Reference List.....	52
Appendix A: PRISMA-ScR Checklist.....	66
Appendix B: Search Strategy	69
Appendix C: Data Extraction form: Descriptive summary of studies	70
Appendix D: Data Extraction form: SLI Summary of Diagnostic Practices	93
Appendix E: Piloted questions and respondents' feedback	111
Appendix F: Questionnaire.....	113
Appendix G: Stakeholder demographics	123
Appendix H: Advertisement of study.....	124
Appendix I: Informed Consent Form.....	125

List of Figures

Figure 1:Methodological framework	17
Figure 2: PRISMA Flow diagram	32
Figure 3: Year of Publication	33
Figure 4: Procedure of assessment of SLI	38
Figure 5: language assessment tools	38

List of tables

Table 1: Criteria for SLI (World Health Organisation, 1993)	9
Table 2: Inclusion and exclusion criteria for literature	21
Table 3: Process of theme development	23
Table 4: Distribution of included studies by country	34
Table 5: Summary of themes and subthemes identified in scoping review	35

LIST OF ABBREVIATIONS

ASHA	American Speech-Language-Hearing Association
BPVS	British Picture Vocabulary Scale
CELF-4E	Clinical Evaluation of Language Fundamentals—Fourth Edition in English
CELF-4S	Clinical Evaluation of Language Fundamentals—Fourth Edition in Spanish
CLD	Culturally and linguistically diverse
DA	Dynamic Assessment
DLD	Developmental Language Delay
DSM-IV	American Psychiatric Association’s Diagnostic and Statistical Manual- Fourth Edition
EOW–E	The Expressive One-Word Picture Vocabulary Test- English
EOW–S	Expressive One-Word Picture Vocabulary Test—Spanish Edition
HPCSA	Health Professions Council of South Africa
ICD 10	International Classification of Disease
ITALK	Inventory to Assess Language Knowledge
LI	Language Impairment
LOLT	Language of learning and teaching
NWR	Nonword Repetition
PLI	Primary Language Impairment
PPVT	Peabody Picture Vocabulary Test
RAPT	Renfrew Action Picture Test
ROW–E	Receptive One-Word Picture Vocabulary Test- English
ROW–S	Receptive One-Word Picture Vocabulary Test—Spanish Edition
SLI	Specific language impairment
SLT	Speech language therapist
TACL	Test of Auditory Comprehension of Language
TAPS-R	Test of Active and Passive Sentences—Revised
TROG-2	Test for Reception of Grammar
VATT	Verb Agreement and Tense Test

Chapter 1

Introduction

In the USA, Specific Language Impairment (SLI) affects 7-10 percent of children in kindergarten and persists into adulthood (NIDCD, 2019). The statistics for developing countries may paint an even more dire picture (Adegbiyi et al., 2020).

Although the issue of lack of appropriate speech-language therapy resources has been debated in the literature for more than a decade, assessment practices are still not clearly defined in countries with cultural and linguistic diversity such as South Africa (Mophosho, 2018; Pascoe et al., 2010; Pascoe & Norman, 2011). South African Speech-Language Therapists (SLTs) continue to face a lack of culturally and linguistically appropriate assessment tools that are impartial and reflect the culturally and linguistically diverse (CLD) population (Pascoe & Norman, 2011). Navigating assessment practices for SLTs who are not proficient in the language(s) of their clients is made even more challenging by the lack of explicit guidelines (Kraemer & Fabiano-Smith, 2017). The situation is not unique to South Africa. International migration has resulted globally in children speaking more than one language and, in many cases, a different language at home and school (Maul, 2015). As the international demand and linguistic diversity increase and the focus on providing equitable speech-language therapy services intensifies, the difficulty for SLTs increases (Abrahams et al., 2023).

Regardless of the availability of suitable assessment tools, language evaluation holds significant importance and necessity for a multitude of purposes. This includes identifying potential linguistic delays or impairments in individuals (Kohnert, 2010). For multilingual children specifically, it is crucial to distinguish between their language abilities and any possible impairment. Most standardised assessment tools are developed in English-speaking countries such as the United States of America and the United Kingdom and exported to various countries (Oyono et al., 2018). SLTs in many countries with different English dialects and other native languages utilise these tools developed specifically for English-speaking countries (Mdlalo et al., 2019; Tuller et al., 2018). Not only are these tools inappropriate for many English first-language speakers, without adaptations, but are even more so for African first-language speakers (Oyono et al., 2018). Furthermore, in order to obtain a fair representation of a child's language skills, assessments in all their languages are recommended (Simonsen & Southwood, 2021). However, language assessment tools are commonly only available in languages that have been well researched (Peña et al., 2018).

This scoping review aimed to investigate and describe the practices of SLTs involved in diagnosing SLI in CLD school-aged children. Thus, the research question of the current scoping review was: 1) What is known from existing literature about language assessment practices in the diagnosis of SLI in school-aged CLD children? and (2) What are South African SLTs' perceptions regarding the feasibility of the assessment practices identified in the review in the South African context? By answering these research questions, we can help identify gaps in knowledge and provide valuable insight for future research. This provides the opportunity to highlight current diagnostic practices for the diagnosis of SLI in children from CLD backgrounds. This information could be useful for South African clinicians, policymakers and service programme developers. Since the findings were considered relative to the South African context by consulting with relevant stakeholders, this review could provide beneficial information for SLTs assessing school-aged children from CLD backgrounds and for future research relating to the topic.

In order to answer the research questions, the following aims and objectives were formulated:

1. To determine the extent of available literature regarding language-based assessment practices when diagnosing SLI in CLD school-aged children and,
 - 1.1. To describe the available literature regarding language-based assessment practices when diagnosing SLI in CLD school-aged children and,
 - 1.2. To determine the language assessment instrument(s) used when assessing CLD school-aged children.
2. To investigate the perceptions of South African SLTs, working with school-aged children, regarding the feasibility (availability, affordability, and challenges) of the assessment practices identified in the review in the South African context.

This thesis is structured as follows:

- Chapter 1 (Introduction) introduces the research topic by briefly describing the context and rationale for the study, as well as presenting the research questions, aims and objectives.
- Chapter 2 (literature review) presents a comprehensive and critical review of the literature related to language assessment practices; the influence of CLD on diagnostic practices; and an overview of the challenges faced by SLTs.
- Chapter 3 (methodology) gives a detailed description of the design, and collection and analysis procedures.
- Chapter 4 sets forth the findings in an in-depth description of the three main themes, as well as an overview of the stakeholders' perspective of the literature findings.

- Chapter 5 (discussion of the research findings) highlights the significance of the outcomes by discussing similarities and/or contradictions between individual themes, as well as between the current findings and those reported in existing literature.
- Chapter 6 presents the conclusion and covers the study limitations and strengths. Implications and recommendations for future research, health professional education, and clinical practice are discussed.

Chapter 2

Literature Review

This chapter will provide an overview of SLT practices in diagnosing SLI, as well as the challenges when diagnosing SLI in children from CLD backgrounds. It will elaborate on the specific consideration of diagnosis, and highlight the need for CLD inclusive assessment practices, especially in countries as culturally and linguistically diverse as South Africa.

Understanding Specific Language Impairment (SLI)

SLI is defined as language development that is characterised by a chronological delay of one or many years, with limitations in acquiring language structures, in the absence of hearing loss and/or neurological damage or disease (Leonard, 2014; World Health Organization, 1993). It should be noted that SLI is also known as Developmental Language Delay (DLD), Primary Language Impairment (PLI) and Language Impairment (LI) (Bishop, 2017). The modifier *specific* in SLI provides an image of a child who solely presents with a language weakness (Leonard, 2014). Therefore, for the purpose of this paper, the term SLI will be employed.

Children with SLI present with several processing difficulties at pre-school age, leading to poor school-age outcomes including poor reading outcome as a result of their lack of familiarity with the morphological, grammatical, and syntactical structures of written language. Thus, children with SLI will present with poor academic performance (Adlof, 2020; Aguilar-Mediavilla et al., 2014; Bonti et al., 2020). Some children with SLI are able to overcome difficulties in understanding and producing simple sentence constructions, but continue to experience difficulties with understanding and/or producing complex sentences and figurative language (Saar et al., 2018).

Weakness in language continues to be apparent in many ways in later childhood, adolescence, and adulthood (Leonard, 2014). Adolescents with SLI have also been reported to have significantly lower scores on independence, such as self-care, travelling, and managing finances, in comparison to same-age typically developed peers (Conti-Ramsden & Durkin, 2008). Weaker linguistic abilities experienced by adolescents with SLI seem to hinder their ability to acquire autonomy (Bozas, 2020), which highlights the role of language skills as critical components of various fundamental personal competencies.

Assessing SLI

Diagnosing SLI can be challenging as SLI can present in various forms across different languages, resulting in a divergence of clinical indicators (Hamann & Abed Ibrahim, 2017).

While the diagnosis of SLI is required for treatment purposes, there is at present no consensus regarding assessing children with SLI, possibly due to inconsistencies in terminology, the number of language domains affected, and the scale of heterogeneity (Richterová & Málková, 2017). From a broad perspective two different assessment strategies should be used for assessing children; namely psychometric and clinical strategies (Adlof et al., 2021). Psychometric strategies comprise the use of standardised assessment tools and a battery of tests for the detailed assessment of the child's language skills (McFadden, 1996). Clinical strategies are a form of individualised assessment employed by professionals, such as SLTs, psychologists and linguistics, taking the form of individualised assessment (Richterová & Málková, 2017).

Children may present with deficits in all five domains of language (phonology, morphology, syntax, semantics, and pragmatics), with specific weakness in morphosyntax, reduced accuracy in sentence repetition, difficulty comprehending complex sentence structures, and repetition of two to four syllable non-words (American Speech-Language-Hearing Association [ASHA], 2010; Stoeckel et al., 2013). Therefore, the psychometric strategy of assessment for SLI includes receptive and expressive language assessments, which include tests of speech (auditory) discrimination, word recognition, sentence understanding, and comprehension of grammatical contrasts and narratives, as well as language samples (Ferré et al., 2016). Of which standardised language assessment tools commonly encompass all of these domains and are used to diagnose children with SLI (Selin et al., 2019).

Standardised language tools have been developed to diagnose monolingual children with SLI as it encompasses all the language domains in order to diagnose SLI. These standardised tests have been normed on same age peers providing a comparative standard. One of the most common English language assessment tools employed by SLTs is the Clinical Evaluation of Language Fundamentals (CELF-4) (Semel et al., 2003), as it consists of a number of core subtests measuring syntax, morphology, semantics, and metalinguistics (Salter, 2013).

The issue with using standardised tests indiscriminately is that language is constantly developing throughout childhood, therefore, SLI cannot be defined based on an absolute criterion (Bishop, 2014). For example, a child who presents with two-word utterances cannot forthwith be classified with SLI as this is age-appropriate for a two-year-old or – importantly – a child functioning at a two-year-old level. Thus, age specific normative language data is required, in order to understand the range of the child's language ability (Theodorou et al., 2016).

The usual approach to interpreting the results of standardised tests is to employ statistical criterion that is language specific. A positive diagnosis is made if the child scores below 3% or 10% for a child of a particular age (Selin et al., 2019). The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD 10) (World Health Organization, 1993) specifies that if a child scores 2 standard deviations (SD) below the norm, that child would be diagnosed with SLI (Table 1). For the diagnosis of SLI, the typical cutoff ranges from 1 SD below the mean (bottom 16% of the population) to 2 SD below the mean (bottom 2% of the population) (McFadden, 1996). However, this practice of applying arbitrary low cut-off criteria scores for the diagnosis of SLI has been unsupported by the clinical manuals of standardised language tests (Spaulding, et al., 2006).

Table 1: Criteria for SLI (World Health Organisation, 1993)

There is no neurological, sensory, or physical impairment that directly affects the use of spoken language, nor is there a pervasive developmental disorder
In assessment of language skills by means of standardised test, the child achieves below 2 SD for the child's age level
The child achieves at least 1 SD below nonverbal IQ language skills on standardised language tests
Receptive language score is more than 2 SD below the age level, and expressive language score within 2 SD below the age level

According to the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV) (Laloi et al., 2017), children have to present with academic or social difficulties caused by language difficulties. This criterion is commonly met when children are referred by healthcare professionals or their parents who are concerned about the child's language development (Williams & McLeod, 2012).

Understanding CLD

In South Africa, the term "culturally and linguistically diverse" typically refers to multicultural and multilingual individuals who are non-mother-tongue speakers of English and come from an indigenous language and cultural background (Mdlalo et al., 2019). Generally speaking, individuals can be categorised as culturally diverse when their beliefs and values have been shaped by multiple cultures, which is evident in their race/ethnicity, religious or political affiliations, or gender identity (ASHA, 2010). Additionally, individuals can be considered linguistically diverse if their language acquisition has been influenced by more than one

language (ASHA, 2010). Moreover, *culturally linguistically diverse* can have a particular meaning in a particular setting.

In order to understand this, we need to consider the terms bilingual and multilingual. Bilingualism refers to the knowledge and usage of two languages (Grosjean, 2012) while multilingualism is “*the ability of societies, institutions, groups and individuals to engage, on a regular basis, with more than one language in their day-to-day lives*” (p. 188) (Birkbeck, 2015; Cenoz & Gorter, 2023). However, these terms are often used interchangeably to describe individuals who speak more than one language (International Expert Panel on Multilingual Children’s Speech, 2012). Multilingualism is associated with academic, social, and cognitive advantages (Bialystok, 2018). Furthermore, it supports cultural identity. Thordardottir (2019) found that bilingual individuals exhibit enhanced executive control. This heightened executive control is believed to be a result of constantly managing two languages and selectively activating the appropriate language for a given context. Additionally, simultaneous bilinguals tend to have more advanced metalinguistic skills, allowing them to analyse and understand language structure more effectively than monolinguals.

A commonly perceived disadvantage of multilingualism in young children is a reduced vocabulary size, slower rate of development of morphosyntactic skills, slower speed of picture identification tasks, and increased processing time on lexical retrieval tasks (“Multilingualism and development,” 2015). In a study conducted by Keshavarz and Bahrainy (2008), the findings of this study suggest that in the areas of lexical acquisition and related syntactic constructions, monolinguals show significantly better performance than bilinguals. This is due to the fact that the dominant language is spoken commonly within the community and that bilingual speakers may not receive schooling in their first language (L1).

Due to the perceived limitations of multilingualism, it has been believed to be disadvantageous for the child’s language outcomes. Research has shown, however, that it does not cause long-term disadvantages when compared to monolingual children’s outcomes (Paradis, 2016; Park et al., 2020). In actuality, a more accurate reason for persistently poor outcomes could be factors relating to immigration, such as children from multilingual backgrounds being born to parents from minority languages who do not speak the majority language of a country and often face a hostile environment (Metcalf-Hough, 2015). This is further amplified by adverse factors that impact language outcomes, such as poverty, lower levels of parental education, increased parental stress, poor education resources, and reduced access to services (Lazear, 1999).

In 2018, 23% of school-aged children nationwide in the United States of America spoke a language other than English at home (Kids Count Data Center, 2022).

South Africa is uniquely positioned as it has 12 official languages, with the primary language spoken by households varying significantly per province. According to Stats South Africa (2018), isiZulu is the language spoken most often in South African households, with 24.4% (15.13 million) of the population speaking the language (Fraser, 2023).

In the context of clinical services for children with SLI, therefore, it can be difficult to correctly identify normal language acquisition as a second language or language disorder in bilinguals (Grimm & Schulz, 2014).

Clinicians need to be aware of the role of culture and linguistics as the majority of learners are likely to receive services from non-native speakers (Gould, 2008; Guiberson & Atkins, 2012; Hamann & Ibrahim, 2017; Mdladlo et al., 2016). Culture and language may influence the child's behaviour and attitude towards speech-language and hearing services (ASHA, 2017; Kanade et al., 2021). Larson et al. (2020) suggested that attention to language(s) and culture(s) of CLD children enhances the effectiveness of assessment, and increases participation and satisfaction among families.

According to Ebert (2020), an adequate understanding of the impact of SLI is fundamental, and investigating the child's language environment contributes towards identifying children with SLI. For multilingual populations, assessment of language skills is critical for appropriate development of general education curriculum and identifying genuine needs for referral to special education services (Andersson et al., 2019; Individual with Disability Education Act, 2017).

Assessing SLI in CLD children

One of the main challenges faced by SLTs is the lack of appropriate assessment tools for children from CLD backgrounds (Washington et al., 2019). As language skills in CLD children differ situationally, with the skill capacity of each language determined by the particular context, and as language dominance of a CLD child changes in accordance with different language groups, stages, communities and services, comparing these children's language skills with a monolingual normative sample does not provide an accurate reflection of the skill and inevitably will lead to misdiagnosis (Cruz-Ferreira, 2018). For example, testing in the same two domains in both languages will reveal strengths and weaknesses that would not have been evident in testing only one language (Lugo-Neris et al., 2015). Furthermore, discussions in the literature point to the importance of establishing appropriate bilingual norm

categories which not only distinguish between monolinguals and bilinguals, but take into account the variation within the bilingual population (Zebib et al., 2019).

Given the increase in the number of children from CLD backgrounds the language assessment protocols used to assess monolingual children are no longer applicable (Hamann & Abed Ibrahim, 2017). For example, in a study conducted by Andersson et al. (2019), the formally translated Swedish version of the CELF-4 was utilised by Swedish SLTs. Based on the findings, 30% of monolingual participants and 80% of bilingual participants scored below the recommended screening cut-off score for language disorder. Furthermore, if participants were L2 Swedish speakers from low socioeconomic backgrounds, the scoring of the child placed them at greater risk for misdiagnosis. This supports the assertion by Bird et al. (2022) that when children from CLD backgrounds with SLI are assessed on standardised language tests in their second language (L2) they will perform poorly in comparison to monolingual peers. Highlighting the fact that it is inappropriate to compare monolingual and multilingual children, as it would lead to the underestimation of multilingual children's skills (Andersson et al., 2019; Washington et al., 2019).

Goral and Conner (2013) argued that a comprehensive assessment of language skills should take into account the individual's cultural and linguistic background. The child's culture and linguistic background have been seen to provide insights into instrumental factors that shape their language usage (Kohnert, 2010). Determining whether a bilingual child's language difficulties stem from language impairment or environmental factors heavily relies on obtaining information regarding the quantity and quality of their language input. Such knowledge enables clinicians to accurately interpret direct measures of a child's language skills (Boerma & Blom, 2017). Therefore, when direct evaluation in both languages is unavailable, obtaining information on a bilingual child's language development through parental reporting proves to be a valid approach that holds significant value (Tuller, 2015). In addition, approximately 20 % of respondents in a recent study indicated that SLTs consider parent or teacher reports when diagnosing children with SLI to gain an insight into developmental and environmental factors, particularly in the absence of CLD-inclusive language assessment tools (Hendricks & Diehm, 2020).

Given the diverse nature of language, an alternative to assessing a child in multiple languages includes using bilingual norm-referenced tools and adapting norms of standardised tools (McFadden, 1996; Thordardottir, 2015). According to Kambanaros & Grohmann (2013), varying levels of exposure can affect language proficiency as the acquisition of multiple languages may follow either a sequential or simultaneous process. Furthermore, simultaneous bilinguals tend to have more advanced metalinguistic skills, allowing them to

analyse and understand language structure more effectively than monolinguals. Therefore, researchers have recommended that standardised assessment tools or norms that have not been adapted or developed for the CLD population not be used to diagnose language impairment (Fumero et al., 2021; Oyono et al., 2018) in this population.

Studies have demonstrated, however, that acquiring a language at an early age does not guarantee native-like long term outcomes in language (Muñoz & Singleton, 2011). Regardless of age, there is considerable diversity in L2 proficiency, which highlights the significance of input and experience in the language acquisition process (Muñoz & Singleton, 2011). Hence, assessing and diagnosing SLI children from CLD backgrounds can be challenging due to two main factors. Firstly, the diverse nature of language development: the acquisition of multiple languages may follow a sequential or a simultaneous process, depending on the individual's circumstances (Boumeester et al., 2019). Secondly, the unique characteristics of SLI are specific to each language as SLI can manifest differently in different languages (Bishop, 2014).

In a study assessing Latino children, it was reported that in some cases the children were only assessed in one language, and the majority of SLTs' reports failed to provide information regarding the child's proficiency in the other language, language history, and evidence of reviewing the child's classwork (Kraemer & Fabiano-Smith, 2017). This is contrary to the recommendation made by ASHA (2017) that children are to be assessed in both or multiple languages. In South Africa, similar recommendations have been made to afford fair and unbiased opportunities for children from CLD backgrounds (Health Professions Council of South Africa, 2019).

Even though it has been recommended to assess a child in both or multiple languages, it may be challenging in clinical practice to assess in the L1, the dominant language, as there might not be norm-referenced tests for the L1 or the SLTs are unable to administer the tests (Hamann & Abed Ibrahim, 2017). In some countries with linguistic diversity, assessing in both or multiple languages of a child can be unrealistic and challenging due to insufficient financial resources, and the lack of culturally appropriate assessment instruments, bilingual SLTs, and skilled interpreters (Williams, & McLeod, 2012).

Given the lack of assessment tools for multilingual children, attempts have been made to adapt or translate existing tools and develop new tools. One of these assessment tools, the LITMUS tool (Language Impairment Testing in Multilingual Settings), was developed as a bilingual language assessment tool (Hamann & Abed Ibrahim, 2017) to address the influx of bilingual speakers in Germany. In the case of well-documented languages, such as Spanish

and English in the United States of America, where bilingual assessment procedures for Spanish-English speakers have been developed, collecting data in the L1 and L2 of a child is feasible (Peña et al., 2018). A specific multilingual assessment tool, Bilingual English–Spanish Assessment (BESA), was designed to assess bilingual English-Spanish children takes into consideration the language proficiency of these children (Peña et al., 2018; Peña et al., 2020). Prior to this test English-based standardised tests were adapted and translated into other languages. For example, the CELF and PPVT were translated into Spanish, with the normative samples being Spanish-speaking children (Kraemer, & Fabiano-Smith, 2017).

To further address the lack of suitable language assessment tools, researchers have looked at other skills to use as a proxy for language skills. Children who have SLI experience challenges in both nonword repetition and existing vocabulary knowledge (Adlof et al., 2021). Nonword Repetition (NWR) is an important clinical marker of SLI because it has been linked to the acquisition of language skills, including both vocabulary and grammar (Tager-Flusberg, 2015). In a study by Boerma and Blom (2017) they incorporated a nonword repetition task (NVRT) to assess phonological short-term memory, as suggested by Thordardottir (2015). Nonword repetition is known to be challenging for children with language impairment (LI) and is often used clinically as an indicator of LI in monolingual children. It can be used to assess bilingual CLD children as it decreases the significance of exposure to their second language compared to vocabulary tests that would be affected by the exposure to the words of the additional language (Ferré et al., 2016; Marinis et al., 2017). In addition, NVRTs may have less bias against bilingual children than standardised measures that rely on vocabulary or grammar knowledge since nonwords are not lexicalised by definition; but conversely, some advantages gained from familiarity with a specific language might exist when it comes to conforming with commonly observed phonotactic patterns seen within languages (Boerma & Blom, 2017).

English-speaking SLTs have also learned to collaborate with interpreters or translators in an attempt to better understand the language skills of CLD children, and commonly rely on family members to facilitate effective communication between themselves, the child, and other family members (Mcleod & Baker, 2014). This ensures that all parties involved have a clear understanding of therapy goals, progress, and recommendations (Williams, & McLeod, 2012). Although the National Language Policy framework (2002), states that interpretation services should be available to assist healthcare workers and clients in the South African public sector, limited financial and human resources hinder implementation. Similarly, Grandpierre et al. (2018) and Mcleod and Baker (2014) reported that utilising translators may not be feasible due to limited funding and a lack of multilingual SLTs in Speech-Language Therapy

departments (Grandpierre et al., 2018; Mcleod & Baker, 2014). However, this shortcoming should be addressed by the relevant state departments and divisions by making an active investment in recruiting trained interpreters (Mophosho,2018).

In studies of SLTs working with children from a minority language background, SLTs have been found to employ a variety of assessment tools such as informal methods (observations, spontaneous speech, and interviewing the communication partner) and formal measures (standardised tools), in order to gain insight into the individual child's language proficiency (Armon-Lotem, 2018; Liu et al., 2018; O'Toole & Hickey, 2013; Southwood & White, 2020).

In conjunction with clinical tests and informal assessments, SLTs observe the child in various situations, as this can identify systems that may have been missed in psychometric tests (Richterová & Málková, 2017). Observation is particularly useful when assessment in the first language (L1) might not be possible as there are no assessment instruments in that language (Williams & McLeod, 2012). One such approach is the use of language samples, which allow SLTs to gain insight into the child's natural speech and the child's expressive language, including aspects like complexity, coherence, and fluency (Armon-Lotem, 2018; Dollaghan & Horner, 2011). One way to gain a language sample is through narrative assessment, where a structured method is utilised that allows the SLT to analyse the linguistic macrostructures (Tsimpli et al., 2020). However, this method is only valuable if the SLT has the language skills or access to translation of these samples (O'Toole & Hickey, 2013).

Furthermore, SLTs have employed Dynamic assessment (DA), as it can be used as an informative method that is suitable and can be time efficient when diagnosing SLI in CLD children (Hunt et al., 2022). DA measures a child's potential to learn, as opposed to a child's knowledge base or life experiences. There are various approaches to DA with the most evidence supporting the test-teach-retest method (Melick, 2014).

There are multiple factors that make it challenging to properly evaluate and address language impairments in multilingual children with SLI. Limited availability of key resources, such as interpreters or assessment tools in non-dominant languages, may contribute to the perception among many speech-language therapists (SLTs) that assessing these individuals requires significant effort. This reinforces current monolingual policies and practices within the field (Bloder et al., 2021).

While alternative or supplemental approaches to formal assessment have yielded promising results, implementing such non-standardised measures requires more time (Bloder et al., 2021; Kapantzoglou et al., 2012). This poses a challenge for SLTs to provide equity in

services for clients from CLD backgrounds (Abrahams et al., 2023). SLTs have had to make multiple modifications to standardised tests when working with CLD children, adapting assessment tools and materials to suit different languages or dialects spoken by the child, and using bilingual assessments or finding alternative ways to assess language skills in a meaningful way that aligns with the child's linguistic abilities (Simonsen & Southwood, 2021). When adapting material, SLTs have had to pay particular attention to aspects that are relevant to the child's native language or dialect and to be culturally sensitive and aware (Maul, 2015). In some cases, SLTs have adapted formal assessment material by removing certain assessment items and replacing visual stimuli (Pascoe & Norman, 2011). It may be challenging for SLTs to identify relevant assessment stimuli, as syntax, semantics, pragmatics, and phonology differ across languages (Watson & Pennington, 2015). This is an issue that many South African SLTs face as the majority of SLTs do not reflect the CLD of the population, with little to no knowledge regarding other official languages and/ or the culture of their clients (Southwood & Van Dulm, 2015).

School age assessment practices, particularly within CLD populations, have received limited research attention. This scoping review, therefore, seeks to understand how professionals are engaging with the issue of diagnosing SLI within CLD backgrounds and what the current practices include.

Chapter 3

Methodology

This chapter outlines the methodological framework, steps followed during the scoping review, and data analysis. Additionally, the chapter elaborates on the consultation method employed and the manner in which it was executed.

3.1 Study design

A scoping review methodology was utilised for this study. According to Munn et al. (2022): *“Scoping reviews are a type of evidence synthesis that aims to systematically identify and map the breadth of evidence available on a particular topic, field, concept, or issue, often irrespective of source (i.e., primary research, reviews, non-empirical evidence) within or across particular contexts”*. (p. 950).

Scoping reviews lay the groundwork for subsequent research by presenting an overview of the current evidence and pinpointing areas that necessitate more thorough investigation (Peters et al., 2020). Since the aims of the current scoping review aligned with the purposes of scoping reviews (Arksey & O’ Malley, 2005; Peters et al., 2020), this methodology was deemed to be the most appropriate for the study.

3.2 Methodological framework

The scoping review followed the methodological framework recommended by Arksey and O’Malley (2005) and subsequently expanded by Levac et al. (2010). The scoping review included two phases: the literature review (steps one to five) and the consultation phase (step six), which consisted of a questionnaire presented to SLTs. In order to enhance the rigour, trustworthiness and consistency of the scoping review, the Joanna Briggs Institute (JBI) Scoping Review methodology (Peters et al., 2020) was followed and the Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018) was used as the reporting standard. Refer to Appendix A. The steps of the literature review are presented graphically in Figure 1.

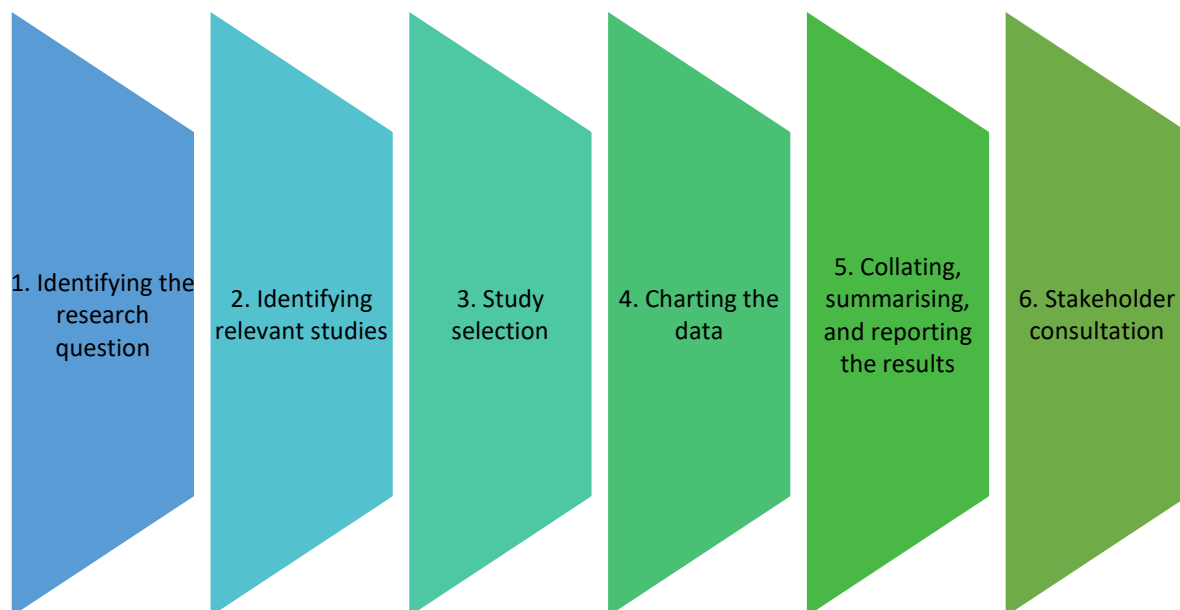


Figure 1: Methodological framework

Phase One: The literature review (steps one to five)

3.2.1 Identifying the research question

The initial research question was: How are children from CLD backgrounds assessed and diagnosed with SLI? When researching the assessment practices of children from CLD backgrounds, it transpired that the research had mainly been conducted in Australia and the United Kingdom (Gould, 2008; Watson & Pennington, 2015). The researcher, therefore, decided to include a stakeholder consultation to include SLTs working with school aged CLD children in South Africa. Given that South Africa is a culturally and linguistically diverse country, the language assessment practices of SLTs would be explored in an attempt to bridge the gap between the literature and clinical practice and make practical guidelines accessible to SLTs. This led to the formulation of two related research questions: (1) What is known from existing literature about language assessment practices in the diagnosis of SLI in school-aged CLD children? and (2) What are South African SLTs' perceptions regarding the feasibility of the assessment practices identified in the review in the South African context?

3.2.2 Identifying relevant studies

Prior to the study, a pilot study was conducted in November 2021 to review existing literature on the research topic. The aims of the pilot phase were to test and enhance the methods

outlined in the protocol, develop essential tools, improve content and process related to data extraction, and determine project scope (Kantorová et al., 2022).

A total of six online search platforms were utilised: PubMed, Scopus (Elsevier), Cochrane library, EBSCO host research databases, Sabinet African journals, and Google scholar. The search terms were: 'children', 'assessment', 'speech therapist', 'culturally and linguistically diverse'. A total of 91 articles were identified. An additional corpus of 107 articles from grey literature consisting of trials was identified.

Thereafter, in consultation with a qualified librarian at the Faculty of Medicine and Health Sciences, Stellenbosch University, the search terms were refined and piloted to identify suitable keywords and select the databases that would identify studies relevant to the research topic.

The search string was refined and formulated based on the population, concept, and context (PCC) of the study, which served as an overarching framework for the identification of relevant studies for this review (Peters et al., 2020).

1. Population: The population of interest was school-aged learners between the ages of six and eighteen years.
2. Concept: The concept under investigation was language assessment practices used for the diagnosis of SLI.
3. Context: The studies focused on the context of culturally and linguistically diverse populations.

All combinations of terms describing population (school age learners), concept (language assessment practices and Specific Language Impairment) and context (Culturally and Linguistically diverse populations) were considered relevant. The search string, therefore, consisted of language assessment OR assessment instruments OR language evaluations OR language test AND specific language impairment OR SLI OR language impairment OR language disorder OR communication disorders (concept) AND (school-age children) OR child* AND (culturally and linguistically diverse) OR (culturally diverse background) OR (linguistically diverse backgrounds) OR bilingual OR multilingual OR cross-cultural OR cultural and linguistic responsiveness. See Appendix B: Search strategy.

The literature search was carried out in March 2022. The initial search spanned the period from 2012 to 2022. This timeframe was selected to ensure that the review included the most recent literature, while also excluding assessment practices that may be outdated. The search was conducted using the following electronic databases: Pubmed, Scopus, clinical key, web

of Science, Sabinet Discover, Cochrane (Review and Trial), SCIELO, and EBSCOhost [Africa-Wide Information, CINAHL, eBook Collection (EBSCOhost), E-Journals, ERIC, Health Source: Nursing/Academic Edition, MasterFILE Premier, MEDLINE, eBook Open Access (OA) Collection (EBSCOhost)].

An updated search was conducted from March 2022 to March 2023, to enhance the review timeline and update the review.

Citation search

The reference lists of the articles that met the inclusion criteria were reviewed for additional articles. The articles identified followed the study selection process, namely, an initial title, followed by an abstract screening and finally a full-text review, as outlined by Arksey and O'Malley (2005).

Expert consultation

Furthermore, South African experts who were currently lecturing in the area of SLI or had published in the area of language assessment concerning children of CLD backgrounds and speech and language development and disorders in children were consulted. A reference list of identified articles was sent to the expert to review. They were instructed to add relevant articles relating to the study (published and/or unpublished) that did not appear on the list. A total of six experts were contacted, three of whom responded.

3.2.3 Study/ Source of Evidence selection

The process of selecting the studies was carried out by following the PRISMA framework developed by Moher et al. (2009). Refer to Figure 2 (Chapter 4).

1) Identifying relevant literature

The articles were initially extracted from the databases in RIS/CVC format and exported to Zotero (Corporation for Digital Scholarship, 2023) for removal of duplicates.

2) Screening of title and abstract for relevance

Titles and abstracts were screened by two independent reviewers (namely the reviewer and supervisor) according to the eligibility criteria (Table 2), which included: the age of participants, CLD participants, type of study, and type of assessment.

The initial screening on ten articles, were conducted by both reviewers, following an iterative process. The inclusion criteria were amended post hoc, based on familiarity with the literature. Thereafter the final inclusion criteria were applied to identify the relevant articles. Studies were vast but some studies may have focused on the L1 and L2 of the participants, implying that they are bilingual. When reviewing the participants' backgrounds, they had exposure to multiple languages, therefore, the term multilingualism was utilised to encompass all the language options.

Each reviewer reviewed the remaining titles blindly (also known as masking). This process was followed to eliminate bias (Day & Altman, 2000). Thereafter, the results were unblinded and any conflicts related to the screening was discussed until a consensus was reached about whether the title should be included. Subsequently, the selected articles were exported in RIS format and exported to Ray-yan, an artificial Intelligence beta design that allows authors to collaborate on the screening phases of the review process (Ouzzani et al., 2016).

The exact process was followed for the screening of the abstracts. However, if it was unclear from the abstract whether the inclusion criteria of the study had been met, the full article was obtained and the article was included for full text-review.

3) Assessing eligibility based on full-text review

Once the screening was completed, the reviewers reviewed the full-text articles and independently assessed their eligibility against the criteria (Table 2). The article's methodology was reviewed, and based on the PPC criteria, the article was included or excluded. The aim of the study was not relevant. Instead, the report had to include a description of the language assessment regarding the diagnosis of participants. Only articles that included a description of the language diagnosis for SLI were selected.

Articles where there was any uncertainty were reviewed by the primary reviewer for a second time who then determined whether to include the article or not.

4) Final inclusion of studies

The reference lists of the selected articles were searched. Additional articles that were identified during this citation search were reviewed relative to the research question and eligibility criteria.

Table 2: Inclusion and exclusion criteria for literature

Inclusion	Exclusion
Publication date: 2012 – 2023	Publication before 2012 and after 2023
Study participants will include children from 6 to 18 years old.	Study participants were children younger than 6 years and older than 18 years.
The core concepts should include language assessment practices for the diagnosis of SLI or DLD or LI or PLI,	No mention of both core concepts: language assessment practices for the diagnosis of SLI or DLD or LI or PLI, within the CLD population.
Study participants will be children from CLD backgrounds. CLD is defined as multicultural and multilingual individuals who are non-mother-tongue speakers of English and come from an indigenous language and cultural background (Mdlalo et al., 2019).	Monolingual study participants.
Articles in English and Afrikaans will be included as these are the languages in which the researchers are proficient.	Articles written in languages other than English and Afrikaans.
Studies to be included: scoping reviews, systematic reviews, primary research, etc.	Letters to the editor, opinion pieces, and commentary articles.
Grey literature to be included: theses and dissertations, conference papers and proceedings, research reports, government policies, technical notes and specifications, proposals, data compilations, clinical trials, etc.	

3.2.4 Charting the data

The key information identified was extracted on a 'datasheet' created in Microsoft Excel. The information recorded consisted of standard key information and study-specific information (Arksey and O'Malley, 2005; Daudt et al., 2013; Levac et al., 2010). The final datasheets contained the following (see Appendix C- Descriptive summary of studies):

- (1) Author(s),
- (2) Year of publication,
- (3) Location of Study,
- (4) Methodological design,
- (5) Aim of study,
- (6) Description of participants (cultural background, age, languages spoken).
- (7) SLI Diagnostic practices (see appendix D- SLI Summary of Diagnostic Practices):
- (8) Language diagnostic criteria of SLI,
- (9) Language Assessment practices,
- (10) Language Assessment Instruments.

Datasheets (found in Appendices C) were devised and utilised to extract and summarise data from the studies included in the scoping review. A draft of the datasheet was developed during the pilot phase. An iterative process was used to devise the datasheet. As the reviewers became familiar with the data, the datasheet was updated. The reviewers conducted a pilot study using ten articles to help the researchers become acquainted with data extraction and determine if there was enough information to address the research question.

Following the pilot study of the ten articles, the primary reviewer recorded the data. Thereafter, it was reviewed by the second reviewer. If the reviewers were uncertain about an article, it was discussed among both reviewers until a consensus was reached.

3.2.5 Collating, summarising and reporting results

Levac et al. (2010) recommended including three distinct steps (collating, summarising, and reporting the results) in step five of the framework proposed by Arksey and O'Malley (2005) to increase the consistency with which researchers undertake and report scoping study methodology. The three steps were:

1. Analysing data (collating and summarising),
2. Reporting results and producing an outcome commensurate with the research question/s,
3. Reflecting on the meaning of the results and discussing implications for future research and practice.

Qualitative content analysis was used for this scoping review. This involved the organisations of findings into high-level categories or themes, which could potentially be developed into theoretical frameworks (Pollock, 2023).

The reviewers familiarised themselves with the data that was relevant to the objective and research question relating to the scoping review. The data items were structured around the PCC framework in order to structure meaningful objectives that aligned with the aims of the study (Pollock et al., 2023). Thereafter, the reviewers coded the data as a label based on initial thoughts, and possible themes, hence an inductive approach was employed (Elo & Kyngäs, 2008). The coding framework was reviewed and agreed upon by both reviewers. After meeting several times, the reviewers identified three themes: criteria for the diagnosis, procedure of assessment, and language assessment tools for the diagnosis of SLI. Once the framework had been developed the primary reviewer extracted data and assigned it to a theme. The second reviewer reviewed how the extracted data was assigned to the themes. If the second reviewer did not agree, discussions took place until a consensus was reached. Thereafter, a numerical-based analysis was also conducted and the frequency of each theme and subtheme was determined. Summaries of the results in both table and figure formats assisted in identifying patterns (Elo & Kyngäs, 2008). An example of the process developed to identify the themes is presented in Table 3 below (Pollock et al., 2023).

Table 3: Process of theme development

Extracted data	Initial thoughts and open coding	Theme development
<p><i>“We assessed the children by means of Bilingual English Spanish Assessment – Middle Extension BESA-ME. Additionally, we employed a measure of narrative language, the Test of Narrative Language. The highest standardised parent concern rating, and highest standardised teacher concern rating was considered”.</i></p>	<p>Battery of standardised tests; parent and teacher concern/ case history.</p>	<p><u>Procedure:</u> Battery of standardised tests available for Spanish-English Bilinguals and parent and teacher concern was employed in this study.</p>

The numerical analysis was used to summarise the scope, nature, and distribution of the articles included (refer to Appendix C and Appendix D). By employing this method, the researchers obtained a comprehensive understanding of the information from various articles and were able to identify the most commonly appearing diagnostic criteria, procedures and resources.

The researchers ensured that there was a clear reporting strategy in place for readers to identify any possible partiality in presenting outcomes or recommendations, as per Arksey and O'Malley's (2005) guidelines. Therefore, considering this aspect, the researchers adopted a standardised approach while communicating their findings. The PRISMA-ScR checklist (Tricco et al., 2018) and the JBI methodology (Peters et al., 2020) were employed to provide guidance for reporting the extraction, analysis and presentation of the data (Pollock et al., 2023). This step also ensured that all full-text studies met the final inclusion criteria and sufficiently addressed the research question.

3.3. Phase two: Step 6 - Stakeholder consultation

3.3.1. *Development of the questionnaire*

The researchers devised a questionnaire by utilising the results from phase 1 as the basis for a conceptual framework. The researchers engaged in discussions regarding technical terminology, content, and a preliminary draft of the questionnaire (Kishore et al., 2021).

The questionnaire consisted of four sections:

Questions 1-2 were related to consent,

Questions 3- 11 were related to the demographics of stakeholders. In order to have a better understanding of the years of experience, work setting, language(s) spoken by the SLTs, and the language(s) spoken by the children receiving speech therapy services,

Questions 12-26 were included to address aim 2: perceptions (availability, affordability, and challenges) of the assessment practices identified in the review. The findings of the review (Appendices C and D) were used to formulate these questions. Furthermore, stakeholders were asked to describe additional language-based assessment practices that they employ when diagnosing SLI in CLD school-aged children, and

Question 27 was related to the contact information of the stakeholders. This was included if the information obtained from the stakeholders was unclear to the researchers. A telephonic or virtual, follow-up conversation could be conducted to clarify information.

Pilot of questionnaire

For the questionnaire to be effective, it must possess the qualities of validity, reliability, clarity, brevity and engagement (Tsang et al., 2017; Zhang & Aryadoust, 2022). A pilot of the questionnaire was therefore conducted to refine the survey instrument to ensure the accurate collection of appropriate data (Kopper et al., 2023).

A draft survey was sent to five SLTs who participated in the pilot study. Among these SLTs were both those who met and did not meet the stakeholder inclusion criteria of the study. The only requirement to participate in the pilot study was that the participant had to have one year of working experience post-community service and have access to the internet.

The pilot study aimed to assess several key factors related to the questionnaire (refer to Appendix E for the questions included in the pilot study). Firstly, it sought to determine whether respondents had difficulty understanding and answering the questions. This was crucial in ensuring that the questions were clear and comprehensible to all respondents. Additionally, the duration of completion for each respondent was recorded to obtain an accurate estimate of how much time would be needed by future stakeholders to complete the questionnaire adequately (Cleave, 2021).

Another important aspect evaluated during pilot testing was the relevance of the questions to the research topic. It was essential to confirm that all items included in the questionnaire were directly related to the area under investigation. By doing so, the researchers aimed to guarantee that the data collection process would yield meaningful results consistent with the research objectives.

Furthermore, attention was given to designing a user-friendly questionnaire that minimised response drop-out rates. This involved analysing potential reasons why some individuals might decide not to complete the survey and implementing strategies to mitigate these issues. Tracking and documenting instances where respondents dropped out provided valuable insight into improving future versions of the questionnaire.

Feedback from pilot participants indicated that four questions within the survey were perceived as ambiguous and required additional background information for better comprehension and informed responses. In response to this feedback, the necessary revisions were made to clarify these questions and ensure they aligned with respondents' feedback. Refer to Appendix E for an example of implementation of the feedback.

Additionally, based on participant input regarding completion time, adjustments were made to the information leaflet, indicating the extended estimated response time being between 10 and 15 minutes. This modification aimed at providing an accurate representation of what respondents could expect when completing the questionnaire.

Overall, the pilot testing phase was considered to be essential in refining the questionnaire and ensuring that it collected the relevant data sought by the researchers. Addressing concerns raised by participants and making appropriate adjustments improved the chances of obtaining accurate and meaningful responses from the intended audience. For the final questionnaire, refer to Appendix F.

Stakeholder consultation (Questionnaire)

After the initial five steps of the scoping review were completed, the sixth step of the scoping review was conducted (Arksey & O'Malley, 2005). South African SLTs were the stakeholders and were consulted regarding the feasibility of the school-age language assessment practices identified in the scoping review, for the diagnosis of SLI for children from CLD backgrounds. The stakeholders presented valuable insights which could be used to inform future clinical approaches which are contextually relevant (Pollock et al., 2022).

Although 55 SLTs attempted the questionnaire, only 14 met the inclusion criteria, of which eight participated. Of these eight stakeholders, three answered all the questions. The remaining five answered a few of the questions. Refer to Appendix G for demographics of stakeholders. Of the final cohort, four SLTs indicated that they worked at South African state schools, three at South African state hospitals, three within the private practice context, two for non-governmental organisations, and the remaining three at private schools, private hospitals and at a university. SLTs could select more than one option, therefore, the results suggest that some of the SLTs worked across settings. The work experience ranged from less than a year to more than 20 years.

3.3.2. Selection criteria

In order to be included in the consultation, stakeholders had to conform with the following criteria:

- SLTs working with CLD children aged six to 18 years.
- Proficient in English or Afrikaans. It was assumed that SLTs were proficient in one of these languages as these are the languages used in SLT training programmes at South African universities.
- Have sufficient access to the Internet (as the surveys were conducted online).

3.3.3. Recruitment method

The stakeholders, who included SLTs working in both public and private settings, were recruited from private practices (via Medpages and/or Google) and schools providing services

to learners with special needs. Additionally, stakeholders were recruited through an online invitation to take part in the research. The invitation (Appendix H) was posted on the social media platforms Facebook and WhatsApp and was also distributed via email.

3.3.4 Study Procedure

SUNSurvey was used to create and distribute the questionnaire. SUNsurvey is a web-based e-Survey service to support academic staff and students of the University of Stellenbosch using online surveys for academic research.

The questionnaire (Appendix G) contained questions relating to the selection criteria (see 3.3.2) in order to accurately include or exclude stakeholders in accordance with the aims of the study. Factors that were considered were biographic information of the stakeholder, diagnostic criteria, language of assessment practices, and tools used to diagnose SLI in children from CLD backgrounds. Furthermore, stakeholders were asked to describe additional language-based assessment practices that they employ when diagnosing SLI in CLD school-aged children. Consent was obtained electronically, prior to completion of the questionnaire (Appendix I). Stakeholders had access to the online survey for a period of one month.

A follow-up conversation was conducted, telephonically or virtually, if the information obtained from the stakeholders was unclear to the researchers. The participants' contact or email addresses were obtained from the questionnaire, where the last question specifically requested this information (Appendix G).

3.3.4. Data Analysis

Quantitative and qualitative analysis was utilised.

“The major advantages of quantitative methods are that the data can be summarised relatively straightforward and that it is relatively simple to draw meaningful conclusions on the basis of the observations” (Quené & van den Bergh, 2021, p. 15). In order to better organise stakeholders' responses, frequency counts and percentages to analyse data were utilised due to the decreased sample size and nature of the questions (Quené & van den Bergh, 2021).

“Qualitative analysis is the numerical examination and interpretation of observations for the purpose of discovering underlying meaning and patterns of relationships” (Jarvinen & Mik-Meyer, 2020, p.7). Basic thematic analysis was utilised to analyse data by identifying themes and patterns (Dawadi, 2020). Direct quotes were utilised to enable analysis of the collected

data and to evaluate the plausibility, and credibility of the stakeholders' response (Lingard, 2019).

3.4 Ethical considerations

Ethical approval to conduct the study was obtained from the Health Research Ethics Committee (HREC) of Stellenbosch University (ethical clearance number S22/02/029) (see Appendix J). Ethical protocol was followed in accordance with the principles of the Declaration Helsinki (World Medical Association, 2013).

Consent was obtained from each stakeholder before they commenced with the questionnaire, ensuring adherence to the principles of autonomy, despite there being no harm, or risks, or benefits involved in participation. Although no personal benefit, information obtained could be of benefit to the profession with regards to how to assess CLD children. The stakeholders had the freedom to withdraw from the study at any point as participation was voluntary. Additionally, data anonymity and confidentiality were maintained through the exclusion of any identifying information during result reporting. Completed electronic questionnaires were saved in a password-protected file, with only the researcher and supervisor having access to it. Those stakeholders who provided their contact information could only be identified if they were contacted. Refer to Appendix G for questionnaire.

Chapter 4

Results

This chapter focuses on the results of the six steps of the scoping review. The results are presented according to the aims of the study, which were:

- (1) to determine the extent of available literature regarding language-based assessment practices when diagnosing SLI in CLD school-aged children and,
- (2) to investigate the perception of South African SLTs about the feasibility (availability, affordability, and challenges) of the assessment practices identified in the review in the South African context by consulting stakeholders, specifically SLTs working with school-aged.

The results are presented as follows: (1) the literature search (Figure 2), (2) a descriptive summary of the articles (Appendix C), (3) a descriptive summary of assessment practices (Appendix D), and (4) results obtained from the stakeholder consultation.

4. 1. Phase one: A literature review

4.1.1. Literature search

The process of selecting the studies was carried out by following the PRISMA framework developed by Moher et al. in 2009 (Figure 2). This involved several steps including searching for appropriate literature in databases, evaluating the relevance of article titles, evaluating the relevance of article abstracts, assessing the eligibility of full texts by referring to the inclusion and exclusion criteria (Table 1), and finally including the selected articles.

Eight databases were used to identify updated, relevant studies. EBSCOhost and Pubmed yielded the majority of the results. The initial search yielded 20 720 records. A total of 761 duplicates were identified and removed by Zotero (Corporation for Digital Scholarship, 2023) reference management software. Additionally, 198 titles were identified as duplicates by the Rayyan software (Ouzzani et al., 2016) and automatically removed and a further 23 titles were removed manually by the reviewers.

19 738 titles were screened by the reviewers using the Rayyan Software (Ouzzani et al., 2016), with 18 897 titles excluded as irrelevant. For example, the following titles were excluded, “Interventions for preventing obesity in children” and “Parent-mediated

communication interventions for improving the communication skills of preschool children with non-progressive motor disorders”, as it was unrelated to the topic of the present study.

Following the abstract screening, 841 articles were excluded. The reviewers identified 119 articles to be included in this scoping review which met the inclusion criteria (Table 2), with an additional 722 articles identified as “maybe” as it was unclear from the abstracts if these articles met the eligibility criteria. After further investigation into the methodology of these articles, 40 articles were included for full-text review. Therefore, 159 full-text articles were reviewed by both reviewers.

Expert consultation

Of the six South African experts who were approached, only three responded. However, none of the 14 articles identified by them met the eligibility criteria (Table 2). Six were excluded due to population (under 6 years of age), and the remainder were excluded as the diagnostic practices relating to SLI were not described in the article or the focus was not explicitly related to the CLD population.

Citation search

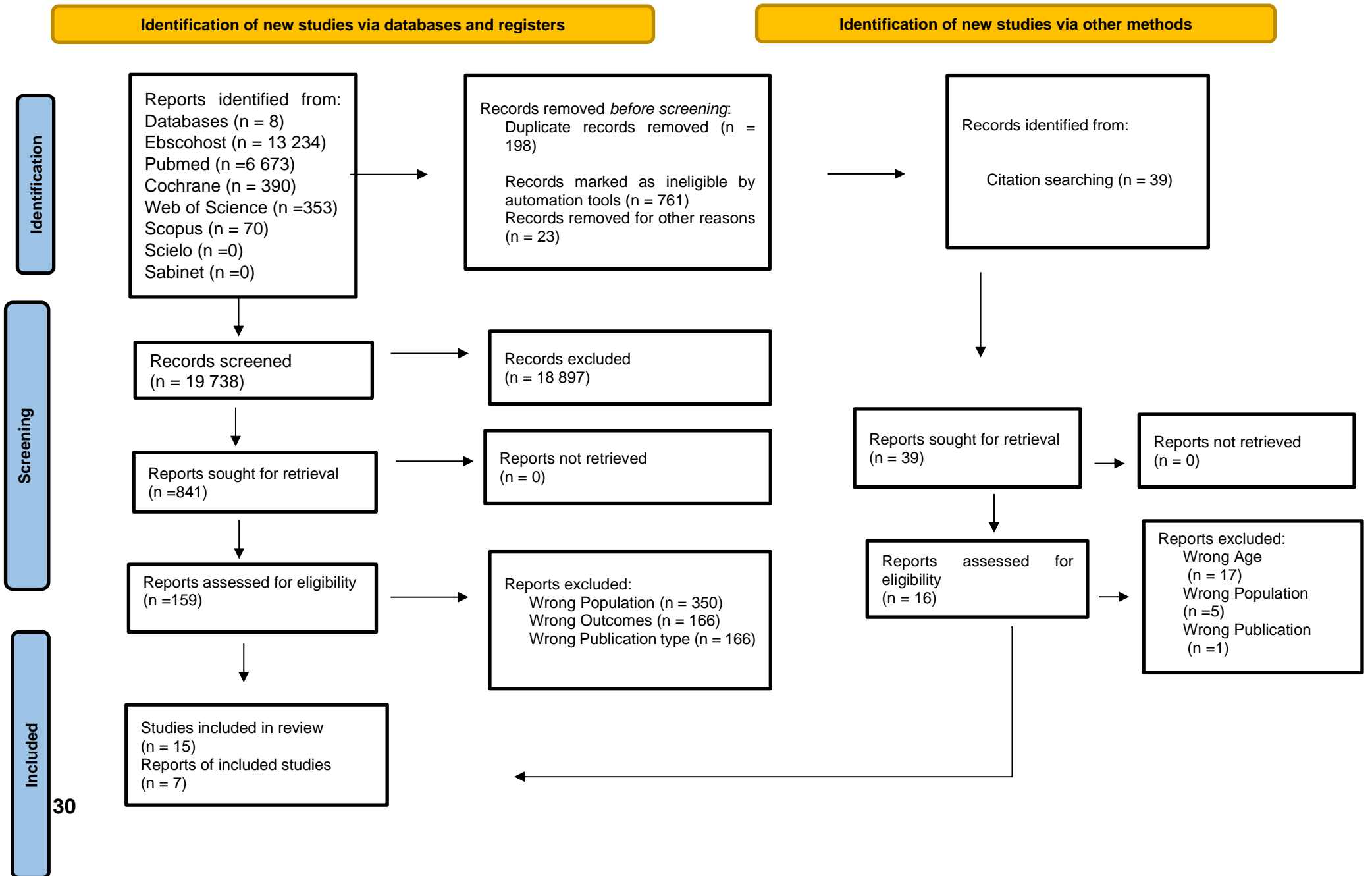
A total of 39 articles were identified during the citation search. Twenty-three articles did not meet the eligibility criteria (Table 2). In 17 articles the participants were younger than 6 years old, in five articles a description of the assessment practices to diagnose SLI were not described, and one article was considered to be the wrong publication type. Thus, 16 articles met the inclusion criteria for full-text review.

Updated search

In March 2023, an updated search was conducted during which 1206 articles were identified. Based on the initial title search, 19 articles were included. During the abstract review, 10 articles were identified for full-text review by both reviewers and nine articles did not meet the criteria (n=7 as the age of participants younger than 6 years old and n=2 as the participants were not from CLD backgrounds). A total of eight articles met the inclusion criteria for full-text review and were included by both reviewers.

Thus, a final total of 32 articles met the inclusion criteria and were included in the review.

Figure 2: PRISMA Flow diagram (Page et al., 2021)



4.1.2. Descriptive summary of included studies

Year of publication

The distribution of the included studies according to year of publication is shown in Figure 3. The years with the most publications was 2020 (Dam et al., 2020; Jasso et al., 2020; Kapantzoglou et al., 2020; Park et al., 2020; Peña et al., 2020; Wada et al., 2020) and 2017 (Grasso et al., 2017; Jacobson, & Yu, 2017; Kraemer & Fabiano-Smith, 2017; Laloi et al., 2017; Petersen et al., 2017; Verhoeven et al., 2017), with six articles published. The years with no publications were 2015 and 2023. Studies conducted in 2023 did not meet the inclusion criteria of this study.

Four studies were published in 2019 (Ebert et al., 2019; Ebert & Pham, 2019; Marini et al., 2019; McMillen et al., 2019) and four in 2018 (Anaya et al., 2018; Bedore et al., 2018; Castilla-Earls et al., 2018; Shivabasappa et al., 2018). The years that produced three studies each were 2021 (Albudoora, & Peña, 2021; Ebert, 2021; Park et al., 2021) and in 2014 (Ebert et al., 2014; Engel de Abreu et al., 2014; Gibson et al., 2014). Two studies were published in 2016 (Girbau, 2016; Kambanaros et al., 2016), and in 2013 (Blom et al., 2013; Kambanaros et al., 2013), and in 2022 (Grimm, 2022; Hertel et al., 2022) respectively.

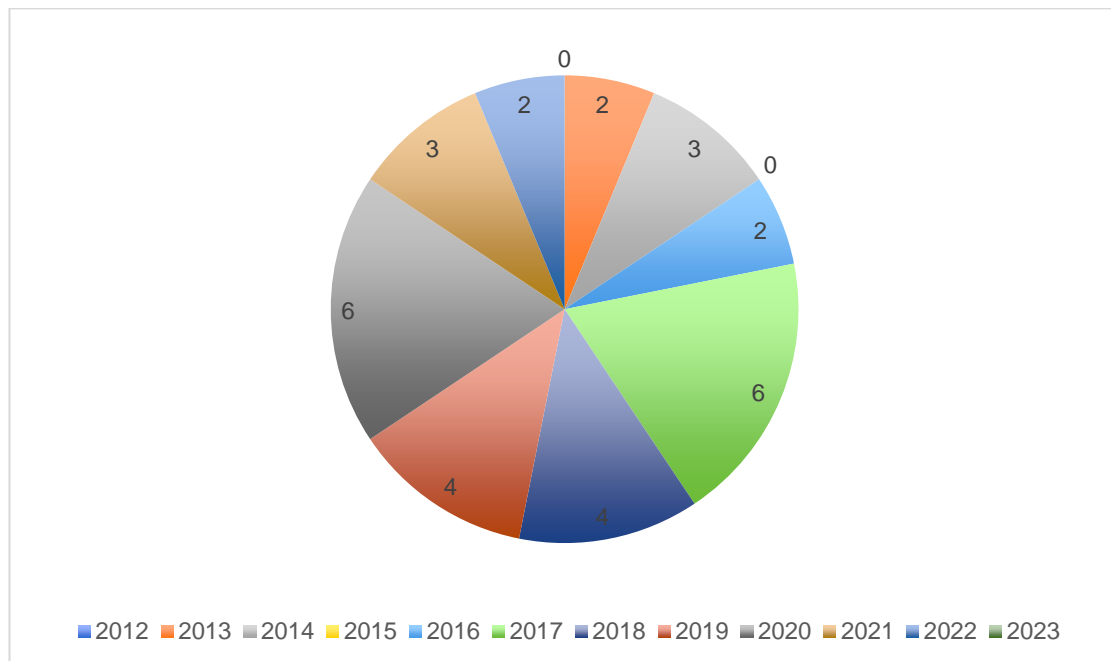


Figure 3: Year of Publication

Study Location

Table 4 provides an overview of the countries in which the studies were conducted. All 32 studies stemmed from the Global North¹, with 20 of the studies conducted in the United States of America (Albudoora & Peña, 2021; Anaya et al., 2018; Bedore et al., 2018; Castilla-Earls et al., 2018; Dam et al., 2020; Ebert et al., 2014; Ebert et al., 2019; Ebert, 2021; Ebert & Pham, 2019; Grasso et al., 2017; Gibson et al., 2014; Kraemer & Fabiano-Smith, 2017; Jacobson & Yu, 2017; Jasso et al., 2020; Kapantzoglou et al., 2020; McMillen et al., 2019; Peña et al., 2020; Petersen et al., 2017; Shivabasappa et al., 2018; Wada et al., 2020).

Two studies were conducted in Canada (Park et al., 2020; Park et al., 2021), two in Germany (Grimm, 2022; Hertel et al., 2022), two in Greece (Kambanaros et al., 2013; Kambanaros et al., 2016), and two in the Netherlands (Blom et al., 2013; Verhoeven et al., 2017). One study came from each of the following countries: France (Laloi et al., 2017), Italy (Marini et al., 2019), Luxembourg (Engel de Abreu et al., 2014) and Spain (Girbau, 2016).

Table 4: Distribution of included studies by country

Country	Frequency
United States of America	20 (62.5%)
Canada	2 (6.25%)
Germany	2 (6.25%)
Greece	2 (6.25%)
Netherlands	2 (6.25%)
France	1 (3.125%)
Italy	1 (3.125%)
Luxembourg	1 (3.125%)
Spain	1 (3.125%)

Studies included were heterogeneous in design. Eleven of the studies were described as being mixed-cross sectional (Anaya et al., 2018; Blom et al., 2013; Ebert et al., 2019; Ebert, 2021; Kambanaros et al., 2013; Kapantzoglou et al., 2020; Kraemer & Fabiano-Smith, 2017; Park et al., 2020; Petersen et al., 2017; McMillen et al., 2019; Verhoeven et al., 2017), seven were longitudinal studies

¹ The term "Global North" does not refer to a geographical area in the conventional sense but instead refers to countries with significant influence and developed economies across various regions of the world. This category includes affluent zones like North America, Europe, and Australia (Odeh, 2010).

(Albudoora & Peña, 2021; Castilla-Earls et al., 2018; Dam et al., 2020; Grasso et al., 2017; Hertel et al., 2022; Jacobson & Yu, 2017; Shivabasappa et al., 2018), and six were described as exploratory studies (Bedore et al., 2018; Girbau, 2016; Grimm, 2022; Kambanaros et al., 2016; Laloi et al., 2017; Peña et al., 2020).

Four of the studies (Ebert et al., 2014; Gibson et al., 2014; Jasso et al., 2020; Wada et al., 2020) were described as being cross-sectional studies. One study had a qualitative analytic design (Engel de Abreu et al., 2014), one was a case study (Ebert & Pham, 2019), one a pilot study (Marini et al., 2019) and one had a qualitative design (Park et al., 2021).

Participant characteristics

The collective age range of the participants was from five to 11,6 years. The participants in seven studies were recruited from larger longitudinal studies (Albudoora & Peña, 2021; Gibson et al., 2014; Hertel et al., 2022; Jasso et al., 2020; McMillen et al., 2019; Park et al., 2021; Shivabasappa et al., 2018). The participants of the remaining studies were recruited by the researchers.

Altogether 27 languages were identified in the studies. Participants were either first-language or second-language speakers of the following languages: Albanese, Arabic, Berber, Bengali, Catalan, Croatian, Cypriot Greek, Dutch, English, Farsi/Dari, French, German, Italian, Khmer, Mandarin, Moroccan, Ojibwe, Pashto, Portuguese, Romanian, Spanish (Mexican, Guatemalan, Salvadorean and Cuban), Serbian, and Surinamese, Tamil, Turkish, Urdu, and Vietnamese. Spanish was the most frequently spoken language.

4.1.3. Results of literature identified in the scoping review

This section will present the results relating to Aim 1 of the study, describing the available literature regarding language-based assessment practices when diagnosing SLI in CLD school-aged children. The results will be presented relative to the following themes: (1) Criteria for the diagnosis of SLI, (2) Procedure of assessment for SLI, and (3) Language assessment tools used.

Table 5: Summary of themes and subthemes identified in scoping review

Theme 1: Criteria for the diagnosis of SLI	Parental/Teacher Concern
	Scoring on the norm referenced language test
	Meet ICD 10 and DSM-IV criteria
Theme 2: Procedure of assessment for SLI	Formal language assessment
	Informal language assessment
	Language of Assessment
Theme 3: Language assessment tools	Standardised language tools

4.1.3.1 Criteria for the diagnosis of SLI

Twenty-eight articles reported on the criteria used to diagnose SLI in CLD children. The criteria that were mentioned most often in articles were: parental/teacher concern, performance on standardised tests, and ICD 10 and DSM-IV, with performance on standardised tests being used the most often.

Ten articles reported that parental and/or teacher concern was taken into consideration (Albudoora & Peña, 2021; Bedore et al., 2018; Castilla-Earls et al., 2018; Ebert et al., 2014; Ebert et al., 2019; Ebert & Pham, 2019; Gibson et al., 2014; Jasso et al., 2020; McMillen et al., 2019; Peña et al., 2020).

Sixteen articles used performance on standardised language tests to make a diagnosis (Albudoora & Peña, 2021; Blom et al., 2013; Ebert, 2021; Ebert et al., 2014; Ebert et al., 2019; Engel de Abreu et al., 2014; Gibson et al., 2014; Girbau, 2016; Grasso et al., 2017; Kapantzoglou et al., 2020; Jacobson & Yu, 2017; Jasso et al., 2020; Shivabasappa et al., 2018; Park et al., 2021; Park et al., 2020; Wada et al., 2020). According to nine articles, if a child scored 1.25-1.5 SD below the norm when a test was administered, the child was diagnosed with SLI. In the study by Blom et al. (2013), the cut-off criterion was 2 SD below the norm in the less proficient language.

One of the studies included the ICD 10 (World Health Organization, 1993) and one included the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV) in their criteria (Engel de Abreu et al., 2014; Laloi et al., 2017).

4.1.3.2. Procedure of assessment for SLI

All studies provided information relating to the assessment procedures followed to diagnose SLI in CLD children. The procedures reported on most often were language of assessment and type of language assessment (formal and informal language assessments). Formal language assessments are standardised instruments that include descriptions of their norming process, reliability and validity, and recommended uses (Bawayan & Brown, 2022). Informal language assessments may include caregiver/client interviews and usually include methods that lack formal norming procedures and are more flexible and adaptable (Ward et al., 2021). Refer to Figure 4.

In 16 of the studies, both languages (L1 and L2) were assessed. During one study (Verhoeven et al., 2017), the researchers were expected to assess the learners in both languages, as per the protocol implemented in their country. However, they were unable to assess the child's L1 as there were no standardised tools in the first language (minority language), and the researchers were not proficient in administering the tool. Two studies made use of language samples in both languages (Kapantzoglou et al., 2020; Peña et al., 2020).

In eighteen of the studies formal assessments were conducted, using standardised language tests (Albudoora, & Peña, 2021; Castilla-Earls et al., 2018; Dam et al., 2020; Ebert et al., 2014; Ebert et al., 2019; Ebert, 2021; Ebert & Pham, 2019; Engel de Abreu et al., 2014; Girbau, 2016; Grimm, 2022; Hertel et al., 2022; Jacobson & Yu, 2017; Kambanaros et al., 2016; Kapantzoglou et al., 2020; Kraemer & Fabiano-Smith, 2014; Marini et al., 2019; Park et al., 2020; Wada et al., 2020).

Two articles reported that informal language assessments were utilised, namely narrative sample (Gibson et al., 2014) and language sample (Kapantzoglou et al., 2020; Peña et al., 2020).

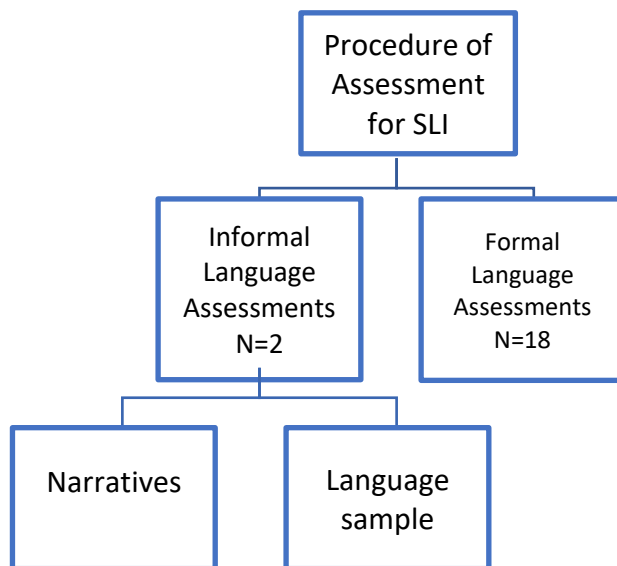


Figure 4: Procedure of assessment of SLI

4.1.3.3. Language assessment tools

This section will report on the language assessment tools most often used for the assessment of SLI in CLD children. The tools described in the literature and their frequency of appearance are depicted in Figure 5.

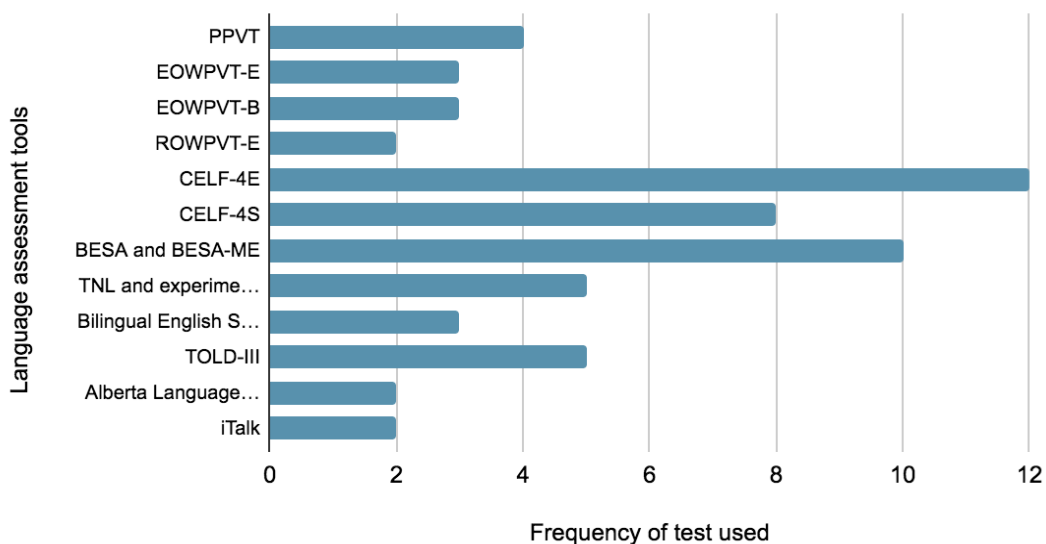


Figure 5: language assessment tools

Key: Peabody picture vocabulary Test- PPVT; The Expressive One-Word Picture Vocabulary Test -EOWPVT-E and Bilingual Edition- EOWPVT-B; Receptive One-Word Picture Vocabulary Test English-ROWPVT-E; Clinical Evaluation of Language Fundamentals—Fourth Edition in English CELF-4E and in Spanish - CELF-4S; Bilingual English-Spanish Assessment -BESA or the Middle Extension, Experimental Version -BESA-ME; the Test of

Narrative Language –TNL and experimental version; Bilingual English Spanish Oral Screener -BESOS; Test of Language Development–Primary: Third Edition -TOLD-III; Alberta Language Developmental Questionnaire; iTalk.

The CELF-4 in English and Spanish was most commonly used, with 12 studies (Castilla-Earls et al., 2018; Dam et al., 2020; Ebert et al., 2014; Ebert et al., 2019; Ebert, 2021; Jacobson, & Yu, 2017; Kambanaros et al., 2016; Kapantzoglou et al., 2020; Kraemer & Fabiano-Smith, 2017; Park et al., 2021; Park et al., 2021; Wada et al., 2020) reporting using the test.

The author E.D. Peña was a co-author on nine distinct articles in which the Bilingual English–Spanish Assessment—Middle Extension (BESA-ME) was used (Albudoora & Peña, 2021; Anaya et al., 2018; Bedore et al., 2017; Grasso et al., 2017; Gibson et al., 2014; McMillen et al., 2019; Peña et al., 2020; Petersen et al., 2017; Shivabasappa et al., 2018). Given that these articles reported on the inclusion of a longitudinal cohort and that these participants were tested before inclusion to confirm SLI diagnosis, it was decided to include the BESA-ME once as the reviewer could not determine whether the cohorts in these studies were the same participants. Refer to figure 5.

4.2. Results of Stakeholder Consultation

This section will present the results in relation to Aim 2: to investigate the perception of South African SLTs about the feasibility (availability, affordability, and challenges) of the assessment practices identified in the review in the South African context by consulting stakeholders, specifically SLTs working with school-aged children.

The information presented to the SLTs included results related to the diagnostic practices relating to SLI, the criteria for diagnosis, and the language assessment tools employed. Selected quotations extracted from the completed questionnaires, pertaining to specific aspects of the obtained results were incorporated with an aim to furnish a deeper understanding into the SLTs responses in accordance with scoping review findings.

Eight SLTs who worked within a private practice and state context and had experience working with children from CLD backgrounds (Appendix G), responded to the questionnaire. Only three SLTs answered all the questions. A potential explanation for the decrease in response rate may be due to the lack of flexibility when using a questionnaire. In contrast to focus groups, which permit real-time modifications, inflexibility could hinder opportunities with respect to

modifying the questionnaire so as to better accommodate respondents' preferences and requirements (Cleave, 2021).

Furthermore, overloading the survey participants with an excessive number of questions or difficult questions, survey participants might become distressed and may lead to early termination of the process. In addition, stakeholders might rush through their responses, resulting in incomplete surveys resulting in suboptimal data quality being collected.

4.2.1. Theme 1: Criteria for the diagnosis of SLI

All eight SLTs commented on the feasibility of using parental or teacher concern, performance on norm referenced language tests, and diagnostic criteria for diagnosing SLI in CLD children.

- Parental/ teacher concern

In 31% of the studies identified in the review, parents or teachers were consulted regarding their concern. Three (37.5%) of the stakeholders felt that it was feasible, within the South African context, to consult with parents and teachers regarding their concerns about the child's language. SLT [1] commented that she felt consulting parents and teachers allowed a holistic report on the *["general language skills of the child's age peer and educational context as most standardised tests are not normed on South African population so would consider my results in light of this"]*. This was reiterated by a second SLT [3] *["I prefer to work off concerns and difficulties rather than scores"]*.

- Scoring on norm referenced language test

In 25% of the studies identified in the review, if a child scored 1.25-1.5 SD below the norm when a test was administered, the child was diagnosed with SLI. Two (25%) of the SLTs made use of a scoring cut-off of 1.25-1.5 SD below the norm on a language test when diagnosing children of CLD backgrounds with SLI. Further, two of the stakeholders felt that this scoring threshold was not feasible in a South African context. SLT [2] commented *["Not accurate for the South African population, and not based on our norms"]*.

Three of the stakeholders stated that it was not feasible to use the scoring cut-off of 1 SD below the norm. SLT [5] commented *["1 SD criteria below the norm on both language tests would allow for misdiagnosis of children"]*. In one study, 2.25 SD below the norm on a less proficient language was a cut-off criterion; however, three of SLTs felt this was not feasible within the South African context as reported by SLT [2] *["We work with kids who come from*

high-risk backgrounds and in multiple languages - by that logic they will fail any standardised testing”].

- ICD 10 and DSM-IV criteria

Two of the stakeholders reported that using the ICD-10 and DSM-IV criteria was feasible in the absence of standardised tests. SLT [6] commented on the usage of formal criteria noting that [*“Qualitative information is essential when working with populations on which tests are not normal. Allows for better interpretation”*].

4.2.2 Theme 2: Procedure of assessment for SLI

Three of the eight SLTs commented on the feasibility of the procedure of assessment identified for the diagnosis of SLI.

- Formal language assessments

In 56% of the studies identified in the review, standardised language tests were used. The use of standardised tests was considered to be not feasible in the South African context when diagnosing children with SLI, as reported by two out of the three stakeholders. SLT [1] indicated [*“Prefer informal assessment in our context. Quicker, more specific to the child, more specific to the culture, and more familiar vocabulary”*]. However, SLT [3] stated that formal tests can be used to substantiate a statement and advocate for support for the child from governmental support structures, as she commented [*“Scores can be used to support applications for concessions from the education department in conjunction with educational psychology report results”*].

- Informal language assessments

A relatively small percentage of 6,25% of the studies identified in the review, utilised informal language assessment strategies. The three SLTs stakeholders felt that it was feasible to employ informal assessment measures, namely narratives and language samples. SLT [5] highlighted that [*“Narrative assessment is a clinically relevant means of evaluating functional and academic language skills. Language samples provide clinical information for therapy aims/targets”*]. Furthermore, a SLT [1] stated that [*“Informal measures are more contextually relevant “*].

- Language of assessment

The literature revealed that in 50% of the studies, bilingual children were assessed in both languages. Assessing the child in both languages was feasible to three of the stakeholders.

SLT [3] reported that assessment of a child's language skills in both languages [*“Need to get information of full picture to make an accurate diagnosis”*]. This is done to gain better insight into the child's performance in his/her home language and language of learning, as reported by SLT [5] [*“Many children are in a school where the language of learning/ teaching (LOLT) is not their first language. It is helpful to see their functioning in the LOLT as this is where they are struggling and where I can support them as a therapist in a school”*].

In contrast, one SLT assessed children in their second language, the language of schooling, and conducted screening in their home language. This is reflected in the response by SLT [1] [*“Try English first, and mix second language in. School work is in English and unfortunately must be of fluent speaking and understanding to cope at school”*].

4.2.3 Theme 3: Language assessment tools

Three SLTs commented on the language assessment tools used to diagnose SLI.

Twelve standardised language assessment tools were identified in the scoping review. Two standardised tools were used by the stakeholders. The Peabody Picture Vocabulary Test (PPVT) was utilised by one of the stakeholders; and the Clinical Evaluation of Language Fundamentals—Fourth Edition in English (CELF–4E) was utilised by two of the stakeholders. These two assessment tools were commonly used by SLTs as they were introduced to and had access to these tools during their training at university. SLT [3] stated that she was able to adapt the stimuli to be culturally sensitive [*“manipulate the pictures as needed to make more cultured to the child”*].

4.3 Stakeholder recommendations

Three of the eight SLTs provided additional language-based assessment recommendations for the diagnosis of SLI.

When stakeholders were asked to describe additional language-based assessment practices when diagnosing SLI in CLD school-aged children, the following strategies were mentioned: observing the child in the classroom using an observational rating scale, requesting parents to record children at home, and information from other professional assessments such as educational psychology or occupational therapy assessments. SLT [5] mentioned the use of additional assessment [*“auditory skills... I need to know if a child is processing auditory info*

correctly before moving on to verbal language skills and non-verbal language skills... grasp on reading skills... if expected to read at a certain level”].

Additionally, language assessment tools such as The Renfrew Action Picture Test (RAPT), Test of Auditory Comprehension of language (TAACL), Renfrew Bus story, TAPS-4: A Language Processing Skills Assessment, Phonological awareness Test (PAT), Wepman’s Auditory discrimination test, British Picture Vocabulary Scale (BPVS), CUBED-3 Narrative language measures (NLM), and Peter and the Cat - Narrative Assessment were reported to be used to diagnose children with SLI

Chapter 5

Discussion

The scoping review included two phases: the literature review (steps one to five) and the stakeholder consultation phase consisting of an electronic questionnaire for SLTs (Arksey & O'Malley, 2005; Joanna Briggs Institute, 2015; Levac et al., 2010).

The purpose of this scoping review was to determine and describe the existing research on language assessment practices used to diagnose SLI in school-aged CLD children. In addition, it aimed to understand how South African SLTs perceive the feasibility (availability and challenges) of these assessment practices within their own context. To gather information, stakeholders comprising SLTs who worked with school-aged children were consulted, resulting in additional insights into diagnostic assessment practises specific to South Africa.

The literature search identified core themes: criteria used to diagnose SLI in CLD children, procedure of assessment, and language assessment tools for diagnosing SLI in children from CLD backgrounds.

An overview of studies that met the inclusion criteria revealed that the greatest number of publications occurred in 2017 and 2020. This was expected if one considers that it is estimated that in 2019, 272 million international migrants were recorded, which equates to 3.5 per cent of the global population (McAuliffe & Khadria, 2020). A further possible explanation for this occurrence could be the heightened level of awareness regarding multilingualism and empowerment (Coleman, 2015) as SLTs were faced with the task of evaluating and diagnosing children with SLI with varying levels of proficiency in multiple languages.

All the research was conducted in Europe and North America, which are home to most high-income countries. This increase in research particularly in the United States of America, could be due to the fact that the country has been a main destination for international migration, and the number of foreign-born people residing in the country has quadrupled, to close to 51 million in 2019 (McAuliffe & Khadria, 2020). SLTs in these countries are, therefore, faced with having to assess children from CLD backgrounds and make judgments about their language skills.

Assessing a specific language skill through assessment measures is a multifaceted task. Although a gold standard for evaluating SLI in children from CLD backgrounds has yet to be established, different assessment guidelines suggest adopting a test battery approach to evaluate language skills accurately (Armon-Lotem, 2018; Liu et al., 2018).

More than half of the studies made use of standardised language tools. A reason for this was that the researchers in those studies had access to language tools in the languages of their clients. The consultation data suggests that most stakeholders did not consider the use of standardised language assessment tools to be feasible to diagnose SLI in CLD children in South Africa. Standardised tests which are readily available to South African SLTs do not represent the multilingual and multicultural population of South Africa. As pointed out by Betz et al. (2013), using standardised tests on the CLD population is inappropriate as each test should be administered in the same manner and with the consistent scoring rules used when it was normalised on the same age peers of the original population. These scoring rules would result in overdiagnosis of SLI in CLD children.

An additional reason why stakeholders did not make use of standardised tests was that the norms are not appropriate for the CLD population that they see, which could result in wrongful misdiagnosis, either over- or under diagnosing children (Fumero et al., 2021) as the majority of standardised tools have been largely normed on Western, monolingual, and middle-class populations (Alt et al., 2012). Although stakeholders stated that these tests were inappropriate for the CLD population, they continued to use the tests as they provide evidence to support the diagnosis. This practice frequently occurs where access to remedial or support services relies on objective measures, even though these measures may not be appropriate (Williams & McLeod, 2012).

According to the studies in the review, parental and/or teacher concern was taken into consideration when assessing a child. Similarly, a small number of stakeholders reflected that consulting with parents and teachers provided the stakeholders with a more accurate picture of the language difficulty experienced by the child. According to Williams and McLeod (2012), clinical diagnosis may rest not only on direct assessment of the child but on parental information as well. In a study conducted by Auza et al. (2023), it was noted that input parents provided regarding the child's language concern facilitated the identification of SLI, particularly in the absence of CLD-inclusive assessments, as parents are attuned to the child's communicative and linguistic needs and challenges. A potential explanation is that a large number of stakeholders felt this was not feasible, as parents do not typically accompany their children to therapy within the school context, thus SLTs do not have the opportunity to collect firsthand information from parents. Parents and teachers may be more acquainted with the child's language difficulties in other environments, allowing them to provide a more accurate reflection. However, teachers may face constraints such as large class sizes and heavy

workloads, which prevent them from completing questionnaires effectively (Mirra & Rogers, 2020; Nakamura & Dev, 2022).

The majority of the stakeholders reported that norm-referenced standardised tools were not standardised on a population reflecting the child's linguistic background and did not accurately represent the child's language abilities. Therefore, SLTs considered parent or teacher reports when diagnosing children with SLI to gain insight into developmental and environmental factors that could influence the child's language skills (Abutbul-Oz & Armon-Lotem, 2022; Hendricks & Diehm, 2020).

Traditional scoring cut-off criteria on standardised tests, 1.25-1.5 SD below the norm, may not be appropriate when diagnosing SLI in CLD children, as the cut-off thresholds were determined for a normative sample group consisting of children who do not represent the CLD population. If these thresholds were to be used, it would not yield appropriate and accurate results, therefore, a more flexible approach was used in interpreting cut-off points (Ferré et al., 2016). According to Thordardottir (2015), when assessing multilingual children in at least two language domains, the cut-off would be 2,25 SD in the weaker language depending on the language proficiency. The stakeholders in the current study, however, felt this was not feasible within the South African context. The stakeholders in the current study, however, felt this was not feasible within the South African context as employing the scoring cut-off threshold, as stipulated by standardised tests, would result in misdiagnosis and place the child from a different or multiple linguistic background at a disadvantage. It has been recommended by ASHA (2017) that if standardised tests are used in a CLD context, it should be without rigid cut-offs. This, however, leaves the interpretation of the test results to the SLT which may explain why they see the value in using parent and teacher reports when making a diagnosis.

The literature that was reviewed indicated that diagnostic criteria, ICD-10, or DSM-IV were typically utilised in conjunction with formal and informal language tests to diagnose children with SLI. This supports the idea of a test battery approach (Armon-Lotem, 2018; Liu et al., 2018). Some stakeholders made use of this strategy when diagnosing CLD populations, in particular when formal tests were not available, to obtain more trustworthy results.

Two studies made use of informal assessment procedures including narrative and language samples. A reason that the majority of studies did not including informal assessment may have been due to the fact that the studies used study-specific test protocols for the diagnosis or confirmation of SLI and that the studies took place in countries where formal tests were available in the language of the participants. Furthermore, given that there is a lack of culturally

and linguistically appropriate assessment tools in the South African context, stakeholders felt that it was more feasible to conduct informal language assessments by gathering narratives and language samples. This practice is supported by Armon-Lotem (2018) and Dollaghan and Horner (2011) who argue that such informal assessments allow SLTs to gain insight into the child's natural communication, and the complexity, coherence, and fluency of their expressive language. Research has demonstrated that deficiencies in microstructures of narratives are a strong indication of SLI and are useful for differential diagnosis of SLI among bilingual children (Pearce et al., 2010; Tsimpli et al., 2020).

In the current study, stakeholders felt that informal assessment procedures were contextually more appropriate to assess children which would provide an accurate representation of their language skills and identify clinical information about goals to target in therapy. Furthermore, narrative samples have been used to gain insight into the academic language skills of school-age children. However, in multilingual settings, these methods are only valuable to the multilingual SLT or one who has access to an interpreter for translation of the sample (O'Toole & Hickey, 2013).

A defining characteristic of SLI is that in the case of bi- or multilingual children the LI is reflected in both or multiple languages (Hamann & Abed Ibrahim, 2017). Thus, when diagnosing children from CLD backgrounds, the language of assessment is a significant factor. According to the reviewed studies, it is common practice to assess in both languages. South African stakeholders, reported that they assessed children in at least two languages, the language of learning commonly English and the home language, despite the fact that the most common language spoken by the children they serve were isiZulu and Afrikaans. Yet, only two SLTs were proficient in isiZulu and the majority of the SLT stakeholders were proficient in English, some in Afrikaans. Within the context of South Africa where there are 12 official languages, the stakeholders only represented three of these languages which could further explain why this was not considered to be feasible. The problem with assessment in English is that the majority of South African children do not receive sufficient exposure to English when entering the school system (Simonsen & Southwood, 2021).

Effective assessment of CLD children could become more prevalent as more South African SLTs who are proficient in African languages are entering the profession in comparison to previous years (Southwood & van Dulm, 2015). Some assessments in the literature studies were also reportedly conducted by bilingual SLTs. A bilingual SLT conducting an assessment offers several advantages as the therapist then possesses a deep understanding of language structures and cultural nuances, and can communicate directly with the child without the need

for interpretation. This enables the therapist to prompt the child, minimising any potential delays or miscommunications during the evaluation process (Goral & Conner, 2013).

In contrast, some stakeholders assessed children fully in their L2, specifically the language of schooling, and only screened the home language. Employing these practices makes it difficult to diagnose SLI, as a defining characteristic of SLI is that in the case of bi- or multilingual children, the LI is reflected in both or multiple languages (Hamann & Abed Ibrahim, 2017). Assessing children in their language of schooling provides insight into their language performance in response to the academic language demands. In a study conducted by Oyono et al. (2010), 43% of SLTs in the Western Cape rated themselves as not confident in providing assessments in South African indigenous languages due to the specific language repertoire (consisting primarily of English only or English and Afrikaans) of these SLTs (Southwood & Van Dulm, 2015). Furthermore, only 3% were proficient in any of these languages (Mdladlo et al., 2016).

This is contrary to the guidelines of the Health Professions Council of South Africa (HPCSA, 2019), which recommend that diagnosing deficits solely based on one test in a single language should be avoided when working with a child from a CLD background. This recommendation is supported by Fumero et al. (2021), who point out that a child from a CLD background would have different language skills in each language and the assessment results for one language only would not be a holistic and accurate representation of the child's language skills and ability.

The scoping review revealed that the Clinical Evaluation of Language Fundamentals—Fourth Edition in English and Spanish (CELF-4E and S) was the most commonly used language tool in the studies reviewed. The language tools most commonly used by the South African stakeholders were the Peabody Picture Vocabulary Test (PPVT) and CELF-4E, although neither of these tests was normed in the South African context. These two assessment tools were commonly used because the stakeholders were introduced to the assessment tools during their training at university and felt comfortable using the tools. This finding is supported by Southwood and van Dulm (2015) who reported similar findings regarding language tests commonly used by SLTs in South Africa.

Furthermore, another reason these tools were most used was that stakeholders felt they were able to adapt the stimuli to be culturally sensitive, although they did not necessarily specify the modifications made to these assessment tools. SLTs have had to modify existing assessments by removing certain assessment items and replacing pictures or other visual

aids (Pascoe & Norman, 2011). The challenge with adapting standardised tests is that this influences the psychometric constructs of the test, specifically the validity, therefore, it affects the manner in which the results should be interpreted (Girolamo et al., 2022). Given that standardised tests are normed on monolingual speakers, translating the assessment into a different language does not remove the bias of the assessment (Carter et al., 2012).

Additional Stakeholder recommendations

The stakeholder consultation revealed that they gathering information about the children's language abilities, and that a combination of informal measures was employed. These measures included observing the child in the classroom, language experience questionnaires in which parents recorded their child's language use at home, and gathering data from other professional assessments. This was supported by Castilla-Earls et al, (2020) that by gathering multiple sources of data regarding the child's language skills in various contexts clinicians could comprehensively assess the strengths and weaknesses of the child's communication skills.

Additionally, several specific language tools were utilised to diagnose children with SLI. The focus was on receptive, and expressive language assessments and auditory skills, which included: speech discrimination/auditory discrimination test, word recognition, sentence understanding, comprehension of grammatical contrasts, narratives, language samples, and the evaluation of phonological awareness.

Overall, this discussion highlights how various tools and methods were employed in assessing children with SLI in this study. Similar recommendations have been made by the HPCSA (2019). The HPCSA noted that effective assessments go beyond traditional standardised tests and utilise a combination of informal measures, observations, and specific language tools to gain a comprehensive understanding of children's language abilities. By employing a range of assessment practices, researchers can obtain a more holistic view of a child's language skills and better tailor interventions for those diagnosed with SLI (Southwood & van Dulm, 2015).

Chapter 6

Conclusion

The assessment for the diagnosis of SLI is a multifaceted and complex field within Speech-Language Therapy (Topbaş, 2011), particularly when children from CLD backgrounds are involved (Goral & Conner, 2013). The increasing demand for accurate evaluation necessitates appropriate assessment material and procedures to accommodate CLD learners.

The study utilised a scoping review design to gather relevant information on assessment practices for diagnosing children with SLI. The purpose was to provide valuable insights and guidance for researchers and clinicians working with children from CLD backgrounds, particularly within the South African context.

A total of 32 articles were reviewed and included in the scoping review. All of the studies were conducted in the Global North with the majority of the studies conducted in the United States of America. Collectively, 27 languages were identified in the studies, with the age of participants ranging from 5 to 11.6 years.

The scoping review provided information regarding language assessment practices for the diagnosis of SLI in school-age children from CLD backgrounds. According to the findings, the common practices included standardised language assessment tools and assessment in both languages, which were both reported to be not feasible within the South African context, even though the practice of assessing in both languages was supported. The practices were influenced by the context, availability of assessment resources and policies.

The current study highlighted the need for CLD appropriate language assessment resources (including practical guidelines, contextually relevant assessment tools, as well as access to interpreters) in South Africa. In the absence of these resources, current practices included the use of informal language assessments and modifications to existing tests to be more culturally inclusive.

Research and Clinical Implications

From the findings, it is evident that there is no gold standard for diagnosing SLI in CLD school-age children. Current diagnostic criteria and procedures used for the diagnosis are not uniform. Given the fact that many of the studies used study-specific protocols or did not provide detailed descriptions of the assessment criteria and procedures, it is recommended

that future research investigate the assessment practices of clinicians who are currently diagnosing SLI within CLD populations.

All the studies that were included were conducted in the Global North which highlights the need for primary research in this field in countries within the Global South, including South Africa.

According to the HPCSA (2019) guideline for practice in a CLD South Africa, clinicians are advised to use interpreters, translate existing tools and utilise standardised tools if the child belongs to the same cultural and linguistic background as the normative group. Although the HPCSA (2019) guideline was not included in the review, from the responses obtained from the stakeholders, these recommendations were viewed as not being feasible. Therefore, research is needed that focuses on why the HPCSA (2019) guideline are not adhered to and not considered to be feasible. Furthermore, the research highlights the need for policymakers to address practical implications of working with CLD children in the South African context. This should include increasing the number of CLD SLTs entering the profession. Furthermore, it is recommended that the undergraduate curricula be amended to provide effective training and preparation of SLTs when working in CLD settings.

Only one group of stakeholders, who were SLTs, were included. Other stakeholders involved in the diagnosis of SLI in CLD children may have had a different perception about the feasibility of the assessment procedures identified in the review. Therefore, future research should include other members involved in the diagnosis of SLI in CLD children which include teachers and parents.

Strengths and Limitations

A scoping review provides valuable research by systematically mapping and summarising existing literature on a broad topic (Pollack et al., 2022). Nonetheless, it has both limitations and strengths associated with its usage.

In order to maintain consistency, rigor and trustworthiness when conducting the review, guidelines such as the PRISMA-SCR checklist (Tricco et al., 2018) (refer to Appendix A) and the JBI methodology (Peters et al., 2020) were employed to provide guidance for conducting and reporting the scoping review.

Explicit inclusion and exclusion criteria were established to guide study selection, which ensured that the reviewers were able to consistently identify articles that addressed the research question.

To ensure that the literature search was comprehensive, eight electronic databases were used, alongside a citation search.

To enhance the rigour and trustworthiness of the review, two reviewers independently conducted the various steps of the review by means of an artificial Intelligence beta design. This also allowed the reviewers to collaborate on the review process and identify conflicts. The conflicts were regularly resolved through discussion and consensus meetings.

The researchers adhered to rigorous methods to minimize bias and enhance transparency throughout this scoping review. These included using a structured protocol, independent review process, pretested forms, bibliographic manager tool, and updating the search.

To mitigate the potential limitations of language constraints, the reviewers proactively contacted researchers or experts who could provide additional research that may have been missed during the search.

The methodological choices in this study were limited by the availability of English-only articles and articles that did not require payment for access. This means that there is a possibility that relevant articles in other languages or from the Global South may have been missed. However, the researchers chose English as the language of focus because the reviewers are proficient in it, and it allowed for better comprehension of the research material.

Due to the limited sample size and incomplete response rate among stakeholders, where some participants did not respond to every question, this could have had an impact on the generalisability and validity of the study. Furthermore, only one group of stakeholders, who were SLTs were included. Other stakeholders involved in the diagnosis of SLI in CLD children may have had a different perception about the feasibility of the assessment procedures identified in the review. Due to the time and financial constraints only one stakeholder group could be included.

To enhance understanding and clarify responses from stakeholders, participants were given the option to provide their contact details for follow-up with the primary reviewer. However,

only one stakeholder provided their details, making it challenging to clarify responses effectively.

An online questionnaire was selected as a cost-effective method to reach a larger audience. However, given the limited number of stakeholders who participated and that only a small number answered all the online questions, a focus group format would have yielded an opportunity for in-depth information to be obtained from the stakeholders, explore responses and detail regarding additional approaches, materials and strategies practically employed (Jones, et al., 2013).

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Appendix A: PRISMA-ScR Checklist

SECTION	ITEM	PRISMA-ScR checklist item	REPORTED
TITLE			
Title	1	Identify the report as a scoping review.	Yes
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Yes
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	
METHODS			
Protocol and Registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	N/A
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	

Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	N/A
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	

Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	

Appendix B: Search Strategy

Search conducted in 2022						Updated Search conducted in 2023			
Data base	Date of search	Search string	Number of hits	Limits	Publication date	Date of Search	Number of hits	Limits	Publication date
Scopus	08/03/2022	language assessment OR assessment instruments OR language evaluations OR language test AND specific language impairment OR sli OR language impairment OR language disorder OR communication disorders AND school-age children OR children* AND culturally and linguistically diverse OR culturally diverse background OR linguistically diverse backgrounds OR bilingual OR multilingual OR cross-cultural OR cultural and linguistic responsivity	70	English, 2012-2022, article, review, conference paper, final publication	2012-2022	12/03/2023	6	English, 2022-2023, article, review, conference paper, final publication	2022-2023

Appendix C: Data Extraction form: Descriptive summary of studies

	Title	Author(s)	Year	Location	Design	Aim of Study:	SLI participants description:
1	Verb inflection in monolingual Dutch and sequential bilingual Turkish– Dutch children with and without SLI.	Blom, E., de Jong, J., Orgassa, A., Baker, A., & Weerman, F.	2013	Netherlands	mixed cross-sectional	If verb inflection can discriminate between L2 children with and without SLI in Dutch.	40 Bilingual speakers between the ages 6–8-year-old children with SLI who acquire Dutch as their first language (L1) participated. The children were born of Turkish descent.
2	Profiling (specific) language impairment in bilingual children: Preliminary evidence from Cyprus.	Kambanaros, M., Michaelides, M., & Grohmann, K.K.	2013	Greece	mixed cross-sectional	Compare bilingual children with and without SLI with their monolingual counterparts on the same research tool.	4 bilingual children diagnosed with SLI, between the age 6;6–8;10 years old participated. The children spoke Cypriot Greek and or English, Romanian, and Arabic. All children came from families with a medium to high socio-economic status as measured by mother’s education.

3	Three treatments for bilingual children with primary language impairment: Examining cross-linguistic and cross-domain effects	Ebert, D.E., Kohnert, K., Pham, G., Disher, J.R., & Payesteh, B.	2014	United States of America	cross-sectional study	Effects of three distinct treatment programs on language and cognitive processing outcomes in Spanish–English bilingual school-age children diagnosed with PLI.	59 Spanish–English bilingual children with PLI between the ages of 5;6 to 11;2 years participated.
4	Specific language impairment in language-minority children from low-income families	Engel de Abreu, P.M.J., Cruz-Santos, A., & Puglisi, M. L.	2014	Luxembourg	Qualitative, analytic design	<ul style="list-style-type: none"> • Explore whether executive functioning represents an area of difficulty for language-minority children with SLI and • If so, which specific executive processes might be affected. 	81 children from three different groups were analysed: (1) 15 Portuguese–Luxembourgish bilinguals from Luxembourg with an SLI diagnosis (i.e., BiSLI); (2) 33 typically developing Portuguese–Luxembourgish bilinguals from Luxembourg (i.e., BiTD); and (3) 33 typically developing Portuguese-speaking monolinguals from Portugal (i.e., MoTD). All the children were recruited on the basis of a language and social background

							questionnaire that was completed by the main caregiver.
5	The Receptive–Expressive Gap in Bilingual Children with and Without Primary Language Impairment.	Gibson, T. A., Peña, E. D, & Bedore, L.M.	2014	United States of America	cross-sectional study	The authors examined the magnitude of the discrepancy between d measures of receptive and expressive semantic knowledge for bilingual children with and without primary language impairment.	37 Spanish–English bilingual 7- to 10-year-old children with PLI and to 37 Spanish–English bilingual peers with TLD. All children were of Hispanic ethnicity. *The children selected for the present study were part of a longitudinal study by Sheng, Peña, Bedore, and Fiestas (2012).

6	Language Assessment of Latino English Learning Children: A Records Abstraction Study.	Kraemer, R., & Fabiano-Smith, L.	2017	United States of America	mixed cross-sectional	To determine whether SLPs working in a California school district adhered to the aforementioned best practices when assessing Latino EL children when diagnosing them with a language disorder.	Eighty-eight speech-language assessments reports of Spanish speaking English learning children were reviewed. During a three-year period (2010–2011, 2011–2012, and 2012–2013).
7	The Non-word Repetition Task as a clinical marker of Specific Language Impairment in Spanish-speaking children.	Girbau, D.	2016	Spain	Exploratory Research	Determine the potential use of the auditory Spanish NRT as a diagnostic marker to identify Spanish-speaking children with SLI from 8 to 10 years of age.	Twenty bilingual children with SLI between the age of 8-9 years old participated. The children spoke Spanish as the formal language and Catalan as a non-formal. The average SES for the 20 children with SLI was 25.70, thus scoring them within the lower-middle SES.

8	Cross-linguistic transfer effects after phonologically based cognate therapy in a case of multilingual specific language impairment (SLI).	Kambanaros, M., Michaelides, M., & Grohmann, K.K.	2016	Greece	Exploratory Research	Explore whether cognates, words that share meaning and phonological features across languages, could be used to boost lexical retrieval in the context of multilingual SLI.	A multilingual 8.5-year-old girl with SLI was the participant. She spoke Bulgarian, English and Greek.
9	Dynamic Assessment of Narratives: Efficient, Accurate Identification of Language Impairment in Bilingual Students	Petersen, D. B., Chanthongthip, H., Ukrainetz, T. A., Spencer, T. D., & Steeve, R. W.	2017	United States of America	Mixed cross-sectional	<ul style="list-style-type: none"> •Determine the classification accuracy of a concentrate. •Dynamic Assessment format for bilingual Spanish-English children using materials and procedures available to clinicians and conducted in English with real-time scoring and learning target selection. 	Participants consisted of 42 bilingual English-Spanish children between the ages of 6;4 and 9;6 years. A total of 32 children without LI, and 10 children with LI participated. The families were predominantly from low socioeconomic status, with 93% qualifying for free or reduced lunch and 72% with less maternal education than high school.

10	Conceptual Scoring and Classification Accuracy of Vocabulary Testing in Bilingual Children.	Anaya, J.B., Peña, E.D., & Bedore, L.M.	2018	United States of America	Mixed cross-sectional	<ul style="list-style-type: none"> •Compare performance of bilingual Spanish–English school-age children with and without SLI on the Expressive One-Word Picture Vocabulary Test–Third. •To determine which method of scoring yielded the best diagnostic accuracy. 	247 Spanish–English bilingual children enrolled in kindergarten, second grade, and fourth grade aged 5;1 through 11;1 year. 38 children with SLI.
11	Understanding Disorder Within Variation: Production of English Grammatical Forms by English Language Learners.	Bedore, L.M., Peña, E. D., Anaya, J.B., Nieto, R., Lugo-Neris, M.J., & Baron, A.	2018	United States of America	Exploratory Research	Examines English performance on a set of 11 grammatical forms in Spanish–English bilingual, school-age children to understand how item difficulty of grammatical constructions helps correctly classify LI from expected variability in second language acquisition when taking into account linguistic experience and exposure.	378 Spanish–English bilingual children between the ages of 7 and 10 years participated. 65 children with LI participated. *The participants were recruited across three studies.

12	Cross-Linguistic Cognate Production in Spanish–English Bilingual Children with and Without Specific Language Impairment.	Grasso, S.M., Peña, D.E., Bedore, L.M., Hixon, J. G., & Griffin, Z.M.	2017	United States of America	Longitudinal design	Determine if bilingual children with and without SLI who were in kindergarten, or second grade displayed a cognate advantage in production.	Participants included Spanish–English bilingual children between the aged 5;0 to 9;11 years old. They consisted of two groups: 25 TLD and 92 children with SLI. *The children selected for the present study were part of a longitudinal study Bedore, Peña, Griffin & Hixon, 2016.
13	Changes in English Past Tense Use by Bilingual School-Age Children with and Without Developmental Language Disorder.	Jacobson, P.F., & Yu, Y.H.	2017	United States of America	longitudinal design	Examine changes in English past tense accuracy and errors among Spanish–English bilingual children with TD and DLD.	The participants consisted of two groups of bilingual English -Spanish children between the ages 6-9 years. A total of 16 TLD and 17 children with DLD participated. Places of parental origin included El Salvador, the Dominican Republic, Guatemala, Mexico, and Puerto Rico.

14	Can executive functioning contribute to the diagnosis of SLI in bilingual children? A study on response inhibition.	Laloi, A., de Jong, J., & Baker, A.	2017	France	Exploratory Research	<ul style="list-style-type: none">• Estimate the extent to which a non-verbal task tapping response accuracy inhibition can clinically contribute to the diagnosis of SLI, specifically in successive bilingual children for whom the diagnosis of SLI.• Contribution of non-verbal EF to the diagnosis of SLI in bilinguals by investigating performance in both monolingual and bilingual children with and without SLI on a non-verbal EF task tapping response inhibition.	Four groups of children aged between 6;0 and 8;6 participated in this study: a group of 17 TLD monolingual children (MOTLD), a group of 19 monolingual children with SLI (MOSLI), a group of 19 bilingual children (BITLD) and a group of 13 bilingual children with SLI (BISLI). They were all speakers of French as either L1 or L2. The bilingual children's L1s included 13 different languages: Albanese, Arabic, Berber, Bengali, English, Khmer, Mandarin, Portuguese, Romanian, Serbian Tamil, Turkish, and Vietnamese.
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15	Componential Skills in Second Language Development of Bilingual Children with Specific Language Impairment	Verhoeven,L., Steenge, J., van Leeuwe, J., & van Balkom, H.	2017	Netherlands	mixed cross-sectional	Investigate which componential skills can be distinguished in the second language development of 140 bilingual children with SLI in the Netherlands.	The participants consisted of 140 Bilingual SLI immigrant children, aged 5;5–11;5 years old. The participants were divided into three age groups. All were learning Dutch as a second language (L2) and attended special education primary school for children with severe speech or language difficulties in various regions of the Netherlands. The children were of Turkish, Moroccan, and Surinamese background.
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16	The Complexity of the Spanish Subjunctive in Bilingual Children with SLI.	Castilla-Earls, A.P., Perez-Leroux, A. T., Restrepo, A.D., Gaile, D., & Chen, Z.	2018	United States of America	longitudinal design	Investigated the use of the Spanish subjunctive in bilingual children with and without SLI.	The participants in this study were 16 children with SLI and 16 typically developing children (TD) matched on age, English language proficiency, and mother's education level. Bilingual children were selected based on their English proficiency and were classified either as Spanish-dominant children with intermediate English proficiency
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17	Core vocabulary in the narratives of bilingual children with and without language impairment.	Shivabasappa, S., Peña, E.D., & Bedore, L.M.	2018	United States of America	Longitudinal	Answering the question whether bilingual children with PLI and their TD peers differ in the use of core vocabulary during narration.	Out of 167 children, 21 Spanish- English children presented with PLI in first grade. The parents identified them as Hispanic (the ethnicity criteria); parents reported that they had at least 20% combined input and output in English and Spanish. *The children selected for the present study were part of a longitudinal study (Gillam, Peña, Bedore, Bohman, & Mendez-Perez, 2013).
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18	Attention in bilingual children with developmental language disorder.	Ebert, K.D., Rak, D., Slawny, C. M, & Fogg, L.	2019	United States of America	mixed cross-sectional	Explore the attention (control and sustained attention) in monolingual and bilingual children with and without DLD.	154 children participated between the ages 6;0 and 8;11 years. Of which 90 children were bilingual, 29 with DLD, 27 Typical language development (TLD) and 34 did not meet criteria. The participants were exposed to English or to Spanish and English; with no other comorbidities.
19	Including Nonlinguistic Processing Tasks in the Identification of Developmental Language Disorder.	Ebert, K.D., & Pham, G.	2019	United States of America	Case Study	Explores whether non-linguistic cognitive processing tasks can contribute to the identification of DLD in children from diverse linguistic backgrounds.	Spanish–English bilinguals between the ages 6;0–10;11 years with and without DLD participated. 92 of the Spanish –English bilingual children met criteria for DLD. Spanish was the language spoken in the home, and English was learned subsequently via community and school exposure.

20	Linguistic skills in bilingual children with Developmental language disorders: A pilot study.	Marini, A., Sperindè, P., Isabella, R., Savegnago, C., & Avanzini, F.	2019	Bolzano, Italy	Pilot study	Identify the linguistic characteristics of a cohort of 11 simultaneous and early bilingual children (Italian, L1; German L2) with DLDs in each of their languages by using equivalent forms of the same battery of tests which includes also a narrative generation task (the Battery for the assessment of language in children aged 4 to 12 – BVL_4-12; Marini et al., 2015) and comparing their performance with those of bilingual children with TLD.	Twenty-two Italian-German bilingual children were included in this study. Eleven participants had previously received a diagnosis of DLDs. All participants came from families living in Bolzano's area, a bilingual region in north-eastern Italy where both Italian and a variety of German (i.e., the Austrian-Bavarian dialect) are currently spoken.
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21	<p>“Did I Say Cherry?” Error Patterns on a Blocked Cyclic Naming Task for Bilingual Children with and Without Developmental Language Disorder</p>	<p>McMillen, S., Griffin, Z.M., Peña, E.D., Bedore, L.M., & Oppenheim, G.M.</p>	2019	Texas, United States of America.	Mixed cross-sectional	<p>Compare accuracy and error patterns across languages for Spanish–English bilingual children with and without DLD, using a blocked cyclic picture-naming task.</p>	<p>Participants comprised a total of 238 bilinguals, Spanish–English bilinguals. A total of 36 bilingual children with DLD. All children were raised in homes where Spanish was the primary language spoken, and they had varying levels of exposure to English, their second language *The children selected for the present study were part of a longitudinal study <i>Cross-Language Outcomes of Typical and Atypical Development in Bilinguals</i> (Peña et al., 2010).</p>
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22	Bilingualism and Processing Speed in Typically Developing Children and Children with Developmental Language Disorder.	Park, S.J., Miller, C. A., Sanjeevan, T., van Hell, J.G., Weiss, D. J., & Mainela-Arnold, E.	2020	Canada	mixed cross-sectional	Investigate whether dual language experience modulates processing speed in typically developing (TD) children and in children with developmental language disorder (DLD).	Participants comprised a total of 86 monolingual and bilingual children, of which 10 bilingual children with DLD, between the ages 8–12 years. Three children spoke Korean, one child spoke Albanian, two children spoke Bengali, one child spoke Chinese, one child spoke Farsi/Dari, one child spoke Ojibwe, and one child spoke Spanish.
23	Capitalizing on cross-language similarities in intervention with Bilingual children.	Dam, Q., Pham, G.T., Pruitt-Lord, S., Limon-Hernandez., J., & Goodwiler, C.	2020	United States of America	Longitudinal design	Investigate the effects of a cognate-based vocabulary intervention for bilingual children with and without DLD.	A total of twelve Spanish-English bilingual children participated between the ages 6-8 years. Six of these children were diagnosed with DLD. Based on the parent questionnaire, participants were first exposed to Spanish only or to Spanish and English simultaneously.

24	The Utility of an English Semantics Measure for Identifying Developmental Language Disorder in Spanish–English Bilinguals.	Jasso, J., McMillen, S., Anaya, J.B., Bedore, L.M., & Peña, E. D.	2020	United States of America	cross-sectional study	Explores the extent to which an index of English semantics from the Bilingual English–Spanish Assessment—Middle Extension (BESA-ME) Experimental Test Version (Peña et al., 2008) can classify DLD in children with varying degrees of English experience.	The participants consisted of 327 Latino Spanish–English bilingual children between ages 7;0 and 10;11 years old. 66 children with diagnosed with DLD. * Children were pooled from studies: Bedore et al. (2018); Phenotype Assessment Tools for Bilingual (Spanish English) Children (Peña & Bedore, 2006), and from Diagnostic Markers of Language Impairment (Peña, Bedore, & Gillam, 2006) and from Cross-Language Outcomes of Typical and Atypical Development in Bilinguals (Peña et al., 2010).
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25	Code-Switching and Language Proficiency in Bilingual Children with and Without Developmental Language Disorder.	Kapantzoglou, M., Brown, J. E., Cyclic, L.M., & Fergadiotis, G.	2020	United States of America	mixed cross-sectional	Examined the prevalence of children with DLD and their peers with TLD who code-switch the relationship between language proficiency and frequency of code-switches in these groups and between group differences in the frequency of code-switching, controlling for language proficiency and variations in language sample length.	24 Spanish -English speaking children with DLD and 38 TLD participated between the ages of 5– 7 years. Children spoke Mexican, Guatemalan, and Cuban Spanish and were from lower socioeconomic backgrounds determined on the basis of eligibility for free or reduced-price lunch from parent report.
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26	Identifying Developmental Language Disorder in School Age Bilinguals: Semantics, Grammar, and Narratives	Peña, E.D., Bedore, L.M., Lugo-Neris, M.J., & Albudoor, N.	2020	Texas, United States of America.	Exploratory Research	Explore the classification accuracy of various measures of language development designed for school age Spanish-English bilingual children including the Semantics and Morphosyntax subtests of the Bilingual English Spanish Assessment Middle Extension (BESA-ME) and the English and Spanish versions of the Test of Narrative Language (TNL).	Participants consisted of 175 Spanish-English bilingual children. 26 children with DLD in the second or fourth grades, between the ages of 7;2 and 11;6 years old, participated. As reported by their parents, 87% of the children were Hispanic of Mexican descent, 4% were Hispanic of non-Mexican descent (e.g., Salvadorean), 1% were non-Hispanic, and the remaining 8% were unreported.
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27	The Use of Structural Priming and Focused Recasts to Facilitate the Production of Subject- and Object-Focused Relative Clauses by School-Age Children with and Without Developmental Language Disorder	Wada, R., Gillam, S.L., & Gillam, R.B.	2020	United States of America	cross-sectional study	Examine the use of structural priming combined with a focused recasting procedure to elicit subject- and object-focused, centre-embedded relative clauses from students with DLD and TD students.	A total of 26 children ranging in age from 6;10 to 10;11 (years; months), participated in this study. 13 children were diagnosed with DLD. The children were White/non-Hispanic, Asian/non-Hispanic, and Native Hawaiian/non-Hispanic backgrounds.
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28	Identifying language disorder in bilingual children using automatic speech recognition	Albudoora, N. & Peña, E.D.	2021	United States of America	Longitudinal design	Determine the scoring agreement and classification accuracy of a Spanish–English expressive morphosyntax task—transcribed using ASR technology and scored programmatically—to provide evidence for its technical feasibility as an assessment tool	Participants were 84 Spanish-English bilingual second graders. 25 children diagnosed with DLD and 59 children without. The primary Spanish dialect spoken was Mexican, Salvadorean and other. The dialect of English was Standard American English and Southern English and others. *The children selected for the present study were part of a longitudinal study Peña et al., 2010.
29	Revisiting the Influences of Bilingualism and Developmental Language Disorder on Children's Nonverbal Processing Speed	Ebert, K.D.	2021	United States of America	mixed cross-sectional	Examined the influences of bilingualism and DLD on nonverbal processing speed.	56 Spanish–English bilinguals between the ages 6–8 years old participated. A total of 29 children with DLD and 27 TLD.

30	Non-linguistic cognitive measures as predictors of functionally defined developmental language disorder in monolingual and bilingual children	Park, J., Miller, C.A., Sanjeevan, T., Van Hell, J.G., Weiss, D.J., & Mainela-Arnold, E.	2021	Toronto, Canada	Qualitative,	Investigated whether non-linguistic cognitive abilities (procedural learning, motor functions, executive attention, processing speed) can increase the prediction accuracy of fDLD in children in linguistically diverse settings.	Monolingual and bilingual school-age with and without Functionally defined developmental disorder (fDLD) between 8-12 years old participated. A total of 12 bilingual fDLD participated. *These children were a subset of a larger project investigating procedural learning (Park et al., 2019).
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31	The Use of the LITMUS Quasi-Universal Nonword Repetition Task to Identify DLD in Monolingual and Early Second Language Learners Aged 8 to 10	Grimm, A	2022	Germany	Exploratory Research	Comparing the performances of Mo-TD, eL2-TD, Mo-DLD, and eL2-DLD children in both parts of the LITMUS-QU-NWR and analysing the diagnostic accuracy.	36 monolingual and 33 bilingual German children with and without DLD participated. A total of 7 children with DLD was included between the ages of 8;0 to 9;11 years old. The children presented with socioeconomic status of 9.6. The eL2-DLD children acquired 5 different languages at home: Arabic, Serbian/Croatian, Urdu, Russian, Pashto.
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32	Special needs assessment in bilingual school-age children in Germany	Hertel, I., Chilla, S., & Ibrahim, L.A.	2022	Germany	Longitudinal	Compares the performance of typically developing late-L2 refugee bilinguals (henceforth refugee-BiTD) and 2L1/eL2 heritage bilinguals (henceforth heritage- BiTD) to age-matched, typically developing monolingual children (MoTD), and to a control group of children with DLD, on three subtests of the BUEGA (Esser et al. 2008).	45 monolingual and bilingual school-age children with and without DLD. A total of 7 children with DLD between the ages of 7;7–13;9 years old participated. The children spoke German and or Turkish, German and Arabic. The socioeconomic status of the children with DLD was determined by the years of maternal education which was 10.6.* Participants recruited from Wave 2 of the longitudinal research project BiliSAT4 (Bilingual Language Development in School-age Children with/without Language Impairment with Arabic and Turkish as first languages) (Hamann et al. (2020).
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Appendix D: Data Extraction form: SLI Summary of Diagnostic Practices

Author(s)	Year	Language Diagnostic Criteria of SLI	Language Assessment practices	Language Assessment instruments
Blom, E., de Jong, J., Orgassa, A., Baker, A., & Weerman, F.	2013	<u>Criteria:</u> The language proficiency of the children in the sample fell below age expectations as measured by a standardised Dutch language test, i.e., they scored at least 1.5 SD (standard deviation) below the norm on tests for at least two language domains (speech production, auditory processing, grammatical development, lexical–semantic development) or they scored at least 2 SD below the norm on a general language test in their weaker language.	<u>Tester:</u> Special schools SLT, language of SLT not specified. <u>Procedure:</u> The children were diagnosed with SLI on the basis of their low language level.	Not reported
Kambanaros, M., Michaelides, M., & Grohmann, K.K.	2013	Criteria for the diagnosis of SLI was not reported.	<u>Tester:</u> SLTs not involved in study, language of SLT not specified. <u>Procedure:</u> Testing included measures of receptive and expressive morphosyntax, receptive and expressive vocabulary by means of norm-referenced tests for Greek. Diagnosis was confirmed prior to the study by two SLTs.	COST Action A33 (2006–2010), Peabody picture vocabulary Test, Picture word finding test (Vogindroukas et al. (2009),

Ebert, D.E., Kohnert, K., Pham, G., Disher, J.R., & Payesteh, B.	2014	<u>Criteria:</u> Participants had a score of more than 1.25 standard deviations below the mean and parental concern regarding language development.	<u>Tester:</u> Bilingual (English and Spanish) SLT's. <u>Procedure:</u> Three standardised language tests were administered in both English and Spanish.	The Expressive One-Word Picture Vocabulary Test (EOW-E;) and the Expressive One-Word Picture Vocabulary Test—Bilingual Edition (EOW-S); Receptive One-Word Picture Vocabulary Test (ROW-E) and the Receptive One-Word Picture Vocabulary Test—Bilingual Edition (ROW-S) and Clinical Evaluation of Language Fundamentals—Fourth Edition in English (CELF-4E) and in Spanish (CELF-4S).
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<p>Engel de Abreu, P.M.J., Cruz-Santos, A., & Puglisi, M. L.</p>	<p>2014</p>	<p><u>Criteria:</u> SLI diagnosis from specialised health professionals following the clinical criteria from the International Classification of Diseases (ICD 10). Children scored 1.5 SD below the mean on a non-word repetition test. All children performed below the 10th percentile on the language comprehension and the vocabulary subtests. The Brazilian Children's Test of Pseudoword Repetition that was recorded by a native European Portuguese speaker was also administered and children scored on average 6.2 SD below the mean (range -10.1 to -2.25 SD).</p>	<p><u>Tester:</u> Specialised health professionals, language of health professionals not specified. <u>Procedure:</u> SLI diagnosis was confirmed by administrating a range of standardised measures in Portuguese.</p>	<p>(1) Mottier test of non-word repetition (Linder and Grisseman 2000); Language comprehension: Wiener Entwicklungstest (Kastner-Koller and Deimann 1998); wo subtests from the Avaliac ̃o da Linguagem Oral (oral language assessment test; Sim-Sim 2003) were administered: compreens ̃o de estruturas complexas [com- prehension of complex structures] and reflex ̃o morfo- sint ́tica [test of morphosyntax].</p>
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<p>Gibson, T. A., Peña, E. D, & Bedore, L.M.</p>	<p>2014</p>	<p><u>Criteria:</u> (a) Parents and teachers interview with scoring of learner’s language proficiency and concerns about the child’s speech and language. (b) Scores at least 1 SD below those of all other participants were treated as possibly indicating PLI.</p>	<p><u>Tester:</u> Testers not specified and the language of testers. <u>Procedure:</u> Children provided narrative samples in English and Spanish. No further information regarding language assessment.</p>	<p>Not reported</p>
<p>Kraemer, R., & Fabiano-Smith, L.</p>	<p>2017</p>	<p>Criteria for the diagnosis of SLI was not reported.</p>	<p><u>Tester:</u> The assessment was conducted by SLTs, language of SLTs not specified. <u>Procedure:</u> 18 different standardised assessment tests were used. Children were assessed in Spanish (N = 32) or English (N = 38) rather than both (N = 18) as suggested by IDEA, ASHA, and CDE. The vast majority of the children were assessed without the support of an interpreter (N = 87).</p>	<p>CELF-E4; CELF-S4; EOWPVT: B; PPVT; TOLD.</p>
<p>Girbau, D.</p>	<p>2016</p>	<p><u>Criteria:</u> (a) scored at least below –1 SD, in at least two out of the eight Spanish language standardised subtests/tests. (b) The diagnosis criteria for SLI were based on the oral language tests/subtests standardised tests criteria.</p>	<p><u>Tester:</u> Not reported. <u>Procedure:</u> Spanish language standardised subtests/tests were utilised. All of the tests have norms from Spain, except for the TTFC-2 test, which was translated into Spanish, but the norms were from the USA.</p>	<p>PPVT-III; Token Test for Children (TTFC-2); Test de Comprensión de Estructuras Gramaticales (CEG).</p>

<p>Kambanaros, M., Michaelides, M., & Grohmann, K.K.</p>	<p>2016</p>	<p><u>Criteria:</u> 1.5 SDs below zero, whereas for the weaker language, the cut-off was increased to 2.25 SD below zero.</p>	<p><u>Tester:</u> The researchers confirmed the diagnosis, the language of researchers not specified. <u>Procedure:</u> Diagnosis confirmed by means of assessing her language abilities using a battery of standardised tests available for English and Greek following instructions found in the manuals, and for Bulgarian on an informal language measure.</p>	<p>CELF-4E, Test for Reception of Grammar (TROG-2), Verb Agreement and Tense Test (VATT), Test of Active and Passive Sentences—Revised (TAPS-R). Greek: Diagnosis Verbal IQ (DVIQ). Bulgarian: Narrative (cookie theft picture)</p>
<p>McMillen, S., Griffin, Z.M., Peña, E.D., Bedore, L.M., & Oppenheim, G.M.</p>	<p>2016</p>	<p><u>Criteria:</u> (a) a child had to perform more than 1 SD below the mean in both languages compared to a bilingual story retell database on at least one of three indicators (MLU, TNW, NDW) when retelling a model story, on the basis of the wordless storybook Frog, Where Are You? (Frog Retell; Mayer, 1969) and (b) parent or teacher judgement regarding the child's language impairment.</p>	<p><u>Tester:</u> The researchers confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> The assessment was conducted in both languages, English and Spanish, by means of story retelling.</p>	<p>Story retelling - wordless storybook "Frog, where are you?"</p>

<p>Anaya, J.B., Peña, E.D., & Bedore, L.M.</p>	<p>2018</p>	<p><u>Criteria:</u> At least four of the following five criteria (a) scored below 1 SD on age norms in both languages on the BESA or BESA-ME semantics subtest, (b) scored below 1 SD below age norms in both languages on the BESA or BESA-ME morphosyntax subtest, (c) scored below 1 SD on the BESOS screener in both languages, (d) scored below 1 SD on the TNL in both English and Spanish, and (e) scored below an average of 4.25 (of 5) in both languages on the ITALK.</p>	<p><u>Tester:</u> Qualified bilingual SLTs assessed the learners. <u>Procedure:</u> The researchers confirmed the diagnosis by testing the children in both English and Spanish using English and Spanish standardised tests, BESA or BESA-ME.</p>	<p>English and Spanish: two subtests of the Bilingual English-Spanish Assessment or the Bilingual English-Spanish Assessment–Middle Extension, Experimental Version (BESA-ME), the Test of Narrative Language (TNL), and an experimental version of the TNL adapted to Spanish (TNL-S).</p>
<p>Bedore, L.M., Peña, E. D., Anaya, J.B., Nieto, R., Lugo-Neris, M.J., & Baron, A.</p>	<p>2017</p>	<p><u>Criteria:</u> (a) Parent/ teacher rating indicating language delay (b) score 1 SD below the mean in both languages using standardised tools.</p>	<p><u>Tester:</u> The researchers confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> The learners were participants in another study. The diagnosis was confirmed previously by other SLT by means of standardised tools in both languages.</p>	<p>BESA-ME; Test of Language Development–Primary: Third Edition (TOLD-III) and (c) TNL-English – Spanish Adaptation Experimental Version for Spanish, or narratives using wordless picture books.</p>

<p>Grasso, S.M., Peña, D.E., Bedore, L.M., Hixon, J. G., & Griffin, Z.M.</p>	<p>2017</p>	<p><u>Criteria:</u> Scored below the 25th percentile in their higher language in either the Morphosyntax or Semantics subtest of the BESOS. A different version of the BESOS was used with children ages 7;0 to 9;11.</p>	<p><u>Tester:</u> The researchers confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> The researchers confirmed the diagnosis by testing the children in both English and Spanish by utilizing the Expressive One-Word Picture Vocabulary Test (EOWPVT).</p>	<p>(1) Bilingual English Spanish Oral Screener (BESOS) was used for children between 7;0 to 9;11 years old; (2) BESA (3) EOWPVT</p>
<p>Jacobson, P.F., & Yu, Y.H.</p>	<p>2017</p>	<p><u>Criteria:</u> Performance below 1.5 SD or below the second stanine on the CELF-4 on standardised assessment tools in English or Spanish.</p>	<p><u>Tester:</u> The assessment was conducted by two bilingual SLTs. <u>Procedure:</u> The learners diagnosed was confirmed by means of standardised tools in both languages, English or Spanish.</p>	<p>1) Sentence Recall subtest of the (CELF-S4); The Spanish and English versions of the Woodcock–Muñoz Language Survey III (Woodcock & Muñoz-Sandoval, 2001). [Provides a proficiency rating on a 5-point scale for each language using monolingual norms for the respective languages].</p>

<p>Laloi, A., de Jong,J., & Baker, A.</p>	<p>2017</p>	<p><u>Criteria:</u> (a) Diagnostic centres in France apply the usual inclusionary and exclusionary criteria of SLI as set out by the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV) (1994) or the World Health Organization's International Classification of Diseases (ICD-10). (b) Score above a standard score of 85 on a non-verbal IQ test to be diagnosed as SLI. (c) All children with SLI had a significant language deficit, performing on two standardised language measures at least two SD below the mean, the traditional cut-off used in France for the diagnosis of SLI.</p>	<p><u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> Multidisciplinary team of neuropsychiatrists, psychologists and speech therapist diagnosed the children. Information on the language performance of bilingual children was obtained in French only. Given that, testing the learners in their L1 was not able to be conducted as many of the L1 had no standardised tools and the clinicians were unable to conduct these assessments.</p>	<p>They included EVALO (Evaluation du Langage Oral), TCG (Test de Closure Grammaticale; Deltour), ISADYLE (Instrument pour le Screening et l'examen Approfondi des DYsfonctionnements du Langage chez l'Enfant, TVAP (Test de Vocabulaire Actif et Passif), the French equivalent of PPVT or the French version of Test of Reception of Grammar.</p>
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Verhoeven,L., Steenge, J., van Leeuwe, J., & van Ba lkom, H.	2017	<u>Criteria:</u> Norm references of both monolingual and bilingual L2 learning children are taken into account in order to diagnose children with SLI. As much as possible norm references were taken into account.	<u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> A multidisciplinary team consisting of speech therapists, clinical linguists, and school psychologists diagnosed the children. Learners assessed based on the L2 Dutch language test scores and clinical evidence.	Dutch Standardised language test.
Castilla-Earls, A.P., Perez-Leroux, A. T., Restrepo, A.D., Gaile, D., & Chen, Z.	2018	<u>Criteria:</u> (a) score below 73 on the CELF-4S (b) Parents or teachers reported they were concerned about the child's language development.	<u>Tester:</u> Not elaborated. <u>Procedure:</u> Standardised language assessment utilised.	CELF-4S

Shivabasappa, S., Peña, E.D., & Bedore, L.M.	2018	<u>Criteria:</u> The children's performance in each language in the areas of vocabulary/semantics, grammar and narrative were rated using a scale. Once these ratings were completed, experts assigned an overall score using the same six-point scale. Children were identified with PLI if two or three of the raters assigned an overall score of 2 (mild impairment) or less.	<u>Tester:</u> Three certified, licenced, bilingual (English and Spanish) SLTs. <u>Procedure:</u> Standardised tools used in both languages.	TOLD- III; TNL and the BESA-ME.
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<p>Ebert, K.D., Rak, D., Slawny, C. M, & Fogg, L.</p>	<p>2019</p>	<p><u>Criteria:</u> Participants had to demonstrate both language skills below expectations and evidence of functional language difficulty. Core Language score more than 1.25 SDs below the mean on both the CELF-4E and the CELF-4S for bilingual children. Functional language difficulty was defined as the presence of one or more of the following: a) the parent reported overall concern with the child's communication development and specified a concern related to language, and (b) the child met criteria for parent concern on the ALDeQ,.</p>	<p><u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> SLTs or special education managers in local schools diagnosed the children. Parental questionnaires were conducted and standardised tools in both languages were administered. A more stringent criterion was applied to the bilingual children to avoid over-identification. The requirement of functional language difficulty was also imposed to avoid overidentification on the basis of test scores alone.</p>	<p>CELF-4E and CELF-4S, Alberta Language Developmental Questionnaire.</p>
<p>Ebert, K.D., & Pham, G.</p>	<p>2019</p>	<p><u>Criteria:</u> (a) Scored below the average range in both languages; (b) Parent- or school-reported concerns regarding language development.</p>	<p><u>Tester:</u> Not elaborated. <u>Procedure:</u> Children completed language assessments in both Spanish and English.</p>	<p>Language assessment tools not specified.</p>
<p>Marini, A., Sperindè, P., Isabella, R., Savegnago, C., & Avanzini, F.</p>	<p>2019</p>	<p><u>Criteria:</u> Children were previously diagnosed with DLD using standardised testing and measures in both languages in rehabilitation centres in Bolzano's area.</p>	<p><u>Tester:</u> Not specified. <u>Procedure:</u> The children's linguistic skills were assessed in the two languages assessed by administering the Italian and the German language tools.</p>	<p>Not reported</p>

<p>McMillen, S., Griffin, Z.M., Peña, E.D., Bedore, L.M., & Oppenheim, G.M.</p>	<p>2019</p>	<p><u>Criteria:</u> They met four of five criteria: (a) parental/teacher concern about language development, (b) a score greater than 1SD below the mean in both languages on the morphosyntax subtest of the BESA or the BESA-ME field test version, (c) a score greater than 1 SD below the mean in both languages on the semantics subtest of the BESA or the BESA-ME field test version, (d) a composite score on the BESOS that was greater than 1 SD below the mean in both languages, and (e) a score on the TNL that fell greater than 1 SD below the mean in both languages.</p>	<p><u>Tester:</u> Not specified. <u>Procedure:</u> Standardised and experimental measures in both Spanish and English.</p>	<p>(1) BESA, (2) BESA-ME, (3) BESOS (parent/teacher instrument), (4) TNL-S.</p>
<p>Park, S.J., Miller, C. A., Sanjeevan, T., van Hell, J.G., Weiss, D. J., & Mainela-Arnold, E.</p>	<p>2022</p>	<p><u>Criteria:</u> All participants with DLD obtained standard scores at 1.25 SD below the mean on one or more of the following on the CELF-4: the Receptive Language Index, Expressive Language Index, and Core Language Score.</p>	<p><u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> Participants were previously diagnosed by SLTs. A completed a battery of standardised English language test assessing receptive, expressive language and vocabulary. Only English measures were used in the study as there are no bilingual standardised measures.</p>	<p>CELF-4; PPVT-4 and the EOW-E.</p>

<p>Dam, Q., Pham, G.T., Pruitt-Lord, S., Limon-Hernandez, J., & Goodwiler, C.</p>	<p>2020</p>	<p><u>Criteria:</u> The participants with DLD performed 1 SD below the mean on the CELF in both languages.</p>	<p><u>Tester:</u> SLT, language of SLT not specified. <u>Procedure:</u> Standardised language tests in Spanish and in English that included two comprehensive tests of language. Two vocabulary tests in each language for this study in order to capture children's vocabulary knowledge separately in English and in Spanish. Parents completed the Inventory to Assess Language Knowledge (ITALK). Parents rated the child's give areas of speech; the mean score was calculated across Spanish and English separately. Mean scores below 4.18 in the higher-rated language indicates a risk for DLD.</p>	<p>CELF-4S; CELF-4E; ROWPVT; EOW and Inventory to Assess Language Knowledge (ITALK).</p>
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<p>Jasso, J., McMillen, S., Anaya, J.B., Bedore, L.M., & Peña, E. D.</p>	<p>2020</p>	<p><u>Criteria:</u> (a) Parent/ teacher concern about language development (b) score 1 SD below the mean on the Test of Narrative Language and Test of Narrative Language–Spanish Adaptation Experimental Version in both languages. Or children were identified with LI if they met four of the five criteria: (a) Parent or teacher rating below 4.2 (of 5) in both languages; (b) BESA-ME field test version, morphosyntax more than -1 SD from the normative mean in both languages; (c) BESA-ME field test version, semantics more than -1 SD from the normative mean in both languages; (d) BESOS composite more than -1 SD from the normative mean in both languages administered 1 year prior to testing; and (e) TNL more than -1 SD from the mean in both languages.</p>	<p><u>Tester:</u> The researches, SLTs, confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> Participants were previously diagnosed by SLTs. Semantic and morphosyntactic performance and narrative language was measured by means of standardised language assessment tools.</p>	<p>BESA or the BESA-ME; TLD-III & TNL-E & TNL-S.</p>
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<p>Kapantzoglou, M., Brown, J. E., Cycyk, L.M., & Fergadiotis, G.</p>	<p>2020</p>	<p><u>Criteria:</u> 7-year-old children scored below the cut-score of 1 SD below the mean on two grammatical subtests.</p>	<p><u>Tester:</u> Not reported. <u>Procedure:</u> Standardised tests were using in both languages, English and Spanish.</p>	<p>(1) CELF-4S (2) CELF-4E (3) Language sample (English and Spanish): Two different wordless picture books, A Boy, a Dog, a Frog, and a Friend (Mayer & Mayer, 1967) and Frog on His Own (Mayer, 1973).</p>
<p>Peña, E.D., Bedore, L.M., Lugo-Neris, M.J., & Albudoor, N.</p>	<p>2020</p>	<p><u>Criteria:</u> (a) score on BESA-ME (b) highest standardised parent concern rating, and (c) highest standardised teacher concern rating.</p>	<p><u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> Battery of standardised tests available for Spanish-English Bilinguals and parent and teacher concern was employed in this study.</p>	<p>BESA-ME</p>

Wada, R., Gillam, S.L., & Gillam, R.B.	2020	<u>Criteria:</u> scored 1SD below 81 on vocabulary and syntax subtests from global language measures on standardised tests.	<u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> Participants were previously diagnosed by SLTs. The researchers administered two standardised assessment tools to confirm the diagnosis.	CELF-4 and TLD-4
Albudoora, N. & Peña, E.D.	2021	<u>Criteria:</u> (a) Parent or teacher concern using an language inventory in both English and Spanish; (b) BESA-ME Field Test morphosyntax score lower than 1 SD below the normative mean in both English and Spanish; (c) BESA-ME Field Test semantics score lower than 1 SD below the normative mean in both English and Spanish; (d) BESOS composite score lower than 1 SD below the normative mean in both English and Spanish; and/or narrative test composite score lower than 1 SD below the normative mean in both English and Spanish.	<u>Tester:</u> The researches confirmed the diagnosis, language of researcher not specified. <u>Procedure:</u> A battery of standardised tests available for Spanish-English Bilinguals. Parents/caregivers and teachers rate children's vocabulary, speech, sentence production, grammar, and comprehension skills were taking into consideration	BESA-ME; BESOS; TNL and Inventory to Assess Language Knowledge.

Ebert, K.D.	2021	<u>Criteria:</u> (a) score more than 1.25 SDs below the mean on both standardised tools. A more stringent language cut score was used for the bilingual children (-1.25 SDs vs. -1 SD below the mean for monolinguals) to prevent over identification of DLD in bilinguals.	<u>Tester:</u> Not specified. <u>Procedure:</u> Standardised language assessment tools in English and Spanish was used. Detailed parent report regarding development in the child's first language (Alberta Language Developmental Questionnaire [ALDeQ]).	(1) CELF-S4; (2) CELF-E4 and (3) ALDeQ.
Park, J., Miller, C.A., Sanjeevan, T., Van Hell, J.G., Weiss, D.J., & Mainela-Arnold, E.	2021	<u>Criteria:</u> score 1.25 SDs below the mean on one or more of the following: (a) the Receptive Language index, (b) the Expressive Language index, and (c) Core Language scores on the CELF-4.	<u>Tester:</u> Given that the children participated in a larger study. The confirmatory diagnosis was conducted by Park, et al, 2019. <u>Procedure:</u> The children with DLD were required to be classified as having language learning difficulties in the Toronto District School Board and parental report regarding the child's language development.	CELF-4E.
Grimm, A	2022	<u>Criteria:</u> (a) referred to speech-language therapy and if they performed $T < 40$ in the language test. A standardised language test which has been constructed with a particular focus on eL2 learners was employed.	<u>Tester:</u> SLTs, language of SLT not specified. <u>Procedure:</u> German bilingual standardises tests.	LiSe-DaZ,

<p>Hertel, I., Chilla, S., & Ibrahim, L.A.</p>	<p>2022</p>	<p><u>Criteria:</u> confirmation of SLI was conducted at previous Wave 1 via a comprehensive assessment procedure using standardised tests in both languages.</p>	<p><u>Tester:</u> Given that the children participated in a larger study. The confirmatory diagnosis was conducted by (Hamann et al. 2020). <u>Procedure:</u> Standardised tests were employed in both languages. As L1 measures may be crucial, both a standardised Arabic language assessment tool was included and as well as a LITMUS-SRT in Arabic. Furthermore, German standardised language tool for bilinguals was utilised.</p>	<p>L1-Arabic (ELO-L, Zebib et al. 2017) and for L2-German (WWT, LiSe-DaZ, Schulz and Tracy 2011; TROG-D, and PLAKSS,</p>
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Key: Peabody picture vocabulary Test- PPVT; The Expressive One-Word Picture Vocabulary Test -EOW-E; The Expressive One-Word Picture Vocabulary Test—Bilingual Edition- EOW-S; Receptive One-Word Picture Vocabulary Test -ROW-E; the Receptive One-Word Picture Vocabulary Test—Bilingual Edition ROW-S ; Clinical Evaluation of Language Fundamentals—Fourth Edition in English (CELF-4E) and in Spanish (CELF-4S); Token Test for Children- TTFC-2; Test de Comprensión de Estructuras Gramaticales – CEG; Verb Agreement and Tense Test – VATT; Test of Active and Passive Sentences—Revised- TAPS-R; Bilingual English-Spanish Assessment or the Bilingual English-Spanish Assessment—Middle Extension, Experimental Version -BESA-ME; the Test of Narrative Language - TNL; Test of Language Development—Primary: Third Edition -TOLD-III; Bilingual English Spanish Oral Screener (BESOS); Evaluation du Langage Oral- EVALO; Test de Closure Grammaticale; Deltour- TCG; Instrument pour le Screening et l'examen Approfondi des DYsfonctionnements du Langage chez l'Enfant- ISADYLE; Test de Vocabulaire Actif et Passif- TVAP; the French equivalent of PPVT or the French version of Test of Reception of Grammar.

Appendix E: Piloted questions and respondents' feedback

Original question	Final question	Participant feedback
<p>Kindly comment on the feasibility (availability, affordability, and challenges) of the assessment process of CLD children in the South African context.</p> <p>If you look at the criteria for diagnosis of SLI, based on literature which of these are feasible within your context?</p>	<p>Kindly comment on the feasibility (availability, affordability, and challenges) of the assessment process of CLD children in the South African context.</p> <p>Based on the literature, some studies would assess the child in both or one language. Thereafter, when interpreting the child's score, to be diagnosed with SLI, the child had to achieve below a particular range, and or according to a particular criterion. Thus, different criteria for the diagnosis of SLI were identified.</p> <p>If you look at the criteria below, for diagnosis of SLI, based on the literature which of these are feasible within your context?</p>	<p>Some questions are ambiguous and require additional information to give context to the question.</p>
<p>If you look at the criteria for diagnosis of SLI, based on literature which of these are NOT feasible within your context?</p>	<p>Based on the literature, some studies would assess the child in both or one language. Thereafter, when interpreting the child's score, to be diagnosed with SLI, the child had to achieve below a particular range, and or according to a particular criterion. Thus, different criteria for the diagnosis of SLI were identified.</p> <p>If you look at the criteria below, for diagnosis of SLI, based on literature which of these are NOT feasible within your context?</p>	<p>Questions are vague. Required more information for context</p>

<p>Based on the literature, standardised tools were most commonly used to assess the learners when diagnosing SLI in CLD children. Would this be feasible in your context?</p>	<p>Based on the literature, either standardised or informal language assessments were used to diagnose SLI in children from CLD backgrounds.</p> <p>Based on the literature, standardised tools were most commonly used to assess the learners when diagnosing SLI in CLD children. Would this be feasible in your context?</p>	<p>Required more information for context</p>
<p>When considering the language of assessment. Which of these would be feasible within your context?</p>	<p>Studies differed on the language of assessment to make the diagnosis of SLI. Some studies reported testing in both languages while others only assessed in the second language when tests in the first language were not available.</p> <p>When considering the language of assessment. Which of these would be feasible within your context?</p>	<p>Required more information for context.</p>

Appendix F: Questionnaire



** Title of study:*

Language assessment practices in the diagnosis of Specific language impairment in school-age children from culturally and linguistically diverse backgrounds: A scoping review.

We would like to invite you to participate in a research project that involves the completion of an online questionnaire. Your participation is entirely voluntary, and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed questionnaire online, you will no longer be able to withdraw your responses as there will be no way of linking your responses back to you.

The study is being conducted by a student, Farzaana Moosa, completing her masters in speech-language and hearing therapy at the University of Stellenbosch. The study consists of two phases, namely the review of existing literature and stakeholder consultation regarding the literature findings.

The review of the literature has been completed and this phase of the study aims to investigate the perception of South African Speech Language Therapists about the feasibility (availability, affordability, and challenges) of the language assessment practices identified in the scoping review when diagnosing SLI in children from culturally and linguistically diverse (CLD) background.

You are being asked to participate because you are a qualified speech-language therapist that works with school-age learners from CLD backgrounds. In addition, based on your experience and practical exposure, you have skills and knowledge that you could share amongst other Speech-language therapists.

What will participate in the study entail?

The questionnaire will contain multiple choice and short questions relating to biographical information, general questions, and the findings of the literature review, specifically related to the criteria, practices, and language assessment tools used to diagnose SLI in CLD school-age children.

By participating in this study, the participants will contribute to expanding the existing knowledge about the feasibility of diagnostic language assessment practices for SLI within the CLD population. Participants will not be compensated and will have no personal benefits.

The questionnaire will take approximately 15 minutes to complete. The researchers may contact the participant if the response is not clear, if the participant provided an email address or contact number.

The potential risks involved in participating in this research have been minimized. The priority has been placed on maintaining participants' confidentiality, de-identifying the data, and identifying information that will not be reported in the final results. The questionnaire will be sent from a reliable server. However, the possible responses could be viewed by unauthorized third parties (e.g., computer hackers) exists.

You can phone the Principal Investigator of this study, [Farzaana Moosa], at [073 497 5109 at 19131380@sun.ac.za] if you have any questions about this study or encounter any problems.

This study has been approved by the Research Ethics Committee: Social, Behavioural, and Education Research at Stellenbosch University (S22/02/029). The study will be conducted according to the ethical guidelines and principles of South Africa's Department of Health Ethics in Health Research: Principles, Processes, and Studies (2015).

RIGHTS OF RESEARCH PARTICIPANTS:

You have the right to decline to answer any questions, and you can exit the survey at any time without giving a reason. If you have questions, concerns, or complaints regarding your rights as a research participant, please contact Mrs. Clarissa Robertson [cgraham@sun.ac.za; 021 808 9183] at the Division for Research Development.

You will receive a copy of this information and a consent form for you to keep safe.

By clicking START SURVEY, you are confirming that you are:

- Over 18 years old;
- Have read and understood the above explanation about the study; and
- You agree to participate
- You also understand that your participation in this study is strictly voluntary

Do you consent to participate in this study?

Please note that participation is entirely *voluntary & confidential*.

- Yes
- No

Permission to have all anonymous data shared with journals and or conferences:

When this study is finished, we would like to publish the study results in journals and or present at a conference. This may require us to share de-identified data. Therefore, we would like to obtain your permission to share this de-identified data.

- I agree to have my de-identified data shared
- I do not agree to have my de-identified data shared

* All information will be treated as strictly confidential and will only be reported on when collated.

Are you a Speech-language therapist?

- Yes
- No

* Do you work with School-Age learners? (6 -18 years old)

- Yes
- No

- **The term Culturally-Linguistically-Diverse (CLD) refers to multicultural and multilingual individuals who are non-mother-tongue speakers of English and who are from an indigenous language and cultural background.**

Do you work with children from CLD backgrounds?

- Yes
- No

Gender

- Female
- Male
- Non binary
- Prefer not to specify

Age

For the purpose of this study, the term Culturally-Linguistically-Diverse (CLD) refers to multicultural and multilingual individuals who are non-mother-tongue speakers of English and who are from an indigenous language and cultural background.

How many years of experience do you have working with CLD school-age children?

- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- +20 Years

In which setting/ settings do you work?

- Private practice
- State hospital
- State school
- Private school
- Private hospital
- University
- Non-Governmental organisation (NGO)

* What language(s) do you speak?

- English
- IsiZulu
- IsiXhosa
- IsiSotho
- Sepedi
- Sesotho
- Setswana
- siSwati
- Tshivenda
- Xitsonga
- Afrikaans
- isiNdebele

Other (*Please Specify*)

What are the age ranges of the children you work with?

- 6-9 years old
- 10-12 years old
- 13-15 years old
- 16-18 years old

For the purpose of this study, the term Culturally-Linguistically-Diverse (CLD) refers to multicultural and multilingual individuals who are non-mother-tongue speakers of English and who are from an indigenous language and cultural background.

What percentage of your current (individual) caseload is taken up with clients from different cultural and linguistic backgrounds than that of your own?

- Less than 10%
- Between 10% and 39%
- Between 40% and 70%
- Greater than 70%

* Please indicate whether you work with children that speak the following languages

- English
- IsiZulu
- IsiXhosa
- IsiSotho
- Sepedi
- Sesotho
- Setswana
- siSwati
- Tshivenda
- Xitsonga
- Afrikaans
- isiNdebele

* This survey will focus on three areas of importance for the diagnosis of Specific Language Impairment (SLI) of children from CLD backgrounds; (1) the criteria for diagnosis of SLI, (2) The procedure of language assessment, and (3) The language assessment tools.

SLI is defined as language development that is characterized by a chronological delay of one or many years, with limitations in acquiring language structures, in the absence of hearing loss, and or no neurological damage or disease (Leonard, 2014). The term SLI is also known as Developmental Language Delay (DLD), and Language Impairment (LI) (Bishop, 2017). For the purpose of this paper, SLI will be used.

The criteria for diagnosis of SLI.

Kindly comment on the feasibility (availability, affordability, and challenges) of the assessment process of CLD children in the South African context.

Based on the literature, some studies would assess the child in both or one language. Thereafter, when interpreting the child's score, to be diagnosed with SLI, the child had to achieve below a particular range, and or according to a particular criterion. Thus, different criteria for the diagnosis of SLI were identified.

If you look at the criteria below, for diagnosis of SLI, based on the literature which of these are feasible within your context?

- Parental/Teacher concern
- 1 SD below the norm on both language tests
- 1,25-1.5 SD below the norm on one language test
- 2.25 SD below the norm for the less proficient language
- Meet ICD-10 and, or DSM-IV diagnostic criteria

* And why?

- **Based on the literature, some studies would assess the child in both or one language. Thereafter, when interpreting the child's score, to be diagnosed with SLI, the child had to achieve below a particular range, and or according to a particular criterion. Thus, different criteria for the diagnosis of SLI were identified.**

If you look at the criteria below, for diagnosis of SLI, based on literature which of these are NOT feasible within your context?

- Parental/ Teacher concern
- 1 Standard Deviation (SD) below the norm on both language tests
- 1,25- 1.5 SD below the norm on one language test
- 2.25 SD below the norm on less proficient language
- Meet ICD-10 and, or DSM-IV diagnostic criteria

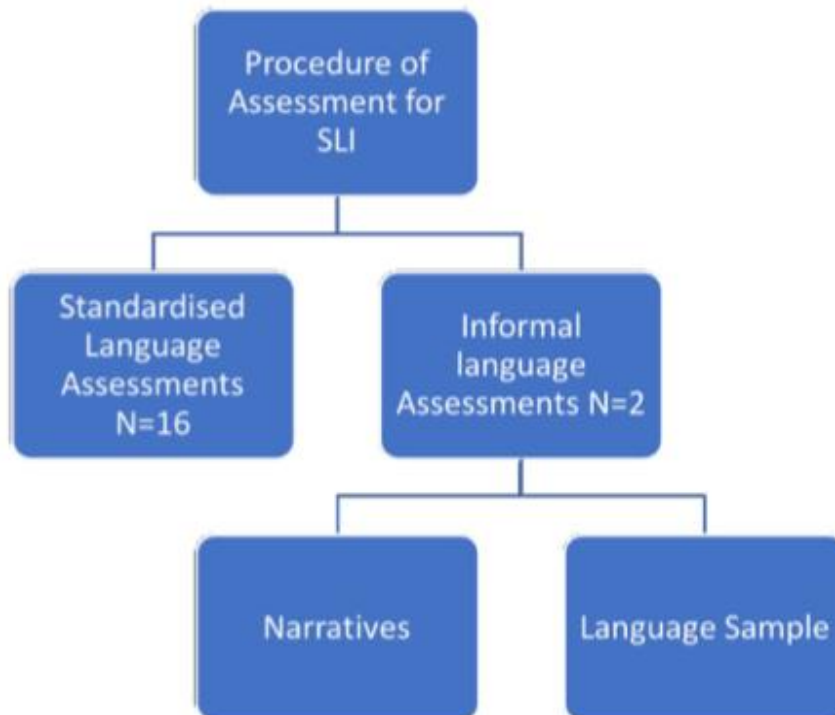
- **And why?**

Do you make use of practices that are not reflected in the Diagnostic criteria above when assessing children for SLI from CLD backgrounds?

The procedure of language assessment

Based on the literature, either standardized or informal language assessments were used to diagnose SLI in children from CLD backgrounds.

Below find a graph containing the diagnostic assessment procedure for the diagnosis of SLI in children from CLD backgrounds.



Based on the literature, standardised tools were most commonly used to assess the learners when diagnosing SLI in CLD children. Would this be feasible in your context?

- Yes
- No

* Why or Why Not?

* Additional informal language assessments were used to diagnose SLI in CLD children by means of narrative and language samples.

Would this be feasible in your context?

- Yes
- No

Why or Why Not?

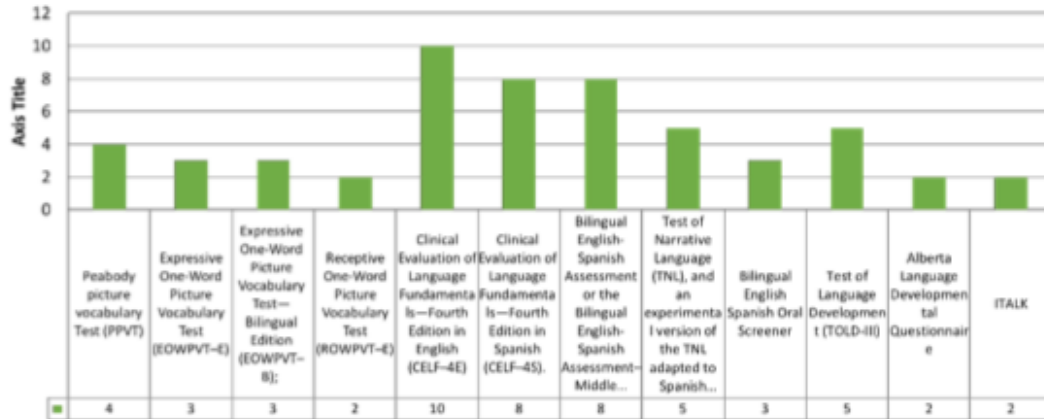
- Studies differed on the language of assessment to make the diagnosis of SLI. Some studies reported testing in both languages while others only assessed in the second language when tests in the first language were not available.

When considering the language of assessment. Which of these would be feasible within your context?

- Testing in both languages
- Assessment in second language when tests in the first language were not available.

Why or Why Not?

The language assessment tools



Based on the literature, the above assessment tools were most used in the literature diagnosing SLI in CLD children.

Select which of these tools are feasible (available, and affordable) within your context to use when diagnosing SLI in CLD children.

- Peabody picture vocabulary Test (PPVT)
- Expressive One-Word Picture Vocabulary Test (EOWPVT-E)
- Expressive One-Word Picture Vocabulary Test—Bilingual Edition (EOWPVT-B)
- Receptive One-Word Picture Vocabulary Test (ROWPVT-E)
- Clinical Evaluation of Language Fundamentals—Fourth Edition in English (CELF-4E)
- Clinical Evaluation of Language Fundamentals—Fourth Edition in Spanish (CELF-4S).
- Bilingual English-Spanish Assessment or the Bilingual English-Spanish Assessment—Middle Extension, Experimental Version (BESA-ME)
- Test of Narrative Language (TNL), and an experimental version of the TNL adapted to Spanish (TNL-S)
- Bilingual English Spanish Oral Screener
- Test of Language Development (TOLD-III)
- Alberta Language Developmental Questionnaire
- ITALK

Why?

Are there any tools that you make use of when diagnosing SLI in CLD children that are not reflected in the above findings?

Are there any language assessment practices that you do when diagnosing SLI in children from CLD backgrounds, that are not reflected in our literature findings? *Kindly elaborate.*

If you grant us permission to follow up telephonically if required, please provide your email address or your contact number.

Thank you for your filling out the questionnaire.

We appreciate your effort and time.

Appendix G: Stakeholder demographics

Demographics profile	Frequency
Gender	
Female	8
Male	0
Age groups	
21-30 years	5
31-39 years	1
40-49 years	0
50 years and above	2
Years of Experience	
0-5 years	4
6-10 years	1
11-15 years	2
16-20 years	1
20 years and above	1
Work settings	
Private Practice	3
State Hospital	3
State School	4
Private School	1
Private Hospital	1
University	1
Non-Government organisation (NGO)	2
Language spoken by Stakeholders	
English	8
IsiZulu	2
IsiXhosa	1
IsiSotho	1
Afrikaans	4
IsiNdebele	1
Other: Hebrew	1
Languages spoken by CLD children	
English	6
IsiZulu	6
IsiXhosa	7
IsiSotho	3
Setswana	1
Tshivenda	1
Xitsonga	1
Afrikaans	7

Appendix H: Advertisement of study



UNIVERSITEIT
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STELLENBOSCH
UNIVERSITY

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1918 · 2018

RESEARCH PARTICIPANT WANTED

My name is Farzaana Moosa and I am completing my master's in Speech-Language therapy at Stellenbosch University.

The focus is to explore the perceptions of **Speech Language Therapists (SLT)** when diagnosing **Specific Language Impairment** with children from **Culturally Linguistically Diverse (CLD)** backgrounds based on the findings of a recently completed scoping review

To participate:

- Registered SLTs in South Africa
- Work with School-age children from CLD backgrounds.

Click [here](#) to access the questionnaire



Appendix I: Informed Consent Form

Title of study:

Language assessment practices in the diagnosis of Specific language impairment in school-age children from culturally and linguistically diverse backgrounds: A scoping review.

We would like to invite you to participate in a research project that involves the completion of an online questionnaire. Your participation is entirely voluntary, and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially.

The study will be conducted by a student completing their masters in Speech-Language Therapy at Stellenbosch University. In South Africa, there are few resources to guide Speech-language therapists when assessing children from culturally- and -linguistically diverse backgrounds.

You are being asked to participate because you are a qualified speech-language therapist that works with school-age learners from culturally- and -linguistically diverse backgrounds. In addition, based on your experience and practical exposure, you have skills and knowledge that you could share amongst other Speech-language therapists.

What will participating in the study entail?

The questionnaire will contain multiple choice and short questions relating to biographical information, general questions, and assessment practices and tools that participants utilize as Speech-language therapists when assessing school-age learners for Specific Language Impairment from culturally- and -linguistically diverse backgrounds that has been identified in the literature.

By participating in this study, the participants will provide input regarding the feasibility of assessment practices identified from the literature. The research will provide useful information on evidence practices that could be considered when assessing SLI in school-age CLD children. Participants will not be compensated and will have no personal benefits.

The questionnaire will last approximately 15 minutes. The researchers may request an email or contact number. The researcher will not contact all participants but may contact a participant if clarification of response is required. The researcher will negotiate a suitable time.

The potential risks involved in participating in this research have been minimized. Priority has been placed on maintaining participants' confidentiality, de-identifying the data, and identifying information that will not be reported in the final results. The questionnaire will be sent from a

reliable server. However, the possibility that responses could be viewed from unauthorized third parties (e.g., computer hackers) exists.

You can phone the Principal Investigator of this study, [Farzaana Moosa], at _____ at _____ if you have any questions about this study encounter any problems.

This study has been approved by Stellenbosch University (Project ID#:...). The study will be conducted according to the ethical guidelines and principles of South Africa's Department of Health Ethics in Health Research: Principles, Processes, and Studies (2015).

RIGHTS OF RESEARCH PARTICIPANTS:

You have the right to decline to answer any questions, and you can exit the survey at any time without giving a reason. If you have questions, concerns, or complaints regarding your rights as a research participant, please contact Estrelita Thomas (021 808 9184) at the Division for Research Development.

You will receive a copy of this information and a consent form for you to keep safe.

By clicking START SURVEY, you are confirming that you are:

- over 18 years old;
- have read and understood the above explanation about the study; and
 - you agree to participate
 - You also understand that your participation in this study is strictly voluntary.

Permission to have all anonymous data shared with journals:

When this study is finished, we would like to publish the study results in journals. The journal may require us to share your anonymous data before publishing the results. Therefore, we would like to obtain your permission to share your anonymous data with journals.

Tick the option you choose for anonymous data sharing with journals:

I agree to have my anonymous data shared with journals during the publication of the results of this study

OR

I do not agree to have my anonymous data shared with journals during the publication of the results of this study.

Permission for sharing data/information with other investigators:

In order to do the research, we have discussed, we must collect and store [describe the raw data that will be collected and stored] from people like you. Once we have done the research that we are planning for this research project, we would like to store your information for further research to be done in the future. Other investigators from all over the world can ask to use your data in future research [please indicate if the data will be transferred from South Africa, where the data will be stored, and who will have access to the data]. To protect your privacy, we will replace your name with a unique study number. We will only use this code for data/information about you. We will do our best to keep the code private. It is however always possible that someone could find out about your name, but this is very unlikely to happen. Therefore, we would like to ask for your permission to share your data/information with other investigators for future, related research.

Tick the option you choose for sharing your data/information with other investigators:

I do not want my data to be shared with other investigators

OR

My data may be shared with other investigators for further analysis and future research in a field related to ... [describe the field of your study]

Appendix J: Confirmation of Ethical Approval



14/03/2023

Project ID: 24463

Ethics Reference No: S22/02/029

Project Title: Language assessment practices in the diagnosis of Specific language impairment in school-age children from culturally and linguistically diverse backgrounds: A scoping review.

Dear Miss F Moosa

Your amendment request dated 24/02/2023 13:13 refers.

The Health Research Ethics Committee (HREC) reviewed and approved the amended documentation through an expedited review process.

The following amendment was reviewed and approved:

1. Protocol Amendment 1 dated 23 February 2023

Where to submit any documentation

Kindly note that the HREC uses an electronic ethics review management system, *Infonetica*, to manage ethics applications and ethics review process. To submit any documentation to HREC, please click on the following link: <https://applyethics.sun.ac.za>.

Please remember to use your project ID 24463 and ethics reference number S22/02/029 on any documents or correspondence with the HREC concerning your research protocol.

Yours sincerely,

Miss EL Rohland
Health Research Ethics Committee 1 (HREC1)

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)•REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372

Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:

IRB0005240 (HREC1)•IRB0005239 (HREC2)

The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the

World Medical Association (2013), Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects; the South African Department of Health (2006), Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015), Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.