

## A systematic review on recent literature on Screening tools for Developmental Language Disorder for children from 0-5 years old

**Damaskos Nikolaos**

SAERA. School of Advanced Education Research and Accreditation

### ABSTRACT

The importance of early intervention in speech and language of children with difficulties has been well documented. Early intervention for children 0-5 years old in risk of Developmental Language Disorder (DLD) proves to be challenging. We address the importance to communicate the need for reliable and valid screening tools for DLD, convergent with recent findings, and discuss implications deriving from the nature of the disorder and the lack of sufficient research data. Screening for preschool children is very common for Speech and Language Therapists, but it is not performed with standard practices, especially when considering professionals working in different countries.

**Keywords:** Developmental Language Disorder, Speech Delay, Screening Tools, Screening, Early Intervention, Protocols

## INTRODUCTION

### Screening for language disorders and speech and language delay

Screening is an essential part of assessment methods for speech and language therapists. Suspecting a Language Disorder (LD), or examining a child with Speech Delay (SD), leads to formal or informal methods of screening of spoken language skills. It should be noted that terminology provided across references throughout this thesis is characterized by a plethora of terms alongside LD, such as Language Impairment (LI), Developmental Language Disorder (DLD), and Specific Language Impairment (SLI). Developmental Language Disorder is a neuro-developmental condition that emerges in early childhood and in many cases persists into adulthood. Screening will be implemented to explore the need for further future assessment (American Speech-Language-Hearing Association, n.d.). Prevalence of DLD in a UK population study has been estimated about 7.58% (Norbury et al., 2016). Phonology, morphology, syntax, semantics, and pragmatics are all language areas that can be affected. The consequences for children facing developmental language disorders have been reported to result in academic difficulties (Tomblin et al., 2000), emotional or behavioural difficulties (Yew and O’Kearney, 2013), and longitudinal effects in social life (Mok et al., 2014). Warning signs of LD can be evident through different ages between preschool and school aged children. Therefore, it is important to identify such difficulties as early as possible and plan adequate intervention strategies.

Screening has also proven helpful to acknowledge the impact of global public health

restrictions introduced after the outbreak of the COVID 19 pandemic. Unrestricted development of communication skills and insufficient opportunities for communication, due to a larger than usual exposure of young children to screen time, have led many teachers to express their concerns in a report published by I CAN (2021). Catching up the potential of peers in communication is yet to be proven, but screening tools can prove advantageous, in order to identify potential difficulties or persistent problems.

Nonetheless, there is also an ongoing discussion on the efficacy of screening tools and as a result on early intervention strategies, regarding children with language disorders or speech delay. The time period that falls under the spotlight is under the age of five years old. Interestingly, the 2006 report of the US Preventive Services Task Force on Screening for speech and language delay in preschool children concluded that data on what it was claimed as key issues were not available. The study of screening aspects was also reported as inadequate, and subsequent trials of intervention were deemed as limited in terms of generalizability (Nelson et al., 2006). Updating evidence from the previous study, there was another review (Wallace et al., 2015), which in turn reported the ability of some screening tools to identify accurately children in need of diagnosis, and additionally the possibility that some of the intervention strategies applied may have been successful to a certain extent. By assessing the efficacy of universal screening for language and speech delay in children under 5, Jullien (2021), concludes in her study that there is not sufficient evidence, supporting the effects of early screening (primary care setting). No short-term or long-term effects were suggested

on the speech or language outcomes, even though no harm was either reported as a result of early screening. Findings in general seem to be inconclusive regarding such a delicate matter.

There is a tendency to acknowledge the efficacy of formal screening tests in distinguishing children that may be in need of further diagnosis, but lack of data, or studies that may be limited in design, or even perhaps have weaknesses in planning and execution have not yet led to solid findings.

### Concerns on Developmental Language Disorders

For many professionals in the field DLD is by nature compelling because of the many and different systems involved (Phonology - the speech sounds and rules for combining that make up words, Morphology - the rules for forming words or parts of words, Syntax - the rules for combining words into sentences, Semantics - the meaning of words and sentences, and Pragmatics - the rules for using language in social situations such as conversation). The overlapping nature of these systems also results in many and different language patterns in children with DLD. It would be a logical assumption that the plethora of language patterns manifested in DLD, make it difficult for non-professionals to recognize the symptoms. And yet the ability to recognize symptoms could lead to screening and possible intervention and in the long term more data available for future research.

It has long been described as an invisible disability (Patchell, and Hand, 1993), but since then not many things have changed on the way DLD is being perceived. Besides the numerous terms used to describe it in the past, recorded as many as 32 different terms in relevant

literature by Bishop (2014), there are also other factors that still render DLD an invisible disorder. The absence of physical signs in children with DLD, does not allow for anyone to speculate on the possibility of such a disorder. Daily communication and coping with familiar situations are going to be based on language skills that almost the majority of children with DLD will be able to develop. Only in cases of complex language demands will children with DLD start to show weaknesses and are required to put much effort. In a sample taken from children in Australia, who exhibited speech and language difficulties, the children with speech disorders were more likely to be diagnosed and be provided with treatment Skeat et al., 2010). Moreover, parents, the second group of adults beyond teachers, who are in a constant state of observing and comparing their children and their abilities to others, even they are not able to compare successfully the abilities of their children when it comes to language development or language abilities in general (Hendricks et al., 2019). But even in teachers it is interesting that even in older ages of elementary schools; they still remain without confidence, but most importantly without specific knowledge, on how to cope with DLD (Marshall et al., 2002).

In addition to the reasons on why DLD remains “unseen” the sense of professionals in the field that popular knowledge on that matter is low has to be validated again by facts. In reality many people might be able to provide information on autism, ADHD and dyslexia, but they do not succeed when faced with the term DLD. And even in some cases the information portrayed by people on DLD could be mistaken, as has been proven with the help of an online small scale survey in Australia (Kim et al., 2022). This particular lack of popularity, and especially knowledge on DLD, could be attributed to the

high rates of comorbidity prevalent in DLD with other disorders. Based on the idea that reading comprehension as a procedure requires children to exhibit sufficient abilities in both decoding and linguistic comprehension. Snowling et al. (2020), have found that indeed reading difficulties are present in children with dyslexia or DLD. High rates of co-occurrence have been also reported between DLD and ADHD, both very common developmental disorders (Mueller & Tomblin, 2012). And continuing with the relationship between DLD and autism, many commonalities have been discussed based on deficits exhibited in language and communication, but there have also been suggested possible links between them, perhaps the existence of a subgroup of children in the autism spectrum disorder that manifest language disorder (Georgiou & Spanoudis, 2021). It is not unusual for children being diagnosed with dyslexia, ADHD, and sometimes being diagnosed with DLD and after some years the initial diagnosis is changed to learning impairment. For Speech and Language Pathologists in school settings there have been reported limited diagnostic labelling or the use of terms descriptive to the situation, avoiding the term DLD (Ash et al., 2020). Educational constraints are common in that matter and further enhance the problem of public awareness on the topic of DLD.

The general attitude prevalent in the United States for example, treating DLD inside the educational procedure is at odds with how other “famous” developmental disorders are handled (e.g., ADHD, autism), which in turn will be diagnosed easily by a medical staff and treated alongside the educational procedure and not exclusively through education alone (McGregor, 2020). As a result, it further undermines the assessment efforts and the communication of

the need why more research is required in general around DLD.

### Research Objectives

For Speech and Language Therapists it is common practice to inform people on early identification signs, regarding the development of speech and language in children, and it is focused mainly in the time period 0 to 3 years old, or extending to the age of 5 years old, in order to achieve early identification and intervention, if needed (ASHA). Such a process, called screening can be performed either formally, or informally, and it will lead children identified as having difficulties to diagnostic procedures. But most notably, as shown by the 2006 report of the US Preventive Services Task Force, it remains to be proven:

1. The convergence between language screening tools for preschool ages and current developments in the study of preschool language development. Reliability and content.
2. Whether they can be administered in certain age groups.
3. Whether screening tool administration to children can be effective following certain rules.

### METHODS

A systematic search of studies was performed about screening in children with speech delay and language disorders, and early intervention related to screening. Language disorders and language difficulties were examined as terms, when describing the most recent term of Developmental Language Disorder, as declared in modern literature (Bishop et al., 2017). The search included literature until June 2022. The

focus was centred on the questions stated in the objectives of this study.

Source of the data was based on the search of relevant data in literature from 1998 until June 2002, and the following databases were examined: PubMed, ResearchGate. Search of relevant literature was based on the following keywords: Language delay; Preschool child; Speech delay; Screening; Developmental Language Disorder; Screening tools.

Data extraction included systematic reviews, meta-analyses, health technology assessments and primary observational studies. Studies reviewed would examine the reliability and validity of screening tools, risk factors in DLD and how screening outcomes were proven effective on early intervention. Relevant information on speech delay, and preschool screening was also included. The issue of bilingualism was excluded, since variables related to bilingualism, would be difficult to incorporate along current variables, and could also be examined separately. Selection criteria included the date of literature published (1998 to July 2022), age of children 0-5 years old (preschool), and had to be closely related to DLD.

### RESULTS

A total number of related articles of 7507 were retrieved for speech delay screening, 5956 were retrieved for screening for early speech intervention, and 32,359 were retrieved for language screening. After applying selection criteria, 14 literature reviews, 1 health technology assessment article, 15 independent experimental studies, 14 longitudinal studies, 2 online surveys, 3 meta-analysis studies, 2 comparative studies, 5 cross-sectional studies, 2 case control studies and 1 standardization

study. Studies selected were considered by the reviewer to be presenting a low risk bias.

Table 1 (Appendix) summarizes screening tools appropriate for language and categorized in an alphabetic manner, providing information regarding age appropriateness, specific area of assessment and type of tool.

### DISCUSSION

#### Concerns on speech and language delay

Regarding that sensitivity in cases of speech delay is higher than DLD, mainly because parent concerns are easily expressed in cases of children that have not started speaking when they are supposed to, or might present poor expressive or receptive vocabulary when compared to peers. It is understandable that the parents will seek professional medical advice.

Again, the same plethora of screening tools are available especially for English speaking children and will be used more readily in cases of speech delay or “late-talkers”. First of all, searching in current literature for a potential positive relationship between parental concerns and effective assessment, there is a lack of evidence. Only a study in Australia, regarding the language abilities of children between the ages of 4 and 5 and the concerns of their parents towards the children’s overall speech ability and in some cases their ability to understand instructions, showed a weak positive relationship after statistical analysis (McLeod & Harrison, 2009). Nonetheless, screening tools can be used with ease for assessing children with language and speech delay, even though accuracy may vary (Jullien, 2021), but without reporting enough evidence to support the usefulness of regular screening for language in primary care settings under the ages of 5 years old (Siu, 2015). A weak claim once more to support regular screening could be recorded, though, by examining the study completed by Schachinger-Lorentzon et

al. (2018). In their study 100 children, both monolingual and bilingual, were screened positively for language delay, when examined at the age of 2.5. They reported, while observing their language and overall development in detail, that 87% of the children later received diagnosis, based on ICD-10, for problems on both expressive and receptive language, and claiming to reveal the close relationship between screening positively for language delay and DLD. Only a small percentage of the initial 100 were diagnosed after the initial screen as late talkers.

Finally, in the case of children with speech and language delay that do not develop a DLD, they are characterized as late talkers due to late language emergence (LLE). And for some researches it could also be the case that another subgroup of children characterized in turn late bloomers (American Speech-Language-Hearing Association, n.d.). Even though there are minor differences between late talkers and late bloomers, there is an interesting approach of the first group by speech and language professionals. This interprofessional education/practice gap seems to establish a “wait and see” approach as described by Singleton (2018). According to Singleton’s study, persistent difficulties in late talkers should be closely monitored, due to the possibility of having potentially significant consequences during the development of children in that group, focusing more on effects in school readiness and socialization. The tendency that was found in DLD for under-research seems to be, to some extent, true in speech and language delay. Not enough evidence in modern literature is present to draw sound conclusions. On the other hand, children exhibiting signs of speech and language delay seem to enjoy more success as much as screening, and future assessment is concerned.

### Risk factors for speech and language development

Risk factors for DLD can be documented and examined, in a general form and perhaps later more specific to communication skills. General risk factors form a heterogeneous mixture. First of all, cognition and behavioural difficulties have been reported in children exposed to high levels of alcohol during pregnancy (Cone-Wesson, 2005), but it is difficult to report similar findings on substance abuse for the same period of life, like for example cigarettes. Fergusson and Lloyd (1991) have proposed that a better factor than exposure to cigarette smoke for DLD would be the socioeconomic status of the family. Drug abuse in pregnancy, such as cocaine could result to no clear association with language difficulties (Frank et al., 2001).

Hearing loss, either sensorineural, either conductive hearing loss are expected to pose risks for language development. Conductive hearing loss has a direct impact in the performance in speech and language (Harrison & McLeod, 2010). In the case though of sensorineural, the effects on language become more apparent at later stages of development (Ching et al., 2013).

Maternal age has also been highlighted as predictive factor for language in the study by Harrison and McLeod (2010). It has been further assessed by Goisis (2015), who determined an age threshold of 30-34, before which vocabulary scores increased along with maternal age and declined beyond that. Maternal influences language development through other pathways as well. Mental health of mothers, and more specifically depression, limits the verbal interaction between a mother and her child/children, and even though is not portrayed as a strong risk factor it should be considered (Clifford et al., 2021).

Premature birth has been reported by Stipdonk et al. (2018) to be associated with atypical brain and language development, when children were born before 37 weeks of pregnancy.

Biological sex poses a small factor but is still reliable for language development. Girls seem to exhibit increased language skills when compared to boys at a very young age (Harrison & McLeod, 2010; Roy et al., 2005).

Family history of language difficulties is significantly related to poor language scores in children (Kalnak et al., 2012). For Collison et al. (2016), among other factors was also suggested as statistically significant. Another influence inside families of language development relies on socioeconomic status. The Hart & Risley (1995) study claimed a huge word gap at the age of 4, between children from higher socioeconomic status when compared to children from low status. It has been criticized over the past years, but it is still mentioned. But again, abandoning the comparisons in socioeconomic aspect, and focusing on the level of education of parents, it seems that higher levels of education influence the size of children's vocabulary (Rowe et al., 2012).

Other everyday factor, as for example exposure to screentime, seems to negatively influence language development, when compared to experiences gained in other ways (Anderson & Pempek, 2005). It is very interesting on the other hand that parents engaging with children while exposed to screentime, may alleviate some of the negative effects (Zimmerman et al., 2009).

Childcare attendance has a positive effect on language development (Collison et al., 2016). Skills associated to communication have produced more language oriented predictors such as vocabulary. Limited vocabulary poses risks in future language development (Dale et al., 2003), since it potentially leads to persistent difficulties from the age of 2 to 4 years old. Morgan, and Wren (2018) based their study in qualitative differences in canonical babbling patterns when compared to peers. The absence or delay of babble was found to be a risk of persistent language difficulties. Finally, Rice (2013) commented on poor use of grammatical

structures among peers, serving also as a potential risk factor for language difficulties.

### Screening tools

Screening plays a fundamental role before comprehensive assessment, as it is not designed to result in diagnosis, rather than identify children with speech and language difficulties. Although it is common practice to hand out standardized screening assessments to children for Speech and Language Pathologists, there is a never ending list of such type of screening, with different characteristics and different orientation. Therefore, it would be useful to provide the first selection criterion for screening tools for language, that is between universal or global and communication oriented. A universal screener is designed to assess in a brief period of time, key abilities which are critical for the development of children, and therefore determines the children that might be in need of intervention, but cannot allow choosing the intervention strategy that is going to be implemented. As reported in IDA (2020): "Universal screening tools have the following characteristics:

- Quick and targeted assessments of discrete skills that indicate whether students are making adequate progress in reading achievement
- Alternate equivalent forms so they can be administered three to four times a year
- Standardized directions for administration and scoring
- Have established reliability and validity standards"

For example, a universal screener could examine various areas, such as cognition, gross and fine motor, self-help and behavioural/emotional performance. Whereas in screeners dedicated to assess language domains, communication, the focus is driven only to key areas such as morphology, semantics, phonology and pragmatics. In addition, key elements form universal

screeners, and could also be examined through other dedicated screeners, for example with a dedicated screener for cognition, or gross and fine motor skills.

Another type of categorization should be between standardized and non-standardized screening tools. Moreover, the American Speech and Hearing Association have defined what constitutes a standardized assessment and two different subgroups norm-referenced and criterion-referenced.

“Standardized assessments are empirically developed evaluation tools with established statistical reliability and validity. Norm-referenced tests are standardized tests designed to compare and rank test takers in relation to one another. Criterion-referenced tests are standardized tests that measure an individual's performance against a set of predetermined criteria or performance standards (e.g., descriptions of what an individual is expected to know or be able to do at a specific stage of development or level of education).” (ASHA, n.d.)

Common practice though among speech and language professionals while administering screening tools, do not rely so often as it should be expected, on standardized procedures. It has been demonstrated that standardized tests, carefully based on certain psychometric measures, are not so often being used in common practice by SLPs, and there is a tendency to select screeners even without validity or reliability (Betz et al., 2013). A logical explanation could be the enormous commercial presentation of many screeners developed through the past decades, and maybe even just the absolute number of tests available, which can be simply overwhelming for any practitioner. As a consequence, it would be helpful to demonstrate and record, even not in an exhaustive manner, rather than in brief and plain manner groups of standardized screeners divided into two groups, universal and speech and language specific.

Another issue that has to be discussed is the current ability of screening tools available for

speech and language in cases of bilingualism. Standardized screeners are not as successful when determining the state of language abilities for bilingual children (Gathercole, 2010). Though it has been possible to yield satisfactory results when comparing scores of bilingual children to typical development, by combining semantic scores from both languages (Peña et al., 2016), it is yet to be portrayed that it will succeed in better classification for bilingual children with or without impairment. Specifically, this chapter will not be analysed or addressed in this review but it adds strength to the claim for more future research, while evaluating current language screening tools or designing new ones.

Table 1 (Appendix) exhibits many screening tools available for English speaking children, and it can be seen that they are characterized by a great diversity in the targeted age span, the areas of assessment and different characteristics, such as standardized, norm-referenced or criterion referenced. Of course, a professional has to be informed about all these characteristics, but even when discussing about particular areas of language to be examined, it is hard to determine with detail. Assessment of articulation, phonology, vocabulary, language comprehension or expression and many more, reveal that it could be challenging to address the needs of small children. Screening tools for areas beside language in preschool children do seem to target specific language skills, but again without any great resemblance in the area of focus. Studies involved in this review discuss that the absence of babbling in children can be serve as an indicator for future language screening, since children who have not babbled can be at risk for developing persisting language difficulties (Morgen & Wren, 2018). Theories that claim the importance vocal or even gestural precursors to language development have been tested in order to determine how they influence the emergence of words (McGillion et al., 2017). In their study, 46 infants were assessed monthly between the ages of 9 and 18 months, in order



to test for the interaction between babbling, pointing and word production, claiming the importance of examining early phonological development as an important step for future word acquisition.

Babbling was the first factor to be discussed and as a result identifying the presence and the quality of babbling in babies 7-8 months (Morgan & Wren, 2018) could be used as an indicator. Babbling was proven in many studies to occur almost the same time period with use of gesture, and both could serve as indicators for future risk of language difficulties.

As early vocalizations have been proposed as indicators of future vocabulary growth in preschool children, interest has been also documented on gestures. It is noted that according to Bates (1976), children produce typical deictic gestures between 8 and 12 months, which is extremely close to the time period children produce babbling. Studies have documented many interactions between the use of gesture in children and later language development. Words that are being produced with gestures are predicted to enter first a child's vocabulary (Iverson & Goldin-Meadow, 2005). One more time such skill proves to predict vocabulary size, since at the age of 14 months the gestures produced by children, predict vocabulary size at 42 months (Rowe et al. 2008). In addition, the number of gestures used synchronous to speech at 18 months influences the complexity of sentences used at the age of three years old (Rowe & Goldin-Meadow, 2009b).

Besides gesture and babbling, vocabulary growth has also been linked to later development of language difficulties in children (Rowe et al., 2012). In this longitudinal study vocabulary growth between the ages of 14 and 46 months, has been assessed and used different estimates as predictors for children's vocabulary at 54 months. At 30 months it was claimed that speed and acceleration of vocabulary acquisition was correlated to later vocabulary development. McGregor et al.

(2013), have discussed in more detail the significance of breadth and depth in children's vocabulary by comparing the oral definitions produced between children with a diagnosis of language impairment and children with normally developing language, across grades 2, 4, 8, and 10. The poverty of vocabulary in children was in all cases characteristic and the language difficulties proved persistent during development. Early word learning has been and word acquisition later in infancy has been also been explored by Mayor & Plunkett (2010), proposing a neurocomputational model after processing data gathered from research in the past 20 years. But in this study, besides presenting the rapid growth of vocabulary, from a mean of 73.8 words at 16 months, to a mean of 1313.6 at the age of two years and six months, it is also shown how this process is to be better explored by taking under consideration other variables as well, highlighting the complex nature of this attribute.

Another useful attempt to determine whether documenting vocabulary acquisition in children could rely in evaluating the mean length of utterance (MLU), has to be examined. But evidence based on two studies by Rice (2012, 2013), lead to the conclusion that it could be misleading. Children with DLD seem to be able to perform as their peers. Nonetheless, attempts to document the vocabulary acquisition gap could serve screening, but only as weak indicator.

Rudolph & Leonard (2016) have focused in word combinations. In their study they compared later performance of children who had missed developmental milestones, aged 4 to 7 years old. Word combination has proven as an indicator for children with DLD.

Other studies are examining the use of morphological skills to establish differences in language development between children with DLD and normally developing children. Hadley and Short (2005) have stated that tense morphemes are established by the age of 3

years old. As a result, tense morphemes could indicate potential language difficulties. A follow up longitudinal study by Rispoli et al. (2012) has further investigated the efficacy of copula BE as an indicator beyond the age of 27 months, when compared to others.

It is important to consider how screening measures are performed as well. Screening for preschool children requires experience, some screening tests shown in Table 1 (Appendix) also require training, so as to achieve better outcomes when dealing with the targeted population. There have also been screening tools, developed for parents. Rescorla, and Alley (2001) while validating a parental tool for the identification of language delay exhibited high reliability and also high correlation with Reynell Receptive and Expressive Language Scale scores, Bayley Mental Development Index, and Vineland Adaptive Behaviour Composite. Significant components for screening tools based on parents, should nonetheless exhibit comparable sensitivity and specificity as typical screening tools administered by professionals. By testing a sample of 64 children, clinical evaluations were performed one month after the screening and again one year after, Klee et al. (2000) presented a high rate of success in identifying 2 year old children with language delay, even though they report a degree of caution regarding the phenomenon of over referral. Ebert (2017) interestingly explored and reported high convergence between parent report and direct clinical assessment; even though the purpose of the study is stated as not to compare these two types directly. Such a direct attempt to measure differences between clinical lead screening and parental reports can be seen in Bennets et al. (2016). They reported that parents would tend to produce similar results to clinical reports, but only in relation to the severity of the language difficulties. For poor or extremely language abilities for children of 24 months, reports made by parents were agreeing to the results pointed out by clinical observations.

### Protocols for screening of early language development

The literature review by So & To (2022) was combined with meta-analytical techniques in evaluating the screening accuracy. It is beyond its limitations novel in cultivating through discussion, future practices and adjustments to screening tools for language development. Once again it is pointed out that current tools can vary significantly in their design and their performance. A second conclusion useful to the effort of adopting practical, evidence-based and accurate tools is that rather than focusing on clinical markers, language ability alone should be taken under consideration. Result reliability can remain the same even when parents are those responsible to administer screeners and report findings. As stated by the authors "Overall, only a small proportion of all the available screening tools achieved good accuracy in identifying both children with and without language disorder", leading to thoughts for possible development of new screening methods in the future.

Therefore, after taking those considerations it would be important to respond to the following questions. 1. Convergence between available screening tools and current literature developments. 2. Is there an age when screening would be optimal? 3. What procedure should be followed when administering screening tools?

1. Having already discussed a list of risk factors related to DLD, focus should be shifted once more to the risk factors that are more related to communication. Babbling was the first factor to be discussed and as a result identifying the presence and the quality of babbling in babies 7-8 months (Morgan & Wren,

2018) could be used as an indicator. Babbling was proven in many studies to occur almost the same time period with use of gesture, and both could serve as indicators for future risk of language difficulties. Vocabulary and grammatical markers should be taken under similar consideration. In another review (Sansavini et al., 2021) more factors are recorded as useful, such as absence of word combinations, poor comprehension, and absence of gestures between the ages of 2 and 3 years old, impaired syntactic comprehension, and absence of two-word combinations by the age of 30 months. Many screening tools can be more oriented to specific language domains can prove unable to detect children at risk. A possible solution could be future design of language screening tools, that take under consideration parent information and evaluate targeted expressive language abilities as described.

2. Ghasabian et al. (2014) compared two groups of children, the first being identified for language difficulties at 18 months, and the second one at the age of 2 years and 6 months. The second group was found to exhibit persistent language difficulties, even at the age of 6 years old. As a result, the age of 2:6 years would be reliable and at the same time have an effect on speech and language outcomes. By 3 years old reliability is better but no accurate predictions can be made yet (Law et al., 2012). Examining a possible optimal age of screening at 4 years old, should take under consideration that by that age many children are at risk of manifesting problems in education. Moreover, effects of intervention techniques tend to minimize after the age of 4 years old (McKean et al., 2017). So, ages between 2 and 4 are shown as potentially optimal, with perhaps the age of 2:6 years old, slightly beneficial when compared to the rest. Sansabini et al. (2021) report optimal

screening ages between 2-3 years old and optimal diagnosis around the age of 4 years old.

3. The use of known risk factors alongside assessment tools would be even more helpful in identifying children that would benefit from intervention (Levickis et al., 2014). Assessment tools administration should be repeated, since there has been evidence of ongoing monitoring to be beneficial in the predictive validity of a tool (Klee et al., 1998). Dynamic assessment would help children with more help regarding their language (Camilleri & Law, 2014). Lastly, focus on prevention rather than solely on screening should be explored.

### CONCLUSION

Screening for language disorders is fundamental for early diagnosis. Recent developments along with the number of screening tools available have to be synchronized. Screening tools seem to target vocabulary development already, but there is evidence about cases in which children could be considered at risk of DLD. Moreover, certain language domains serve as predictors, but more research is needed in order to explore these predictors and present underlying mechanisms in typical language development. Professional practice in screening is crucial, but screening should be seen as a continuous process, taking under consideration reliable parent and caregiver information. Perhaps, future development of screening tools serving the need for language screening between the ages of 2 and 4 years old, offering the option of administering many times in short time periods. Even before the suggested optimal age of screening for language, prevention should also be considered as an option.

## CONCLUSION

Relevance between emotional/psychological trauma and its effect on the nervous system, and overall health and wellbeing, is not a new area of research. This review has summoned studies that indicate on long term effects of trauma on physical, emotional and cognitive behaviour and performance. Survivors of this type of trauma often have difficulties integrating in the society, having stable relationships, being able to support themselves financially, develop professionally and they often suffer from multiple physical issues like high blood pressure, heart disease, psychiatric conditions, insomnia, diabetes, etc. Considering that nervous system runs throughout the physical body and regulates function of inner organs (autonomic nervous system), the consequences can be dire. This all creates burden on the very individual who survived trauma, their families and communities.

Being alive is stressful and trauma seems to be unavoidable part of life. The real question is if this much trauma happening around the whole world is avoidable to much greater degree than it seems. Trauma is being handed down from one generation to the other, perpetuating problems in the family and society as a whole. Resolving trauma with mindfulness, emotional release, or a somatic psychotherapy approach that addresses body and mind can make a difference in the world. More studies in this area are needed in order to document measurable effectiveness of somatic therapies on PTSD and its symptoms. The presented review can contribute to stimulation of the interest of various health care providers for a more integrative approach to treating presenting ailments of their patients.

## REFERENCES

1. American Speech-Language-Hearing Association (n.d.). Assessment Tools, Techniques, and Data Sources. (Practice Portal). Retrieved September, 2, 2022, from <https://www.asha.org/practice-portal/clinical-topics/late-language-emergence/assessment-tools-techniques-and-data-sources/>
2. American Speech-Language-Hearing Association (n.d.). Early Identification of Speech, Language, and Hearing Disorders. Retrieved September 27, 2022, from <https://www.asha.org/public/early-identification-of-speech-language-and-hearing-disorders/>
3. American Speech-Language-Hearing Association (n.d.). Spoken Language Disorders. (Practice Portal). Retrieved September, 27, 2022, from [www.Practice-Portal/Clinical-Topics/Spoken-Language-Disorders](http://www.Practice-Portal/Clinical-Topics/Spoken-Language-Disorders).
4. American Speech-Language-Hearing Association (n.d.). Late Language Emergence. (Practice Portal). Retrieved September, 27, 2022, from [www.Practice-Portal/Clinical-Topics/Spoken-Language-Disorders](http://www.Practice-Portal/Clinical-Topics/Spoken-Language-Disorders).
5. Anderson, D. R., & Pempek, T. A. (2005) 'Television and very young children', *American behavioural scientist*, 48(5), 505-522.
6. Ash, A. C., Christopoulos, T. T., & Redmond, S. M. (2020). "Tell Me About Your Child": A Grounded Theory Study of Mothers' Understanding of Language Disorder. *American journal of speech-language pathology*, 29(2), 819–840.
7. Bennetts, S. K., Mensah, F. K., Westrupp, E. M., Hackworth, N. J., &

- Reilly, S. (2016). The Agreement between Parent-Reported and Directly Measured Child Language and Parenting Behaviors. *Frontiers in psychology, 7*, 1710.
8. Bates, E. (1976). *Language and Context: The Acquisition of Pragmatics*. New York, NY: Academic Press.
  9. Betz, S. K., Eickhoff, J. R., & Sullivan, S. F. (2013). Factors influencing the selection of standardized tests for the diagnosis of specific language impairment. *Language, speech, and hearing services in schools, 44*(2), 133–146.
  10. Bishop D. V. (2014). Ten questions about terminology for children with unexplained language problems. *International journal of language & communication disorders, 49*(4), 381–415.
  11. Bishop, D., Snowling, M. J., Thompson, P. A., Greenhalgh, T., & and the CATALISE-2 consortium (2017). Phase 2 of CATALISE: a multinational and multidisciplinary Delphi consensus study of problems with language development: Terminology. *Journal of child psychology and psychiatry, and allied disciplines, 58*(10), 1068–1080.
  12. Camilleri, B., & Law, J. (2014). Dynamic assessment of word learning skills of pre-school children with primary language impairment. *International journal of speech-language pathology, 16*(5), 507–516.
  13. Capone Singleton N. (2018). Late Talkers: Why the Wait-and-See Approach Is Outdated. *Pediatric clinics of North America, 65*(1), 13–29.
  14. Ching, T. Y. C., Dillon, H., Marnane, V., Hou, S., Day, J., Seeto, M., Crowe, K., Street, L., Thomson, J., VanBuynder, P., Zhang, V., Wong, A., Burns, L., Flynn, C., Cupples, L., Cowan, R.S.C., Leigh, G., Sjahalam-King, J. and Yeh, A. (2013) 'Outcomes of early- and late-identified children at 3 years of age: Findings from a prospective population-based study', *Ear and hearing, 34*(5), pp. 535–552.
  15. Clifford, B. N., Stockdale, L. A., Coyne, S. M., Rainey, V., & Benitez, V. L. (2022). Speaking of State of Mind: Maternal Mental Health Predicts Children's Home Language Environment and Expressive Language. *Journal of child language, 49*(3), 469–485.
  16. Collisson, B. A., Graham, S. A., Preston, J. L., Rose, M. S., McDonald, S., & Tough, S. (2016). Risk and Protective Factors for Late Talking: An Epidemiologic Investigation. *The journal of pediatrics, 172*, 168–174.e1.
  17. Cone-Wesson B. (2005). Prenatal alcohol and cocaine exposure: influences on cognition, speech, language, and hearing. *Journal of communication disorders, 38*(4), 279–302.
  18. Dale, P. S., Price, T. S., Bishop, D. V., & Plomin, R. (2003). Outcomes of early language delay: I. Predicting persistent and transient language difficulties at 3 and 4 years. *Journal of speech, language, and hearing research: JSLHR, 46*(3), 544–560.
  19. Ebert, K. D. (2017). Convergence between parent report and direct assessment of language and attention in culturally and linguistically diverse children. *PLoS one, 12*(7), e0180598.
  20. Fergusson, D. M., & Lloyd, M. (1991). Smoking during pregnancy and its effects on child cognitive ability from

- the ages of 8 to 12 years. *Paediatric and perinatal epidemiology*, 5(2), 189–200.
21. Frank, D. A., Augustyn, M., Knight, W. G., Pell, T., & Zuckerman, B. (2001). Growth, development, and behavior in early childhood following prenatal cocaine exposure: a systematic review. *JAMA*, 285(12), 1613–1625.
  22. Gathercole, V. (2010). Bilingual children: Language and assessment issues for educators. *Handbook of psychology in education* (pp.713-748)
  23. Georgiou, N., & Spanoudis, G. (2021). Developmental Language Disorder and Autism: Commonalities and Differences on Language. *Brain sciences*, 11(5), 589.
  24. Ghassabian, A., Rescorla, L., Henrichs, J., Jaddoe, V.W., Verhulst, F.C. and Tiemeier, H. (2014). 'Early lexical development and risk of verbal and nonverbal cognitive delay at school age'. *Acta paediatrica*, 103(1), pp. 70-80.
  25. Gladfelter, A., & Leonard, L. B. (2013). Alternative tense and agreement morpheme measures for assessing grammatical deficits during the preschool period. *Journal of speech, language, and hearing research : JSLHR*, 56(2), 542–552.
  26. Goisis, A. (2015). How Are Children of Older Mothers Doing? Evidence from the United Kingdom. *Biodemography and social biology*, 61(3), 231–251.
  27. Hadley, P. A., & Short, H. (2005). The onset of tense marking in children at risk for specific language impairment. *Journal of speech, language, and hearing research : JSLHR*, 48(6), 1344–1362.
  28. Harrison, L. J., & McLeod, S. (2010). Risk and protective factors associated with speech and language impairment in a nationally representative sample of 4- to 5-year-old children. *Journal of speech, language, and hearing research : JSLHR*, 53(2), 508–529.
  29. Hendricks, A. E., Adlof, S. M., Alonzo, C. N., Fox, A. B., & Hogan, T. P. (2019). Identifying Children at Risk for Developmental Language Disorder Using a Brief, Whole-Classroom Screen. *Journal of speech, language, and hearing research : JSLHR*, 62(4), 896–908.
  30. I CAN. (2021) Speaking up for the Covid Generation, (Accessed 12 September 2022).
  31. International Dyslexia Association (IDA). (2020). Universal Screening: K–2 Reading. Retrieved September, 10, 2022, from <https://dyslexiaida.org/universal-screening-k-2-reading/>
  32. Iverson, J. M., & Goldin-Meadow, S. (2005). Gesture paves the way for language development. *Psychological science*, 16(5), 367–371.
  33. Jullien, S. (2021). Screening for language and speech delay in children under five years. *BMC pediatrics*, 21(Suppl 1), 362.
  34. Kalnak, N., Peyrard-Janvid, M., Sahlén, B., & Forsberg, H. (2012). Family history interview of a broad phenotype in specific language impairment and matched controls. *Genes, brain, and behavior*, 11(8), 921–927.
  35. Kim, J.-H., Davies, B., & Xu Rattanasone, N. (2022). Have You Heard of Developmental Language Disorder? An Online Survey. *Communication disorders quarterly*, 0(0).
  36. Klee, T., Carson, D. K., Gavin, W. J., Hall, L., Kent, A., & Reece, S. (1998).

- Concurrent and predictive validity of an early language screening program. *Journal of speech, language, and hearing research : JSLHR*, 41(3), 627–641.
37. Klee, T., Pearce, K., & Carson, D. K. (2000). Improving the positive predictive value of screening for developmental language disorder. *Journal of speech, language, and hearing research : JSLHR*, 43(4), 821–833.
  38. Law, J., Rush, R., Anandan, C., Cox, M., & Wood, R. (2012). Predicting language change between 3 and 5 years and its implications for early identification. *Pediatrics*, 130(1), e132–e137.
  39. Levickis, P., Reilly, S., Girolametto, L., Ukoumunne, O. C., & Wake, M. (2014). Maternal behaviors promoting language acquisition in slow-to-talk toddlers: prospective community-based study. *Journal of developmental and behavioral pediatrics : JDBP*, 35(4), 274–281.
  40. Marshall, J., Ralph, S., and Palmer, S. (2002). 'I wasn't trained to work with them: mainstream teachers' attitudes to children with speech and language difficulties. *International Journal of Inclusive Education*, 6(3), 199-215.
  41. Mayor, J., & Plunkett, K. (2010). A neurocomputational account of taxonomic responding and fast mapping in early word learning. *Psychological review*, 117(1), 1–31.
  42. McGillion, M., Herbert, J. S., Pine, J., Vihman, M., dePaolis, R., Keren-Portnoy, T., & Matthews, D. (2017). What Paves the Way to Conventional Language? The Predictive Value of Babble, Pointing, and Socioeconomic Status. *Child development*, 88(1), 156–166.
  43. McGregor K. K. (2020). How We Fail Children With Developmental Language Disorder. *Language, speech, and hearing services in schools*, 51(4), 981–992.
  44. McGregor, K. K., Oleson, J., Bahnsen, A., & Duff, D. (2013). Children with developmental language impairment have vocabulary deficits characterized by limited breadth and depth. *International journal of language & communication disorders*, 48(3), 307–319.
  45. McKean, C., Reilly, S., Bavin, E. L., Bretherton, L., Cini, E., Conway, L., Cook, F., Eadie, P., Prior, M., Wake, M., & Mensah, F. (2017). Language Outcomes at 7 Years: Early Predictors and Co-Occurring Difficulties. *Pediatrics*, 139(3), e20161684.
  46. McLeod, S., & Harrison, L. J. (2009). Epidemiology of speech and language impairment in a nationally representative sample of 4- to 5-year-old children. *Journal of speech, language, and hearing research : JSLHR*, 52(5), 1213–1229.
  47. Mok, P. L., Pickles, A., Durkin, K., & Conti-Ramsden, G. (2014). Longitudinal trajectories of peer relations in children with specific language impairment. *Journal of child psychology and psychiatry, and allied disciplines*, 55(5), 516–527.
  48. Morgan, L. & Wren, Y.E. (2018) 'A systematic review of the literature on early vocalizations and babbling patterns in young children', *Communication disorders quarterly*, 40(1), pp. 3-14.

49. Mueller, K. L., & Tomblin, J. B. (2012). Examining the comorbidity of language disorders and ADHD. *Topics in language disorders, 32*(3), 228–246.
50. Nelson, H. D., Nygren, P., Walker, M., & Panoscha, R. (2006). Screening for speech and language delay in preschool children: systematic evidence review for the US Preventive Services Task Force. *Pediatrics, 117*(2), e298–e319.
51. Norbury, C. F., Gooch, D., Wray, C., Baird, G., Charman, T., Simonoff, E., Vamvakas, G., & Pickles, A. (2016). The impact of nonverbal ability on prevalence and clinical presentation of language disorder: evidence from a population study. *Journal of child psychology and psychiatry, and allied disciplines, 57*(11), 1247–1257.
52. Patchell, F., & Hand, L. (1993). An invisible disability: Language disorders in high school students and the implications for classroom teachers. *Independent education*.
53. Peña, E. D., Bedore, L. M., & Kester, E. S. (2016). Assessment of language impairment in bilingual children using semantic tasks: two languages classify better than one. *International journal of language & communication disorders, 51*(2), 192–202.
54. Rice, M. L. (2012). Toward epigenetic and gene regulation models of specific language impairment: looking for links among growth, genes, and impairments. *Journal of neurodevelopmental disorders, 4*(27).
55. Rice, M. L. (2013) 'Language growth and genetics of specific language impairment', *International journal of speech-language pathology, 15*(3), 223-233.
56. Rispoli, M., Hadley, P. A., & Holt, J. K. (2012). Sequence and system in the acquisition of tense and agreement. *Journal of speech, language, and hearing research : JSLHR, 55*(4).
57. Rowe, M. L., & Goldin-Meadow, S. (2009). Early gesture selectively predicts later language learning. *Developmental science, 12*(1), 182–187.
58. Rowe, M. L., Özçalışkan, S., & Goldin-Meadow, S. (2008). Learning words by hand: Gesture's role in predicting vocabulary development. *First language, 28*(2), 182–199.
59. Rowe, M. L., Raudenbush, S. W., & Goldin-Meadow, S. (2012). The pace of vocabulary growth helps predict later vocabulary skill. *Child development, 83*(2), 508–525.
60. Roy, P., Kersley, H. and Law, J. (2005) 'The Sure Start Language Measure Standardisation Study', *Great Britain, Department for Education and Skills*.
61. Rudolph, J. M., Leonard, L., B. (2016). Early Language Milestones and Specific Language Impairment. *Journal of early intervention, 38*(1).
62. Sansavini, A., Favilla, M. E., Guasti, M. T., Marini, A., Millepiedi, S., Di Martino, M. V., Vecchi, S., Battajon, N., Bertolo, L., Capirci, O., Carretti, B., Colatei, M. P., Frioni, C., Marotta, L., Massa, S., Michelazzo, L., Pecini, C., Piazzalunga, S., Pieretti, M., Rinaldi, P., Lorusso, M. L. (2021). Developmental Language Disorder: Early Predictors, Age for the Diagnosis, and Diagnostic Tools. A Scoping Review. *Brain sciences, 11*(5), 654.
63. Schachinger-Lorentzon, U., Kadesjö, B., Gillberg, C., & Miniscalco, C. (2018).



- Children screening positive for language delay at 2.5 years: language disorder and developmental profiles. *Neuropsychiatric disease and treatment*, 14, 3267–3277.
64. Siu, A. L., & US Preventive Services Task Force (2015). Screening for Speech and Language Delay and Disorders in Children Aged 5 Years or Younger: US Preventive Services Task Force Recommendation Statement. *Pediatrics*, 136(2), e474–e481.
65. Skeat, J., Eadie, P., Ukoumunne, O., & Reilly, S. (2010). Predictors of parents seeking help or advice about children's communication development in the early years. *Child: care, health and development*, 36(6), 878–887.
66. Snowling, M. J., Hayiou-Thomas, M. E., Nash, H. M., & Hulme, C. (2020). Dyslexia and Developmental Language Disorder: comorbid disorders with distinct effects on reading comprehension. *Journal of child psychology and psychiatry, and allied disciplines*, 61(6), 672–680.
67. Stipdonk, L. W., Franken, M., & Dudink, J. (2018). Language outcome related to brain structures in school-aged preterm children: A systematic review. *PLoS one*, 13(6), e0196607.
68. So, K., & To, C. (2022). Systematic Review and Meta-Analysis of Screening Tools for Language Disorder. *Frontiers in pediatrics*, 10, 801220.
69. Thomas, S., Schulz, J., & Ryder, N. (2019). Assessment and diagnosis of Developmental Language Disorder: The experiences of speech and language therapists. *Autism & developmental language impairments*, 4.
70. Tomblin, J. B., Zhang, X., Buckwalter, P., & Catts, H. (2000). The association of reading disability, behavioral disorders, and language impairment among second-grade children. *Journal of child psychology and psychiatry, and allied disciplines*, 41(4), 473–482.
71. Wallace, I. F., Berkman, N. D., Watson, L. R., Coyne-Beasley, T., Wood, C. T., Cullen, K., & Lohr, K. N. (2015). Screening for Speech and Language Delay in Children 5 Years Old and Younger: A Systematic Review. *Pediatrics*, 136(2), e448–e462.
72. Yew, S. G., & O'Kearney, R. (2013). Emotional and behavioural outcomes later in childhood and adolescence for children with specific language impairments: meta-analyses of controlled prospective studies. *Journal of child psychology and psychiatry, and allied disciplines*, 54(5), 516–524.
73. Zimmerman, F. J., Gilkerson, J., Richards, J. A., Christakis, D. A., Xu, D., Gray, S., & Yapanel, U. (2009). Teaching by listening: the importance of adult-child conversations to language development. *Pediatrics*, 124(1), 342–349.

APPENDIX

Table 1. Language Screening Tests

Test	Appropriate Age	Assessment	Type
Ages and Stages Questionnaire (ASQ)	4 months to 48 months old.	Areas screened include gross motor, fine motor, communication, personal-social, and problem-solving.	There are 3 versions. The test was standardized. Reliability and validity are included in the manual.
Assessment Link Between Phonology and Articulation – Revised (ALPHA)	3-8 years	Delayed sentence imitation test assessing children’s use of 15 phonological processes in 50 target words.	Norm-referenced; provides standard scores and percentiles.
Assessment of Literacy and Language (ALL)	PreK – Grade 1 Norms only.	Identify language disorders early that could lead to reading difficulties. ALL assesses spoken language and written language skills, including listening comprehension, vocabulary, semantics, syntax, phonological awareness, alphabetic principle/phonics and concepts about print.	Provides norm-referenced scores for subtests and criterion-referenced scores for supplemental components.
Bankson Language Test – Second Edition (BLT-2)	3 – 6.11 years.	Assesses semantic knowledge, morphological/syntactical rules and pragmatics. A short form is available for screening.	Norm-referenced; provides standard scores and percentile ranks.

## SAERA - RESEARCH ARTICLE

Bankson-Bernthal Test of Phonology (BBTOP)	3 – 9 years.	Assesses articulation and phonology. Provides scores in word inventory, consonant inventory and phonological process inventory areas.	Standardized, norm-referenced.
Bayley Scales of Infant Development (BSID-II)	One month to 42 months old.	The BSID-II consists of three scales: mental, motor and behavior rating scales.	Standardized, norm-referenced.
Bracken School Readiness Assessment (BSRA)	2.6 – 7.11 years.	Adaptation of the Bracken Basic Concept Scale–Revised, measures concept development and receptive language skills to evaluate school readiness.	Norm-referenced; provides age-based standard scores and composite percentile ranks. Allows for the development of local norms. Includes parent-teacher conference form.
Carolina Picture Vocabulary Test	4 – 11.6 years.	Assesses receptive sign vocabulary of deaf and hearing impaired children.	Norm-referenced; provides scaled scores, percentile ranks and age-equivalent scores.
Children’s Speech Intelligibility Measure (CSIM)	3 – 10 years.	Used to establish baseline information regarding intelligibility and to monitor progress during articulation/phonological treatment.	With more than 100 versions of the stimulus list provided, a child can be tested frequently using a different word list. Norm-referenced; provides percentage scores.
Clinical Assessment of Articulation and Phonology (CAPP™)	2.6 – 8.11 years.	CAAP includes an articulation inventory to assess consonant inventory targets. Additionally, two phonological process checklists evaluate articulation accuracy in 10 phonological processes.	Norm-referenced; provides standard scores, percentile ranks and age equivalents.

## SAERA - RESEARCH ARTICLE

Clinical Evaluation of Language Fundamentals – Preschool – Fourth Edition (CELF-Preschool 4)	3 – 6 years.	Comprehensive assessment of language skills with flexible administration options allowing for brief assessment. Composite scores include language structure, language content, language memory and working memory.	Screening version available. Norm-referenced; provides standard scores and percentiles.
Comprehensive Assessment of Spoken Language (CASL)	3 – 21 years.	Comprehensive oral language assessment battery. 15 tests measure language comprehension, expression and retrieval in four language categories: lexical/semantic, syntactic, supralinguistic and pragmatic.	Norm-referenced; provides age and grade-based standard scores, percentiles.
Comprehensive Receptive and Expressive Vocabulary Test – Second Edition (CREVT-2)	4 – 89 years.	Efficient assessment of both receptive and expressive vocabulary. Features full-colour photographs used in the receptive scale. Vocabulary items are related to familiar concepts and are researched to eliminate biased items.	Standardized, norm-referenced.
Computerized Articulation and Phonology Evaluation System (CAPES™)	2 years – adult.	Computerized assessment used to analyse articulation and phonology. Tests single-word production through photoelicitation or conversation. Provides engaging photos and videos of real people and objects. Includes option for recording and playback.	Norm-referenced.
Evaluating Acquired Skills in Communication – Revised (EASIC)	3 months – 8 years.	Assesses communication skills of children with severe language impairments and assists in planning appropriate therapy. Determine communication skills at these levels: prelanguage, receptive I, expressive I, receptive II and expressive II.	Provides developmental age data. Criterion-referenced.

## SAERA - RESEARCH ARTICLE

Expressive One-Word Picture Vocabulary Test – 2000 Edition (EOWPVT-2000)	2 – 18.11 years.	An in-depth assessment of a child’s speaking vocabulary. Conormed with the Receptive One-Word Picture Vocabulary Test, so that comparisons can be made between an individual’s expressive and receptive language.	Norm-referenced. Scores are reported as standard scores and percentiles.
Expressive One-Word Picture Vocabulary Test – Spanish Bilingual Edition (EOWPVT-SBE)	4 – 12 years.	Assesses expressive vocabulary of individuals who are bilingual in Spanish and English.	Norm-referenced; provides standard scores and percentiles.
Expressive Vocabulary Test (EVT)	2.6 years – adult.	A measure of expressive vocabulary and word retrieval. Co-normed with the PPVT-III, allowing for comparison of expressive and receptive skills.	Norm-referenced; provides standard scores and percentiles.
Fruharty Preschool Speech and Language Screening Test – Second Edition	3 – 6 years.	Designed to screen for possible speech/language disorders, to be identified via further assessment. Screens syntax, auditory comprehension and articulation.	Criterion-referenced.
Functional Communication Profile – Revised (FCP-R)	3 years – adult.	Designed to evaluate communication skills of students with autism and developmental disabilities. Alternate forms of communication, such as sign language and the use of augmentative devices, is also addressed. Generates a profile of strengths and needs, mode of communication and level of independence.	Criterion-referenced.
Gesell Developmental Schedules	0-72 months old.	Test components include: language, fine and gross motor, cognitive, and personal-social domains.	Standardized, norm-referenced.

## SAERA - RESEARCH ARTICLE

Goldman-Fristoe Test of Articulation – Second Edition (GFTA-2)	2 – 21 years.	Designed to provide a systematic assessment of articulation by both spontaneous and imitative sound production.	Norm referenced; provides age-based, gender-specific, standard scores and percentile ranks.
Hodson Assessment of Phonological Patterns – Third Edition (HAPP-3)	3 – 8 years.	Designed for children with unintelligible speech. Uses objects and pictures to elicit stimulus words used to code phonological deviations, determine severity and identify patterns to target for intervention.	Standardized, norm-referenced and criterion referenced.
Khan-Lewis Phonological Analysis – Second Edition (KLPA-2)	2 years – adult.	Designed to work with the Goldman-Fristoe 2 to provide a more comprehensive diagnosis of both articulation and use of phonological processes. Evaluates 10 developmental phonological processes.	Norm-referenced; yields standard scores, percentiles and age equivalents.
Kindergarten Language Screening Test – Second Edition (KLST-2)	3 – 6 years.	Individually administered screening test to help identify children who need further diagnostic testing to determine the presence of language deficits.	Criterion referenced.
OWLS Oral Languages Scales	3 – 21 years.	Designed to evaluate expressive and receptive language skills. Neither scale requires reading ability.	Norm-referenced; provides standard score, percentile ranks and age equivalents.
Peabody Picture Vocabulary Test – Third Edition (PPVT-III)	2 years – adult.	Measure of receptive vocabulary. Norm-referenced, wide-range test available in two parallel forms.	Standard scores, age equivalent scores and percentile scores provided. Spanish version available.
Photo Articulation Test – Third Edition (PAT-3)	3 – 8 years.	Evaluates articulation through the use of full colour photographs targeting different sounds. The sounds elicited are arranged by age of acquisition.	Norm-referenced; provides standard scores and percentiles.

## SAERA - RESEARCH ARTICLE

Preschool Language Assessment Instrument – Second Edition (PLAI-2)	3 – 6 years.	Evaluates cognitive, linguistic and pragmatic aspects of language. The formal assessment includes four subtests that assess levels of abstraction, two subtests that assess modes of response, the discourse ability score, and overall estimate of performance. The informal assessment includes two pragmatic measures.	Standardized, norm-referenced; provides scaled scores, standard scores, percentile ranks and age equivalents.
Preschool Language Scale – Fourth Edition (PLS-4)	0 – 6.11 years.	Comprehensive language assessment includes items to assess semantics, attention, interaction and gesture. Domains include expressive language, auditory comprehension and total language. Includes caregiver questionnaire.	Norm-referenced, provides standard scores and percentiles. Spanish version available.
Receptive One-Word Picture Vocabulary Test – 2000 Edition (ROWPVT-2000)	2 – 18.11 years.	Measure of receptive language. Co-normed with Expressive One-Word Picture Vocabulary Test so that comparison can be made between an individual's receptive and expressive language.	Norm-referenced; provides standard scores and percentiles. Spanish version available.
Reynell Developmental Language Scales (RDLS)	1 – 6 years.	Scale used to assess children with visual impairments. Seven domains are covered: social adaptation, sensorimotor, exploration of environment, response to sound, verbal comprehension, expressive language (structure), expressive language (vocabulary) and nonverbal communication. Developmental age equivalents for blind, partially sighted and sighted children are provided.	Norm referenced; provides standard scores, percentiles and developmental age scores.
Rhode Island Test of Language Structure	3 – 20 years.	Designed primarily for use with the hearing impaired, but also useful in assessing other populations. Multiple-choice	Norm-referenced.

## SAERA - RESEARCH ARTICLE

		format used to assess child's understanding of language structure (syntax).	
Rice/Wexler Test of Early Grammatical Impairment	3 – 8 years.	Designed to identify markers associated with specific language impairment and early reading difficulty. Used to supplement broader, comprehensive assessments.	Criterion-referenced.
Screening Test for Developmental Apraxia of Speech – Second Edition (STDAS-2)	4 – 12 years.	Assists in the differential diagnosis of developmental speech apraxia through the eight subtests: expressive language discrepancy, vowels and diphthongs, oral-motor movement, verbal sequencing, motorically complex words, articulation, transpositions, and prosody.	(Not acquired)
Second Contextual Articulation Tests (S-CAT)	3 years – adult.	Consists of three components: Contextual Probes of Articulation Competence tests phonemes in words, clusters and sentences; Storytelling Probes of Articulation Competence extends assessment to connected speech; and Target Words for Contextual Training includes 30,000 training words and word combinations.	(Not acquired)
Structured Photographic Expressive Language Test – 3 (SPELT®-3)	4 – 9.11 years.	Language assessment focusing on morphology and syntax. Full-colour photographs of everyday situations and objects are used to elicit language structures that may not occur spontaneously.	Standardized, norm-referenced; provides standard scores, percentile ranks and age equivalents.
Structured Photographic Expressive Language Test – Preschool-2 (SPELT®-P 2)	3 – 5.11 years.	Full-colour photos designed to elicit specific morphological and syntactic structures. Target structures include prepositions, plurals, possessive nouns and much more.	Norm-referenced, provides standard scores, percentile ranks and age equivalents.
Stuttering Severity Instrument for Children	2 – 18 years.	The SSI-3 is divided in to four major areas: frequency, duration, physical concomitants (rated by degree of	Norm-referenced, provides severity ratings.



## SAERA - RESEARCH ARTICLE

and Adults – Third Edition (SSI-3)		distractibility) and severity. New normative data are reported.	
Test for Auditory Comprehension of Language – Third Edition (TACL-3)	3 – 9.11 years.	A measure of receptive and spoken vocabulary, grammar and syntax. Three subtests: vocabulary, grammatical morphemes, and elaborated phrases and sentences.	Norm-referenced; provides percentile ranks, standard scores and age equivalents.
Test of Auditory Processing Skills (TAPS-3)	4 – 18 years.	Comprehensive assessment of auditory processing abilities, including word discrimination and memory, sentence memory, phonological segmentation and blending, numbers forward and reversed, auditory reasoning, and comprehension.	Standardized, norm-referenced; provides scaled scores, standard scores, percentile ranks and age equivalents.
Test of Early Language Development – Third Edition (TELD-3)	2 – 7.11 years.	Yields an overall spoken language score, and includes scores for receptive language and expressive language subtests.	Norm-referenced; provides standard scores, percentiles and age-equivalent subtests.
Test of Language Development – Primary – Third Edition (TOLD-R:3)	4 – 8.11 years.	Designed to measure components of spoken language, including semantics, syntax and phonology.	Norm-referenced. Derives standard scores, percentiles and age-equivalent scores.
Test of Semantic Skills – Primary (TOSS-P)	4 – 8 years.	A receptive and expressive diagnostic test designed to assess semantic skills related to conversation, reading comprehension and academic achievement.	Standardized, norm-referenced; provides standard scores, percentile ranks and age equivalents.
Test of Word Finding – Second Edition (TWF-2)	4 – 12.11 years.	Designed to evaluate word finding ability, using four naming sections based on accuracy and speed.	Standardized, norm-referenced. Provides age and grade-level standard scores and percentile ranks.

## SAERA - RESEARCH ARTICLE

---

The Apraxia Profile	3 – 13 years.	Assists in the differential diagnosis of developmental verbal apraxia and problematic oral-motor sequences and movements.	Facilitates documentation of present levels of performance as well as progress over time.
Utah Test of Language Development – Fourth Edition (UTLD-4)	3 – 9.11 years.	Assesses semantics, grammar and phonology of children.	Norm-referenced; provides standard scores and percentiles.
Verbal Motor Production Assessment for Children (VMPAC)	3 – 12 years.	Identify children with motor issues that impact speech motor control. Assess three main areas – global motor control, focal oromotor control, sequencing – and two supplemental areas: Connected Speech and Language Control and Speech Characteristics.	Norm-referenced; provides percentile scores.
WIIG Assessment of Basic Concepts (WABC)	2 – 11 years.	Evaluates receptive and expressive basic concept knowledge. Story book format.	Norm referenced; provides standard scores, percentiles and age equivalents.