

# BEST PRACTICE IN WORKING WITH CHILDREN WHO HAVE DEVELOPMENTAL LANGUAGE DISORDER: A FOCUSED REVIEW OF THE CURRENT RESEARCH EVIDENCE BASE

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## Abstract

The purpose of this paper is to provide a synthesis of the current international research evidence base regarding best practice in the diagnosis and treatment of children with language disorders. We begin with a discussion about the terminology used and how this relates to identification and diagnosis, and then describe assessment and treatment practices.

The discussion of intervention and case management of these children focuses on the use of high quality evidence that presents an overview of treatment approaches, rather than specific treatment programmes that may not be relevant to all international practice settings.

The paper sets the context of the wider international research evidence base: we also include commentary that may be more relevant to some countries across mainland Europe, and specifically to the Czech Republic context. Research studies that reflect local languages and culture are a highly important component of the evidence base for practice, but these should be considered in the context of international consensus evidence. In particular, some strategic recommendations are made to address the inherent challenges of sustaining best practice where open access to evidence sources may be constrained.

## Keywords

Specific Language Impairment (SLI), Developmental Language Disorder (DLD), Diagnosis Assessment, Intervention, Evidence-Based Practice (EBP)

## Introduction

The purpose of this paper is to provide a synthesis of the current international research evidence base regarding best practice in the diagnosis and treatment

of children with language disorders. The authors are from UK and Australia respectively, but this paper is intended to provide a commentary on the relevance – and limitations – of the international evidence base to inform best practice standards in all national and cultural contexts.

Children who have difficulties with language that impact on their everyday functional ability require specific support from Speech-Language Therapists (SLTs). These children are therefore the focus of this paper. The key implications for clinical practitioners are highlighted.

## Terminology and description of developmental language disorders

Language difficulties in children are common; at around 5 years of age approximately 6-10% of children may be affected (Law et al., 2000; Norbury et al., 2016). The terms used to describe children who have demonstrated difficulties in acquiring understanding and/or use of language at the same rate as their peers have varied over the years. The term *Specific Language Impairment* (SLI) has been increasingly commonly used in English-speaking countries since the 1980s, and came to describe children who had a disorder of language that was not caused by hearing loss, general developmental delays or other disorders, and where children had normal nonverbal intelligence (Reilly et al., 2014). At the same time, it is now also considered that “a child with a language disorder may have a low level of nonverbal ability, this does not preclude a diagnosis of developmental language disorder” (Bishop et al., 2017, p. 1072).

It is worth noting that the term SLI has become less popular internationally, after it was not included as a diagnostic

category in the updated, widely used Diagnostic and Statistical Manual of the American Psychiatric Association - 5<sup>th</sup> Edition (DSM-5) (American Psychiatric Association 2013). Additionally, the CATALISE consortium attempted to review the terminology for this disorder. This work was led by Dorothy Bishop (Bishop et al., 2016; Bishop, Snowling, Thompson, Greenhalgh, Adams, Archibald, Baird, Bauer and Bellair, 2017) and included 59 experts across ten disciplines and six English-speaking countries. The resulting consensus statement recommended that the term *Language Disorder* be used for children “who are likely to have language problems enduring into middle childhood and beyond, with a significant impact on everyday social interactions or educational progress” (Bishop et al., 2016; Bishop, Snowling, Thompson, Greenhalgh, Adams, Archibald, Baird, Bauer and Bellair, 2017), and the term *Developmental Language Disorder* (DLD) be used for children who have these language problems in the absence of known biomedical causes.

In the Czech Republic, the relevant professional groups (including Speech-Language Pathologists, Phoniatrists, Neurologists, Psychiatrists and Clinical Psychologists) have used a few terms to refer to children with language disorders. These terms have included the widespread use of *Developmental Dysphasia* (DD), as well as SLI, with potentially the same meaning. *Developmental Dysphasia* (DD) is noted to present as a persistent neurodevelopmental disorder, where the clinical symptoms and functional difficulties may change over time. Richterová and Seidlová Málková (2017) recently argued for SLI to be used as consistent terminology in Czech research, academic, educational and practical settings. The ICD-11 (World Health Organization 2018) includes *developmental speech or language disorders* under a subgroup heading of *Neurodevelopmental Disorders*, alongside disorders of intellectual development, autism spectrum disorders, developmental learning disorders, and other disorders with onset during the early developmental period (Reed et al., 2019).

We will use the term DLD throughout this paper. In line with the recommendations of the CATALISE group, the children of interest are those:

- with poorer language than their peers, demonstrated by grammatical errors or simplifications (syntax), fewer words used or understood (vocabulary), lack of depth in their

understanding and application of word categories or meanings (semantics) and/or problems with the social use of language (pragmatics);

- with demonstrated functional difficulties, particularly in relation to social and educational contexts;
- with or without co-occurring disorders, which may include cognitive, sensorimotor or behavioural issues;
- without a known differentiating condition, such as brain injury, cerebral palsy or autism spectrum disorder. These are excluded from this discussion as identification, assessment/diagnosis and intervention are likely to be specific to these conditions.

DLD has known impacts on children's learning, including reading and writing (Mlčáková et al. 2012; Richterová and Seidlová Málková, 2017; Ricketts, 2011), and may have a long-term impact on their social participation (St Clair et al., 2011) and psychological development (Snowling et al. 2006).

### Identification of language impairment

Timely identification and diagnosis of DLD is important. In common with many other countries, the Czech Republic relies heavily on parental identification of children with suspected language problems, particularly in the preschool years (Richterová and Seidlová Málková, 2017). This may lead to under-identification, as parents may not recognise signs of DLD in young children due to the subtle nature of language difficulties (Skeat et al., 2014). There is also a large overlap between normal language development and language development that is symptomatic of DLD: over half of children who are late to begin talking do not have language problems by the age of four (Reilly et al., 2010). Thus, signs that may seem more obvious to parents, such as a slow start to language expression, are not good predictors of DLD and may lead to over-identification. Other systematic evaluations may also support better identification of children with DLD. It is notable that, since the advent in 2017 of compulsory screening for Autism Spectrum Disorder (ASD) for all children aged 18 months in Czech Republic, the differential diagnosis of DD has increased (Taylor and Whitehouse, 2016).

SLTs have a role in supporting parents, health and educational professionals who come into contact with young children to know what to look for, and to seek help from SLTs as soon as possible. Flags that

are indicative for specialist assessment for DLD are (Bishop, Snowling, Thompson and Greenhalgh, 2016):

- \* parental concern about language use or understanding;
- \* behavioural or psychiatric difficulties in young children, which may be symptomatic of underlying language problems;
- \* in 3- to 5-year-olds, limited combining of words into phrases, difficulty understanding spoken language, variable and unusual social interactions, or others having problems understanding what a child says (even close relatives);
- \* in children over 5 years, problems in story telling (recounting or retelling a story or series of events), problems with reading or listening comprehension, problems following spoken instructions, problems with engaging in back and forth conversations, and making literal interpretations of figurative language.

### Assessment and diagnosis

There is no comprehensive diagnostic battery for the diagnosis of DLD in any country. However, there are ongoing efforts in many countries to create and rigorously evaluate appropriate assessment approaches, developmental scales and standardised tools. Coordinated assessment by multi-professional teams is also becoming increasingly expected, including in the Czech Republic. These teams may include any of the following disciplines: Speech and Language Therapists/Pathologists, Psychiatrists, Phoniatrists, Psychologists, Neurologists. Children with neurodevelopmental disorders, including DLD, also have a high incidence of co-morbidities, and increased risk of dyslexia, as stated earlier above. Thorough and accurate evaluation of children's strengths and difficulties, and a diagnosis of DLD are essential reasons for children to be referred from health and educational services for the relevant interventions.

Against the recommendations of the CATALISE consortium, children who are 2 years or under who have limited expressive vocabulary, but are otherwise attempting communication and appear to understand language in line with same-aged children, should be reassessed at a later age (Bishop, Snowling, Thompson and Greenhalgh, 2016). However, children under 3 with more severe symptoms of communication delay - such as minimal interaction and communicative intent,

who do not react to spoken language, or show regression in their development of language skills, should be evaluated for broader developmental concerns, such as Autism Spectrum Disorder or intellectual disability (Bishop, Snowling, Thompson, Greenhalgh, Adams, Archibald, Baird, Bauer and Bellair, 2017; Visser-Bochane et al., 2017).

Once identified as requiring SLT involvement, the assessment process aims to support an accurate diagnosis, and to identify domains of language impacted, in order to guide treatment. Assessment may be supported by psychometric (i.e. standardised assessment) and/or clinical (professional observation and questioning) strategies (Richterová and Seidlová Málková, 2017). The two approaches are easily combined, supporting a holistic understanding of children's performance in testing and in natural and functional environments. Clinical strategies may support a more relevant interpretation of psychometric testing, for example, in determining whether language learning issues (e.g. exposure to Czech for a second language learner) have played a role in a low language test score. These clinical strategies need to be supported by evidence for their validity in determining if children have problems that need intervention or are typically developing. Areas that may provide a useful focus for a clinical evaluation of language development are:

- *Sentence imitation*; this has been demonstrated as useful in identifying DLD in Czech children (Smolík and Vávřů, 2014). Children with DLD made more grammatical errors in sentence imitation and these were more likely to be on verbs and clitics. Sentence imitation difficulties appear to be universal in children with DLD, as they have also been demonstrated in other languages, including Hebrew and Russian (Armon-Lotem and Meir, 2016) and French (Fleckstein et al., 2018).
- *Non-word repetition*; problems with accurately repeating non-words (made-up words with no meaning) has been identified as a significant marker of DLD in children in various languages, including Slovak (Kapalková et al., 2013), Spanish (Girbau, 2016), Hebrew and Russian (Armon-Lotem and Meir, 2016), and Persian (Kazemi and Saeednia, 2017).
- *Narrative* (story telling) has been shown to distinguish children with DLD from children without DLD, in English

(Snowling, Bishop, Stothard, Chipchase and Kaplan, 2006), Cantonese (Newman and McGregor, 2006), Greek (Theodorou and Grohmann, 2010), and Italian (Marini et al., 2008).

One method that shows promise for assessing children with DLD is known as response to intervention (closely related to dynamic assessment). This is a 'test, teach, test' format of assessment, where children's language is evaluated (e.g. using a criterion-referenced test), intervention is implemented targeting the same language area for several sessions, and the test is repeated. This allows the clinician to see the child's response to particular strategies or intervention modes, and their potential to learn (Camilleri and Law, 2014). It may support understanding of which language areas are particularly impaired, as well as promote understanding of where best to target intervention. Response to intervention has been used in the identification of children with reading impairments (Fletcher and Vaughn, 2009) and is an approach that has been explored for use with children who are bilingual, in order to help differentiate language disorders from language exposure/learning issues (Hasson et al., 2013).

## Case management of children with language disorder

Speech and Language Therapists have the distinctive expertise and skills to work with children who have DLD. Following the identification and assessment of the communication difficulties, SLTs are best equipped to develop and to deliver the most appropriate strategies and programmes of therapy to support the child. Language impairment is a long-term condition that will inevitably impact on a child's learning, and on literacy. The SLT can support schools to integrate strategies into the classroom in order to maximise children's language learning and use, including helping teachers and parents in their use of communication techniques and communication-friendly classrooms. Helping to shape parents' understanding and expectations of what to expect following their child's diagnosis is also an essential component of the SLT professional role.

So, the role of the SLT comprises both direct and indirect intervention approaches (Law et al., 2017). Ideally the SLT will work with the child and parents/

carers to identify the child's individual communication needs and agree on personalised goals. Periodic monitoring of the child's progress will lead to relevant changes to the therapy management plan, to ensure that the child is optimally supported, particularly at key transition points, e.g. between educational settings. These individuals will continue to face some level of lifelong language processing difficulties and many may need to access SLT services at different times during their life, e.g. to review their compensatory and pragmatic language strategies for their social and emotional health and wellbeing.

Without adequate support, these children are at a greater risk of depression and anxiety (Botting et al., 2016). Recent research has also demonstrated an association between developmental language disorder and criminal offending, even after controlling for potential confounders such as socio-economic position and years of schooling (Bryan et al. 2015). Young Offenders (YO) with DLD have been found to have mean language scores of more than 2.25 standard deviations below the normative mean, and they also demonstrate greater literacy and socio-emotional difficulties than the general YO population (Winstanley et al., 2019). These communication difficulties potentially compromise a young person's ability to engage in any offender rehabilitation interventions or strategies. It is therefore critical that parents are supported to access early SLT management, and to maintain ongoing links with relevant services.

## Direct intervention approaches

There are some key differences in best practice for direct language therapy intervention approaches for working with children at pre-school age, compared with older children (Gallagher et al., 2009), within a framework of understanding the relative influence of the characteristics and predictors of children's language trajectories (McKean et al., 2015). Diagnosed language impairment at age four years is likely to be persistent, so there is a rationale that the most effective intervention will include functional goals to maximise interaction success. At the same time, interventions are needed that address the primary language impairment/s, so the SLT goals will also focus on specified language competences, not only on a broader range of skills (Law, Dennis and Charlton, 2017). Direct language interventions may be delivered to individual children, or

in a group, where they may additionally benefit from the opportunities to interact and learn from one another (Law, Dennis and Charlton, 2017).

Direct SLT intervention approaches have traditionally mostly targeted specific language aspects (for example, vocabulary or sentence structures). These exercises to focus on 'skills gaps' are reinforced by positive feedback and praise, plus other motivators in a behavioural paradigm. However, more recently the emphasis has shifted on to social learning theory, to situate language training within more meaningful contexts. Then, for slightly older children, therapy goals may include metacognitive skills which are increasingly being used to prompt them to make their own judgements about grammatical constructions (Childers and Tomasello, 2002; Riches, 2013).

There is robust evidence of positive effects of individualised one-to-one direct SLT intervention to improve expressive language skills and vocabulary (Ebbels, 2014; Law et al., 2003; Lowe et al., 2018; Wright et al., 2018). The evidence is less strong at present for the effectiveness of interventions for children who have mixed receptive-expressive language impairment (Boyle et al., 2010).

Language intervention for children over the age of 11 years and into adolescence is still highly important (Ebbels et al., 2017). There is some evidence that direct interventions with these age groups can be effective to increase vocabulary and word knowledge (Lowe et al., 2019). These types of intervention approaches include semantics, phonological, and combined phonological-semantic exercises. Lowe and colleagues' systematic review (2018) showed the strongest evidence for effectiveness was achieved by a combined phonological-semantic approach; but that there is a potential benefit from any (universal) vocabulary intervention. The findings also showed a positive effect, whether delivery was individual, in a small group or a full class group. Whilst there is the potential for improved language outcomes to achieve important benefits for the child in curriculum access and educational progress, there is a dearth of research evidence for the impact on reading comprehension and educational attainment scores. There is also still a research evidence gap to support differentiated models of intervention to correspond to differences between children's profiles of language and

cognition. One of the key predictors for success in direct language interventions appears to be the child's self-awareness of the language impairment (Law, Garrett and Nye, 2003).

### *Indirect intervention approaches*

Indirect interventions may be promoted as being more "naturalistic", including the goal to enhance positive parent-child interaction. However, this is contingent upon the language goals being sufficiently explicit and concrete for the parents and other adults who are asked to implement them. The focus should be on age-appropriate goals that are matched to the child's own setting and interests, and in negotiation with the family's priority concerns. The systematic review and meta-analysis by Ebbels et al. (2019) mapped the most recent evidence of effective SLT interventions for children with different severity levels of language impairment. Children with the most complex and pervasive language impairments are likely to require individualised SLT support. This may include both direct SLT intervention and close collaborative working with the child's educational staff and family. And where responsibility for delivery of interventions is devolved to others, the evidence demonstrates that SLTs have a key role to play to ensure sufficient training and skills; in addition to provision of ongoing support for them to deliver evidence-based programmes as effectively as possible (Ebbels, McCartney, Slonims, Dockrell, Norbury, 2019).

Indirect approaches to case management include inter-professional working, training of others and delegation to others for carrying out practice and supporting generalisation of new skills. In the case of children with language impairment, the influence of effective collaboration with educational professionals is essential (McKean et al., 2017). Matching vocabulary exercises to the child's curriculum topic and levels has been widely advocated. Recent evidence from experimental studies has shown that the "Word Discovery" approach for teaching Science curriculum vocabulary was more effective than usual teaching practice in increasing the word knowledge of participants (Lowe, Henry and Joffe, 2019). Children's expressive use of experimental words was significantly greater than that of usual teaching practice words post-intervention; and this significant difference was maintained at follow-up.

The study design was validated by control measures that showed no change in children's depth of knowledge or expressive use of non-interventional words over time; confirming that "the findings were not due to maturity or practice effects" (Lowe, Henry and Joffe, 2019). Hence, the "Word Discovery" approach could be recommended as a viable option for collaborative intervention between classroom teachers and SLTs.

### **Conclusion**

For all children receiving language interventions, their progress should be closely monitored to assure that the therapy is effective. If children fail to demonstrate the expected gains in the target language aspects, then the respective underpinning research evidence base/s for the interventions should be reviewed. However, the reality of this undertaking is constrained by some of the inherent challenges of the concept and implementation of Evidence-Based Practice (EBP). Whilst these challenges are universal for all healthcare professionals, they will necessarily be more acute for practitioners who have limited access to assessment tools and measurement approaches that are validated for the local population, linguistic and cultural context (Roddam, 2017). Where the most robust scientific evidence or consensus statements do not reflect the local language and cultural demographics (for example, a consensus statement based on evidence from English-speaking countries), these sources should still always be incorporated as part of the transparent clinical reasoning process in an EBP framework. At the same time, professional associations in all countries will want to ensure that they keep their practitioners updated on the continuously growing interdisciplinary knowledge base for language interventions in neurodevelopmental disorders relevant to their own national context.

In addition, when considering the research evidence base for DLD therapy interventions, it is essential to distinguish between efficacy outcomes reported in ideal research conditions, versus effectiveness outcomes measured in real-world settings. In the case of children who have DLD, this specifically includes the research gap for classroom-based approaches, where a child's language disorder is supported collaboratively between SLTs and educational staff.



"Primarily, there is the assumption that there is a robust and comprehensive evidence base to draw upon. We certainly need to be aware of the relevant current published research evidence and how to achieve a realistic approach to embedding this within our routine practice; but many research studies are limited to evaluation of discrete and direct therapy interventions. This does not reflect the reality of the complexity of cases that we manage, working within multi-disciplinary teams and services" (Roddam, 2017, p. 26).

We urge practitioners not to feel unduly overwhelmed by this challenge. The purpose of this paper was in part to demonstrate the value of a focused synthesis of published evidence for bridging the research-practice gap and helping to support more rapid adoption of evidence-based best practice across a specified population (Featherstone et al., 2015). Where practitioners face the challenge of uncertainty for management of an individual case, we recommend the principle of a strategic evidence synthesis.

Maximising the use of pre-appraised sources of high research quality that are open access is the starting point for all practitioners to keep themselves updated on the evidence base for a specified area of their clinical field. Then there are also a range of 'rapid review' models that have been developed as a way to promote application of the best available evidence into practice (Grant et al., 2009). One form of rapid review is the Critically Appraised Topic (CAT), which is explicitly intended to be undertaken by non-academics; as a way of encouraging busy clinicians to have greater confidence in identifying and distilling the key messages for practice from a limited number of published sources. The protocol for a CAT review was clearly detailed by White, Raghavendra and McAllister (2017), with a relevant illustrative example by Skeat and Roddam (2019).

The importance of a correct diagnosis of the nature of the child's language disorder, relative to the developmental age, is the essential foundation for intervention

planning. An international collaboration CLASTA (Communication and Language Acquisition Studies in Typical and Atypical Populations) held a consensus conference in 2015 to promote greater awareness and transparency in case management planning for these children. In addition, the Raising Awareness of Developmental Language disorder (RADLD) campaign re-launched under this name in 2017 and hold an annual international DLD Awareness Day to contribute to the development and wider dissemination of best practice in interventions (Raising Awareness of Developmental Language Disorder 2020). These associations undertake to disseminate pre-appraised evidence sources to professionals working in the field, in addition to their campaign goals of raising public awareness about this hidden disability. Practitioners should be able to access all these evidence-based resources to enhance their practice for the benefit of these children and their families.

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