The Role of Inhibition in Developmental Language Disorder

Sheila Thomas, Nuala Ryder, Joerg Schulz
Department of Psychology, University of Hertfordshire, Hatfield, UK

Introduction

Developmental Language Disorder (DLD; previously known as Specific Language Impairment) describes when a child shows persistent difficulties in the acquisition and use of language, resulting in language abilities that are substantially below those expected for their age. These difficulties are not attributable to other medical or neurological reasons and are not better explained by intellectual disability or global developmental delay (DSM V, 2013). Research and practice have long noted the heterogeneous nature of DLD on diagnosis and assessment. Recent research suggests that the deficit is not restricted to the linguistic domain and, against this background the challenge for the speech and language therapist (SLT) is to provide accurate assessment and effective therapy. Comparatively little is known about the experiences of SLT in the assessment process in contrast to other childhood disorders. Consequently, we sought to extend understanding of the experiences of SLTs involved in the assessment and diagnosis of children with DLD across both linguistic and non-linguistic domains. To do this, we conducted two studies: 1 qualitative examination of SLT experiences and 1 quantitative assessment of linguistic and non-linguistic DLD diagnostic tools.

Examination of SLT Experiences in Diagnosing DLD

SLTs directly involved in assessment and diagnostic procedures were recruited from different types of institution in 3 NHS trusts across the United Kingdom. The length of experience ranged from 2 years to 38 years. All SLTs took part in one focus group each. Data were also collected from NAPLIC members via online questionnaire. The data were analysed using inductive thematic analysis within a phenomenological approach Braun and Clarke (2006).

Semi-Structured Interview Questions

How do children come to be referred to you?

What do you think of current assessment procedures?

Are there reliable indicators you would look for in a child who has DLD (SLI) and if so, which?

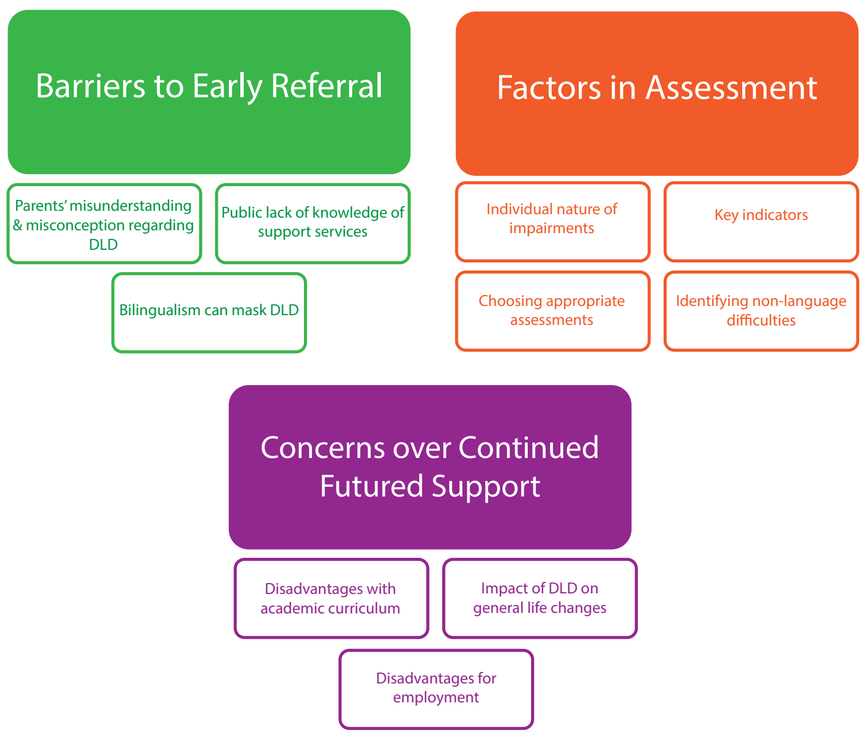
Is there such a thing as “gut instinct” for whether a child has DLD (SLI) and if so, how does this work?

Do you see any non-language difficulties which would be noticeable in a child who has DLD (SLI) and if so, what are they?

If you could design a screening tool for DLD (SLI) what would be the most important features you would want to see in it?

SLTs indicated a dissatisfaction with current assessment tools, lack of awareness of DLD amongst parents resulting in delayed diagnosis and reliance on informal assessment and “gut instinct” to identify non-language difficulties. SLTs struggle to assess BL children due to limitations of available diagnostic tools in different languages. Therefore, it is difficult for SLTs to establish if a child’s language problems are specific to English or are common to all their languages

Thematic Map



DLD diagnostic tools for monolingual and bilingual children

90 male and female children (36 to 48 months; M= ; SD=) were recruited from a playgroup of typically developing (TD; n= 30) children or from a playgroup with a high number of “at risk” (AR; n= 60) children. That is, children who are either monolingual (ML; n= 30) or bilingual (BL; n= 30) and receiving language support. BL children were defined as those children who had been exposed to two (or more) languages in their upbringing, either simultaneously or sequentially.

All children were invited to take part in the tasks (below) with the researcher in a quiet corner of a classroom. The order of the tests was randomised and the procedure was video-recorded for subsequent analysis.

Diagnostic Tools

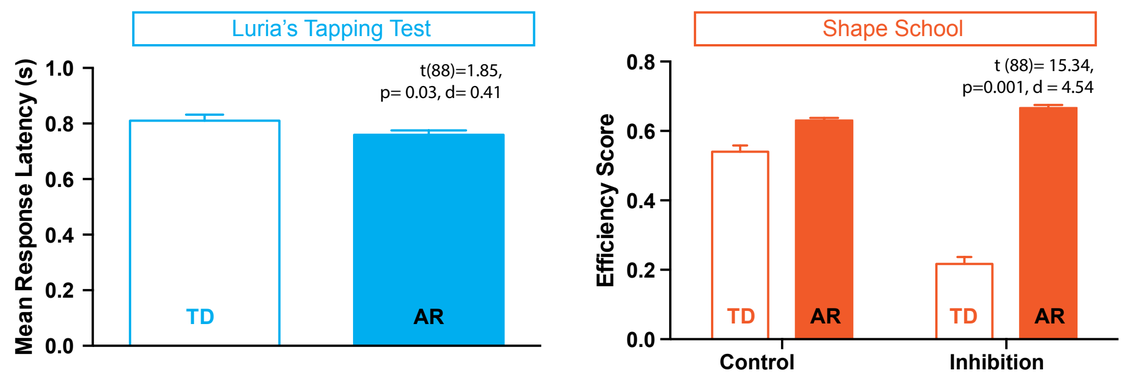
Luria’s tapping (LT) test – After imitating the researcher (e.g., tap a stick once or twice), the child is asked to do the opposite of what the researcher has done (e.g., researcher taps once, child taps twice). Results measured as % of correct responses.

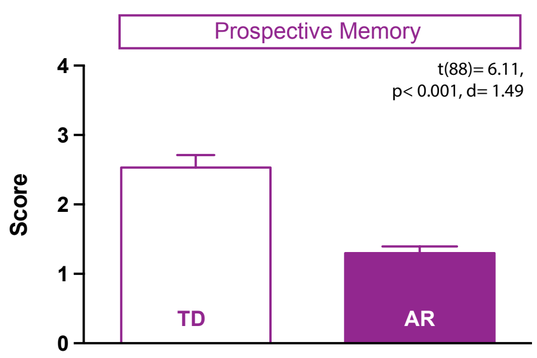
Shape School (SS) test – After naming all the characters on a sheet, the child is asked to name the happy (not the sad) characters. Results measured as efficiency score.

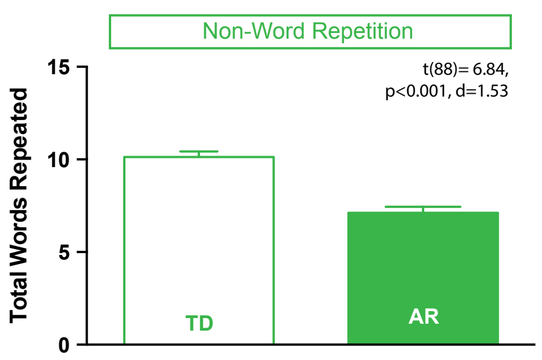
Prospective memory (PM) test – The child is asked to give the researcher a wooden block after each test has been completed and then remember to collect a prize as they leave the room. Results measured as number of correctly recalled items.

Non-word repetition (NWR) test – The child is asked to repeat nonsense words which gradually increase in syllable length. Results are measured as number of completely correct repetitions. This test was specifically designed (Roy & Chiat, 2017) for use with bilingual children as it uses combinations of sounds which the child is unlikely to have encountered before in other languages. Non-word repetition is known to be a robust indicator of DLD and is used in formal assessment tools.

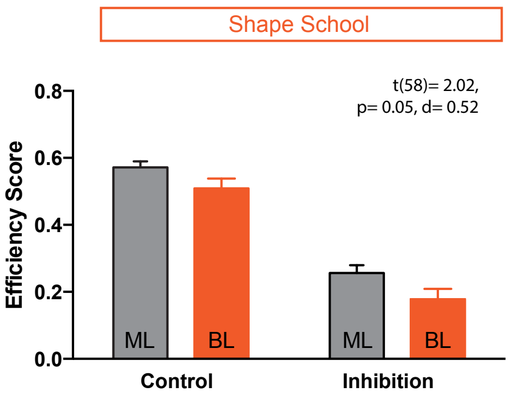
AR children performed significantly worse than TD children on all tests

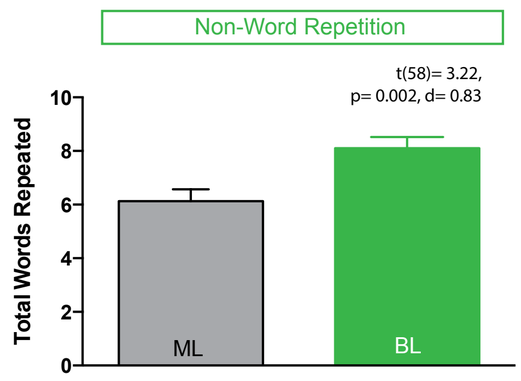






ML children performed better than BL children on SS
BL children performed better than ML children on NWR





Conclusions & Future Directions

1) SLTs highlight the clear need for more accurate and precise diagnostic tools, especially for the assessment of bilingual children.

2) Children with DLD show deficits language AND central executive function abilities. This often manifests itself as difficulties in general organisation. Inhibition appears to be the most important of the central executive functions in relation to language (Pauls & Archibald, 2016).

The results show a clear need for further research to clearly define the contribution of inhibition in DLD as significant deficits are shown in TD / “At risk” comparisons. These findings have important implications for assessment, diagnosis and interventions, with the focus possibly being shifted onto executive function and working memory, not just language. The results also point towards further research comparing the central executive function performance of monolingual and bilingual language impaired children.

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.
Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.
Pauls, L. J., & Archibald, L. M. (2016). Executive functions in children with specific language impairment: A meta-analysis. Journal of Speech, Language, and Hearing Research, 59(5), 1074-1086.