

English summary

This thesis focuses on a group of Danish children with specific language impairment (SLI). Common to these children is that they have a normal IQ, no identified neurological, emotional, social or physical difficulties, but still the language development of these children does not happen as smoothly and easily as is the case for their peers. SLI is a language disorder that can affect both the expressive and the receptive language.

Cross-linguistic research shows that SLI exists across different languages and is well documented for children who are acquiring English, German, Italian, Swedish and Hebrew, etc. The specific outcomes of SLI, however, differ from language to language, and there is currently no ongoing systematic research which documents the specific outcomes of SLI for Danish children.

The primary goal of this PhD thesis was to investigate:

- Grammar skills in Danish children with SLI, for the purpose of documenting the specific profile of SLI for Danish children.
- The interaction between the linguistic and cognitive development in children with SLI.
- If SLI is a delay in language acquisition, or if children with SLI acquire language radically differently compared to the children without SLI.

The thesis is based on four research papers (I-IV), in which the above-mentioned themes have guided the research questions asked in the articles.

The four research studies have drawn on data from three groups of children: (1) 18 children with SLI aged 5,0-9,0 years, (2) 18 control children with unremarkable language without SLI aged 5,0-9,0 years matched to the children with SLI by age, (3) 9 control children with unremarkable language without SLI aged 4,2 to 6,5 years matched with the children with SLI on the score of a grammatical comprehension test (TROG-2DK). The children's linguistic and cognitive skills were examined by means of an extensive battery of tests that, among other things, tested vocabulary and comprehension and the production of complex grammatical structures such as subordinate clauses,

working memory and dual processing. Studies I, III and IV are based on data from groups (1), (2) and (3). Study II is based on data from groups (1) and (2).

Study I showed that morphological errors, word order and the omission of sentence elements occurred more frequently in children with SLI than in age-matched children with typical language development. The children with SLI also had significantly more errors in word order and the omission of sentence elements than younger language-matched children with typical language development. Furthermore, results from Study II showed that children with SLI had difficulty with subordinate clauses, especially with the understanding and production of object subordinate clauses, compared to both age-matched and younger children with typical language development.

Study III showed that language difficulties were, to a significant extent, associated with poor working memory in children with SLI, but not in children with typical language development. The children with SLI, however, had age-appropriate memory skills, when looking at simple memory functions. The memory-related problems in children with SLI were not evident until simultaneous storage and processing were required.

The results from study III also indicated that the association between the linguistic and cognitive skills is of a different nature in children with SLI than that which characterizes children who follow a typical language development pattern. The study indicates, however, that children with SLI do not have general memory difficulties, but that a discrepancy probably exists between requirements and resources, in which context children with typical language development seem to be better at allocating their cognitive resources to both storage and processing.

Finally, results from Study IV showed that regarding narrative retelling the children with SLI language impairment were delayed in elements of both micro- and macro-structure. Furthermore the narrative plot score correlated strongly with MLU morphology, and listening span for the children with SLI language impairment, but not for their age-matched peers, whilst plot score on the other hand correlated strongly with vocabulary and digit span for the typically developing children, but not for the children with SLI language impairment. These mismatches between the profiles of the children with language impairment compared to their age-matched peers indicate that children with

language impairment rely on different cognitive capacity resources for understanding and retelling a narrative.

The results from Study IV showed that difficulties in the retelling of the narrative were generally associated with poor working memory. The analysis indicated that children with SLI use their cognitive resources differently than do children with typical language development in their retelling of a narrative.

In summary, the four articles of the thesis demonstrate that certain grammatical skills appear to be particularly vulnerable in Danish children with SLI. These skills are: Morphology, word order, deletion of the phrase elements and subordinate clauses, especially with subordinate object clauses and narrative abilities. The discovery of these vulnerable linguistic structures is an important step in the direction of both the development of a language test for Danish children to partly improve the identification of children with SLI, but also for intervention with Danish children.

The thesis also shows that children with SLI have some language difficulties, but they also have cognitive difficulties that are closely linked to memory and processing. The thesis indicates that in children with SLI a discrepancy exists between requirements and resources in dealing with tasks which require cognition. The tasks and tests currently used in clinical and research practices often place different demands on language and general cognitive skills, therefore this knowledge on the occurrence of general cognitive difficulties in children with SLI will have an impact when choosing a given test or assignment in both research and clinical contexts.

The results indicate that children with SLI, compared to children with typical language development, experience asynchronous language acquisition. This is thus not only due to a delay in language development, nor is it radically different from language acquisition in children with SLI.

The thesis contributes to a crucial psychological field which is often overlooked in Denmark: Children's communication development in conjunction with their cognitive development.