

Analogical reasoning in children with specific language impairment: evidence from a scene analogy task.

According to the construction grammar theory, language acquisition is allowed by generalisation mechanisms that permit children to abstract a schema from different forms they heard (Tomasello, 2009). For example, they can abstract a “Subject + Verb + Object” schema from sentences like “The child sees a bird”, “The girl sees a chair” or “The boy eats an apple”. This process is linked to analogical reasoning (Tomasello, 2009), which is the ability to map the components of two situations according to the relation shared by these situations. The mapping of the different elements of sentences enables children to abstract a common schema (Tomasello, 2009). However, this process of schema generalisation is impaired in children with specific language impairment (SLI). These children have indeed difficulty abstracting schemas and using them to create new sentences. They are also more disposed to use sentences that they have heard as it is. These difficulties could be due to analogical reasoning impairment. Some studies show indeed that children with SLI perform a verbal or nonverbal analogical reasoning task worse than their age-matched peers (Leroy, Parisse, & Maillart, 2012 ; Leroy, Maillart, & Parisse, 2014). It remains unclear whether this non-performance is due to the language impairment or causes it. Thus, our goal here is to measure the ability of children with SLI to solve analogies, and to compare it to chronological age-matched but also to linguistic age-matched peers without language disorders. To this aim, we use a scene analogy task (Richland, Morrison, & Holyoak, 2006) that has never been used with children with language disorders, to our knowledge. This task will allow us to evaluate the impact of working memory and inhibition on the analogical reasoning ability of children with SLI. Our hypotheses here are the followings. Firstly, children with SLI would have weaker analogical reasoning competence compared to chronological age-matched peers. This finding would confirm data from other studies (Leroy et al., 2012 ; Leroy et al., 2014). Secondly, children with SLI would have weaker analogical reasoning competence compared to linguistic age-matched peers. This finding would reinforce the claim that language disorders in children with SLI are due to analogical reasoning impairment (Leroy et al., 2012). Finally, we suppose that children with SLI would have stronger difficulties when the task requires more working memory and inhibition resources. This assumption is made according to the working memory and inhibition impairments linked to SLI (Vugs, Hendriks, Cuperus, & Verhoeven, 2014). To test these hypotheses, we use a scene analogy task composed of pictures of 20 relations (Richland et al., 2006) varying in relational complexity (binary or ternary relations such as “The cat chases the mouse” or “The dog chases the cat which chases the mouse”) and in perceptual distraction. Working memory and inhibition are also assessed. Twenty children with SLI are matched to chronological age and linguistic age peers without language disorders. The data collection will be completed in March 2016.

References:

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