Processing of subject relatives in SLI children during structural priming and sentence repetition

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Subject relative clauses (SRC) are generally early acquired, at around 3 years in typically developing children (TDC; e.g., Crain et al., 1990). However, children with Specific Language Impairment (SLIC) display persistent difficulties in producing sentences containing subject (as well as object) relative clauses (Novogrodsky and Friedmann 2006). This difficulty extends to repetition of sentences (Conti-Ramsden et al., 2001).

Recent research has suggested that in TDC, prior exposure to even difficult structures can facilitate their subsequent production (e.g., Bencini&Valian, 2008). Such effects have been identified as manifestations of syntactic priming, whereby an abstract syntactic representation is facilitated (Bock,1986). In adults, syntactic priming appears to be implicated in sentence repetition (Potter & Lombardi,1998), and is generally enhanced by lexical repetition. It is therefore striking that SLI children do not show facilitated production of SRC in sentence repetition: We might have expected them to benefit from a syntactic priming effect, which should be enhanced by the exact lexical repetition. Such evidence appears to support the claim that SLIC do not have a representation of SRC. However, SLIC's poor performance in sentence repetition may reflect working memory or other non-syntactic impairments.

We compared SLIC's (and control TDC's) production in a syntactic priming paradigm using picture description with their performance in sentence repetition task where they have to repeat a sentence with a picture as a context. 38 (19 SLI, 19 TD) pre-school Italian children participated (mean 5;4 years, Non-verbal IQ > 92). Children repeated verbatim SRC sentences (repetition), and described pictures after hearing the experimenter describe a picture with an SRC ("the boy that's chasing the girl") or a simple Noun ("chair") as a baseline in a within-participants manipulation (priming; Branigan et al., 2005).

In the priming task, LME analyses showed significant main effects of Group and Prime: TDC produced more SRC than SLI, and both groups were more likely to produce SRC after hearing an SRC. We also found cumulative priming: The more SRC the child had previously produced, the more likely he/she was to produce an SRC. Crucially, there was no significant interaction between Prime and Type. Hence both groups showed equivalent structural priming. However, we find a significant effect of cumulative priming on TDC but not SLI, whereby a TDC is more likely to produce an SR after being exposed to it. Between-tasks comparisons showed SLIC to be significantly more impaired for SRCs in repetition than in priming, relative to TDC. Moreover, SLIC were more likely to produce SRCs that exactly repeated the experimenter's utterance in the priming task, where they spontaneously generated the utterance, than in the sentence repetition task.

These results show that SLIC are able to spontaneously produce SRCs after being exposed to them, and that their spontaneous production of SRCs in this context is less impaired than their elicited repetition of SRCs, relative to TDC. This study therefore suggests that SLIC have an abstract representation of the SRC that they can recruit during production, when it has been facilitated through previous use; moreover, this facilitation is not cumulative for SLI children.

The absence of cumulative priming in SLIC is an index that SR can be accessible in a priming task but implicit learning in is note present in SLIC. We argue that SLIC's poor performance in sentence repetition does not reflect a lack of syntactic knowledge, but rather a task-specific difficulty, likely related to decoding and mapping the semantic representation in the repetition task.

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