

IMPACT OF PHONOLOGICAL COMPLEXITY ON VERBAL SHORT-TERM MEMORY PERFORMANCE IN CHILDREN WITH SLI

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INTRODUCTION

Nonword repetition (NWR) is typically used to measure verbal short-term memory (STM) capacity in children, and poor performance in NWR tasks has been shown to be a reliable behavioural marker of SLI (Dollaghan & Campbell, 1998; Gathercole, 2006). However, mechanisms underlying this deficit are not clear, as NWR not only assesses STM but also requires complex phonological processing (Marton, 2006).

AIM

→ This study explored the extent to which SLI children's poor performance in NWR is related to inherent phonological processing requirements rather than a basic impairment in STM. This was achieved by manipulating syllabic complexity, perceptual complexity and lexicality of verbal stimuli to be recalled in a STM task.

METHODS

Participants: 15 children with SLI, 15 IQ- and Age-matched controls (AC) and 15 lexical age-matched controls (LC)

Task: Perceptual complexity: concatenated vs. temporally segregated syllables

Lexical complexity: word vs. nonword syllables

Syllabic complexity: CV vs. CCV syllables

Number of syllables: L2→L7

Table 1. Examples for stimuli of length 4

	Word		Nonword	
	CV	CCV	CV	CCV
Concatenated stimuli	dosbaingoutta /dɔ̃bɑ̃ŋguta/	cléfrontblancpris /klefrɔ̃blɑ̃pʁi/	dabeguto /dabɛgɛto/	klonfreublopra /klɔ̃frɛublɔ̃pʁa/
Segregated lists of syllables 500 msec	dos bain goût ta /dɔ̃/ /bɛ̃/ /gɔ̃/ /ta/	clé front blanc pris /kle/ /frɔ̃/ /blɑ̃/ /pʁi/	da be gu to /da/ /bɛ̃/ /gy/ /to/	klon freu blo pra /klɔ̃/ /frɛ̃/ /blo/ /pʁa/

RESULTS

Main effects:

Perceptual complexity: Concatenated > Segregated, $F(1, 42)=95.43$, $p<.001$

Syllabic complexity: CV > CCV, $F(1,42)=328.53$, $p<.001$

Lexicality: words > nonwords, $F(1,42)=124.82$, $p<.001$

Length effect: $F(1,42)=1286.26$, $p<.001$

Group effect : SLI < LC, SLI < AC, $F(2,42)=15,25$, $p<.001$

Interaction effects:

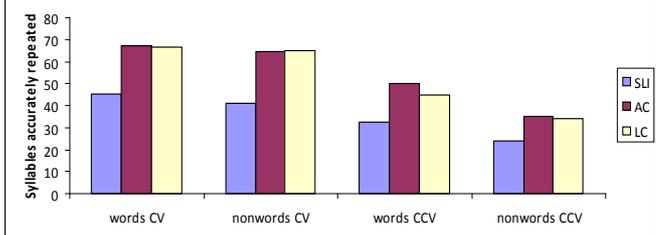
Length x group: $F(2,42)=2.81$, $p=.07$

Lexicality x syllabic complexity x group: $F(2,42)=4.21$, $p<.05$

Control groups: lexicality effect significant for CCV syllables only

SLI group: lexicality effect significant for CV and CCV syllables

Figure 1. Number of syllables accurately repeated as a function of phonological complexity and lexicality



DISCUSSION

The results do not support an increased sensitivity towards phonological complexity as underlying poor performance in NWR tasks (see also Archibald & Gathercole, 2007; Majerus et al., 2009). They confirm a general weakness in short-term recall of verbal information. Children with SLI appear to partially compensate this weakness by an increased reliance on lexical knowledge.

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