

Does phonological processing contribute to word learning?

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Working memory, as described by the influential Multi-Component Model (Baddeley and Hitch 1974; Baddeley 2007), is a subsystem of human memory used for temporary storage and manipulation of data needed for the completion of a given task. It contains a unit called the phonological loop, which is responsible for storing verbal information, specifically phonological forms of words (Baddeley 1966). The phonological loop seems to play a role in language acquisition, particularly vocabulary learning: kindergarten children who score better on the phonological loop tests turn out to know more words and learn new words more quickly than their peers with lower test scores (Gathercole and Baddeley 1990, 1989). The correlation between the phonological loop test results and vocabulary scores does not obtain for children aged 7 or older (Gathercole et al. 1992). However, phonological loop appears to affect the acquisition of the foreign language vocabulary, even in older learners: students with better phonological memory scores learn words in a foreign language faster and more effectively (Cheung 1996; Masoura and Gathercole 1999).

On that basis, a hypothesis can be drawn that the phonological loop plays a special role in the acquisition of vocabulary with a novel phonological structure, but not words characterised by the structure familiar to the speaker, such as the words of the native language. A model that can explain this mechanism has been described by Brown and Hulme (1996), who see the phonological loop as a place where temporary phonological representations of words are created. This happens whenever a speaker hears a foreign word with an entirely unfamiliar phonological structure: she needs to divide it into units and in this way create a representation of this word within the phonological loop, to be transferred later on into long-term memory. However, it might be posited that for new words of the native language, which have phonological structures very similar to items in one's lexical store, there is little need to create completely new representations. Within this theory, the ability to process words phonologically, that is divide speech into phonological units and manipulate them, would be crucial for foreign word learning. This mechanism has been so far explored in studies on Taiwanese children (Hu 2008; Hu and Schuele 2005), where correlation between measures of phonological processing and the scores on a foreign word learning task has been found. One problem with these studies is that the phonological novelty of the words the participants had to learn was not strictly controlled. Therefore, this paper proposes a new improved word learning task, which controls for the corpus frequency of the phonological structures used in the stimuli and thus their familiarity. This task constitutes the basis of a preliminary study examining the relationship between phonological loop, phonological sensitivity and novel word learning in 9-year-old Polish learners of English. In the paper, I will present the results of this study: the analysis of correlations between the participants' speed of learning foreign-sounding pseudowords (as opposed to familiar-sounding pseudowords), and their phonological loop and phonological sensitivity scores.

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