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児童における口頭数詞からアラビア数字表記への変換処理に対する数字の属性およびワーキングメモリ機能の影響

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Impact of the properties in numbers and working memory capacity on transcoding from verbal to Arabic numerals in school children

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The purpose of the current research was to determine the properties of number transcoding from verbal to Arabic form in school children in relation to the number of digits, the number of procedures for transcoding, and working memory capacity. Eighty-six elementary school students in grades 2 through 4 with no known developmental problems participated in this study. In the transcoding task, participants were required to write down a total of 78 one- to four-digit numbers dictated. The results were as follows. 1) The impact of grade level on error rate in transcoding was not statistically significant. 2) No effect of transcoding regularity on error rates was found at any grade level. 3) The influence of the number of procedures for transcoding on the error rate was found in all grades, whereas that of the number of digits was not found for all grade children. 4) Error rates were significantly associated with visuo-spatial working memory capacity, but

not with phonological working memory capacity. These results suggest that the ability to process visuospatial information for understanding of the base-10 place-value structure of the Arabic number system is crucial for the development of number transcoding in school children.

Key words

number transcoding, school children, properties of numbers, working memory

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