Finger Based Representation of Numbers: Correlation Between Finger Tapping Ability and Digit Span

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Abstract: Based on previous research on finger based representation of numbers, we investigated the relation between sequential finger tapping and numeric working memory. Subjects (N=44, all right handed) were given a sequential finger tapping (SFT) test and a forward and backward digit-span (FDS, BDS) test. SFT test measured the participants' ability to execute simple (following the anatomical order) and complex finger tapping sequences with their right hands. We calculated two standardized scores, first involving all sequences (SFT) and second only complex sequences (cSFT). There were no significant correlations between SFT and both FDS (r=0.225, p=0.141) and BDS (r=0.210, p=0.170). However, cSFT scores correlated significantly with both FDS (r=0.304, p=0.045), and BDS [r=0.336, p=0.026]. Since independent movement of fingers relies on distinct finger representations, we interpret the results as finger representation involvement in numeric memory. The stronger correlation between cSFT and BDS might be due to the order processing involved in both.