

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

How can visual perception of numbers affect computational fluency?

Permalink

<https://escholarship.org/uc/item/7xn1796z>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 44(44)

Authors

Takahashi, Maiko
Inoue, Souko

Publication Date

2022

Peer reviewed

How can visual perception of numbers affect computational fluency?

Maiko Takahashi

the University of Tokyo, Tokyo, Japan

Souko Inoue

MITA International School, Tokyo, Japan

Abstract

The ability to calculate fluently is one of the basic academic skills, but certain students have difficulty acquiring it, such as those with developmental dyscalculia. In this study, we focus on the visual perception of numbers as a factor related to computational fluency, and examine whether enlarging the letters of the numbers or widening the line spacing in a calculation task would increase computational fluency. Four hundred and thirty-six junior high school students were asked to perform a two-digit addition or subtraction task in which font size and line width were manipulated, and the number of correct answers per minute was used as a measure of computational fluency. The results showed that enlarging the font size increased the computational fluency of all participants, and that widening the line spacing contributed to the fluency of participants with low computational skills, while it may decrease that of high computational skills.