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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

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Publication Date

2019

Peer reviewed

RunTheLine: An infinite runner serious game to train comprehension of societally relevant large numbers

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Abstract

Large numbers play a significant role in personal and political financial choices and the understanding of exponential growth. Large numbers are also often misjudged, showing a logarithmic number understanding. Small numbers are however represented in a linear fashion, due to direct experience on for example number lines. Earlier, it was shown that large number comprehension can be trained, influencing societally relevant choices. We trained large number comprehension using a serious game (RunTheLine): an infinite runner game where an avatar runs on a number line ranging till one billion. Due to the game mechanics, the players walk the number line at both small and large numbers in small steps, making them aware of the continuity of the number line. Pre-post test differences show a change in economic judgments compared to a control group. This offers a scientific manipulation of behavioral and cortical number line representations and potential educational applications.