Fractions War: An iOS Game to Measure and Train Magnitude Processing with Fractions

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Abstract

Although correlations between magnitude processing and math skills are well established, direct tests of interventions that improve magnitude processing are scarce, and the few extant studies have depended on lab-based tasks. Advances in interactive technology create novel opportunities to design learning experiences that also permit directly testing causal mechanisms in more naturalistic contexts. To capitalize on these opportunities, we developed Fractions War, an iOS app for tablets to train fractions magnitude representations. Players turn over pairs of cards that create a fraction, and indicate which player's fraction has the larger magnitude to gain points. Cards can be altered to present comparisons between symbolic fractions (2/7), nonsymbolic ratios (2 diamonds over 7 hearts), or mixed representations (traditional cards). We examine hallmarks of fraction magnitude processing (e.g. the numerical distance effect) using in-game data and discuss ongoing work testing the effectiveness of Fractions War for improving fractions magnitude processing.