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Irrelevant variability and interleaved/blocked training in an artificial orthography task and connectionist models

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Abstract

Recent work on reading suggests variability in irrelevant elements benefits the learning of sound/spelling correspondences (Apfelbaum et al, 2013). However, under some conditions similarity helps, perhaps depending on the order of items during training (Roembke et al., submitted). To investigate this in the laboratory, we trained adults to map abstract four-symbol strings onto three-finger manual responses. As in reading, there were one-to-one mappings (”consonants”, where one symbol indicates a specific finger) and two-to-one mappings (”digraph vowels” like AI where two symbols map to one finger). Participants (N=15/condition) were trained on variable or similar consonant sets, and with vowels either blocked or interleaved. We found a similarity benefit for interleaved but not blocked training. However, for generalization, there was a variability benefit. Surprisingly, a simple backpropagation model showed both patternsincluding the blocking effect. This suggests that blocking effectstypically thought to invoke explicit strategiesmay derive from associative principles.