Addressing complexity in learning to read the Manchu writing system

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Learning to read fundamentally requires mastering orthography—acquiring written symbols and their mapping principles with sounds. This process challenges novice learners due to symbol visual complexity and the complex mapping relationship between symbols and sounds. Current reading theories largely rely on English and a few Western European languages (Share, 2025), limiting the capacity to develop a universal theory of reading. To expand the scope, we present a study on the Manchu language, a critically endangered yet under-investigated language in China with unique features of visual complexity and symbol-sound mapping complexity. Using orthographic units called *uju hergen*—symbol blocks representing phonological syllables—we investigated the role of different visual features and phonological representations in learning the Manchu orthography. Novice Manchu learners (n = 196; 89.8% female; M_{age} = 18.79) participated in two experiments designed to assess error patterns in uju hergen recognition. Experiment 1 focused on visual complexity of uju hergen and Experiment 2 on mapping complexity between Manchu phoneme marker and sound. We found a unique contribution made by connected points on uju hergen recognition. Furthermore, lower naming error rate was observed for the list of uju hergen characterised by single (one–to–one) mapping between a phoneme marker and sound compared to those by multiple (one–to–many) mapping. No switching cost was observed for the two lists presented in the blocked and mixed orders. We thus propose that, at the sub-symbol level, connected points seem to cue uju hergen symbol blocks decoding, and at the symbol level, uju hergen appear to be read by analysing their constituent phoneme markers. Findings from this understudied Manchu orthography confirm the explanatory power of the constructs of grain size, transparency, inventory size, all of them being referred to by us as orthographic scale.

Keywords: reading, Manchu, uju hergen, orthographic scale

Share, D. L. (2025). Blueprint for a universal theory of learning to read: The combinatorial model. *Reading Research Quarterly*, *60*(2), 1–51. https://doi.org/10.1002/rrq.603