

## **Abstract**

This research aimed to examine children's Chinese spelling acquisition in groups of grade three kindergartners (K3, N=118) and grade three primary students (P3, N=141) in Hong Kong. Two studies were conducted. In Study One, we examined the question of the best model is for learning to spell Chinese words for Hong Kong children, i.e., what kind of linguistic, handwriting, and cognitive skills contribute to spelling acquisition significantly. A comprehensive set of measurements were administered, including semantic radical processing, radical position processing, morphological awareness, vocabulary knowledge, rapid digit naming, orthographic awareness, stroke order awareness, writing fluency, visual-motor integration, foreign script copying, delayed copying, visual-orthographic judgment, backward digits, and orthographic long term memory. Based on both confirmatory factor analyses and multiple regression analyses, the results of Study One were that: 1) a four factor model composed of orthographic working memory, orthographic knowledge, semantic knowledge, and visual-motor skills was established for K3 children and P3 children, respectively. 2) Semantic radical knowledge was the underlying orthographic knowledge factor in K3, whereas the semantic knowledge factor was stronger in P3. 3) The orthographic working memory factor was found to be separate from delayed copy and visual-orthographic judgment in P3, and also from writing fluency additionally in K3, via factor analyses. 4) Hierarchical regression analysis revealed that orthographic working memory was the most salient correlate among all the factors, with IQ and age statistically controlled in both age groups. 5) For K3 children, the orthographic knowledge factor was additionally important, whereas for P3 children, semantic skills were additionally important, for

explaining spelling. 6) Regression analyses also revealed a significant contribution from visual-motor skills to children's word writing, with age and IQ controlled. The significance of visual-motor skills in spelling was weaker in children at P3. 7) An examination of the delayed copying task showed that it entailed three basic components, namely, handwriting skills, working memory skills, and prior orthographic knowledge. 8) Hierarchical regression analyses in K3 demonstrated that not only orthographic working memory, but also orthographic long term memory contributed to word spelling, over and beyond age, IQ, linguistic skills and handwriting skills. 9) In addition, there was no significant interaction between orthographic working memory and long term memory, suggesting that they may be two independent systems. 10) Backward digit span was only administered to P3 children. Phonological working memory assessed by backward digits span had a striking role in explaining variance in spelling at P3, in addition to all the other linguistic, handwriting and cognitive skills.

The purpose of Study Two was threefold. Firstly, I aimed to investigate the spelling error profiles in the two grades. Orthographic-based and phonologically based errors were most prevalent, occupying 90% of the total errors, with a slight increase in phonological errors in P3 as compared to K3. Secondly, the present study examined the associations between each type of error with its accordance linguistic and/or cognitive skills, but results were inconclusive. Thirdly, I attempted to use these spelling errors to account for children's literacy abilities. The morphologically-based error was the only error type that (marginally) significantly accounted for children's spelling across ages.

Findings in this study not only extended our understanding of spelling development, and the roles of linguistic skills, handwriting skills, and cognitive skills in the course of

development. They also provided us with directions for potentially identifying children with spelling difficulties and designing targeted interventions for them.