INVESTIGATING THE COMPONENT PROCESSES UNDERLYING RAPID AUTOMATIZED NAMING (RAN) ACROSS LANGUAGES: EVIDENCE FROM CHINESE-ENGLISH BILINGUALS

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The rapid automatized naming (RAN) task requires people to name aloud recurring simple visual stimuli (e.g., letters and numbers) as fast and accurate as possible. RAN reliably predicts variation in reading ability, though it remains unclear how cognitive processes underlying RAN relate to reading ability, and whether this differs across languages. Using Latin alphabetic and Chinese character stimuli, we evaluated how visual, phonological and – for the first time due to the use of Chinese character stimuli that are inherently carry semantic information – semantic similarity affect both RAN performance (quantified using voice and eye movement measures) and RAN-reading relationships in Chinese L1 - English L2 bilingual adult participants (N = 40). During the experiment, subjects were asked to sequentially name Chinese character and English letters as fast and as acurate as possible, and they were also tested on Chinese and English paragraph reading ability. Results showed that visual but not phonological similarity consistently decreased naming efficiency in all voice and eye movement measures in bilingual RAN. Moreover, semantic similarity increased pause time and decreased saccade amplitude. Finally, pause time and reading errors were found to predict some aspects of reading performance both within and across languages, although the predictive power was not strong (perhaps due to our highly educated subject group). These findings first confirm a key role of visual over phonological processing in RAN in English and Chinese, indicating that RAN quantifies the automaticity of visual processing across language typologies, and predicts reading ability across languages. Moreover, they provide first evidence for a role of semantic processing in RAN, a finding previously unattested due to focusing on alphanumeric RAN stimuli.