

Synesthesia in Korean: Is it Grapheme-Color or Syllable-Color?

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Grapheme-color synesthesia is traditionally defined as the consistent experience of colors when viewing *graphemes* – the smallest orthographic unit in a language. For example, in English (the most common language in which synesthesia is studied), grapheme-color synesthetes typically experience a single color for a single letter. For these synesthetes, the color of syllables and words is usually derived from the color of their component letters. In this way, the grapheme is considered the “fundamental unit” of synesthesia, in other words, the “source” of the color association. This experience is broadly consistent with psycholinguistic studies, which suggest that for English speakers, the letter is the fundamental unit in reading. However, not all languages are alphabetic or grapheme-based. For example, the Korean Hangul writing system combines features of syllabic and alphabetic systems in one script. Hangul is fundamentally an alphabetic system with separate vowel and consonant graphemes (e.g., a consonant ‘ㄴ’, a vowel ‘ㅏ’), but its visual structure is predominantly syllable-based (e.g., a syllable ‘ㄴㅏ’): the graphemes are organized into rectangular-shaped written syllables with distinctive boundaries. Indeed, there is evidence from psycholinguistic studies that the syllable (rather than the grapheme) is the fundamental unit in reading in Korean. Is this cross-language difference reflected in the color experiences of Korean grapheme-color synesthetes?

We collected data from Korean synesthetes who used a color picker and a painter to depict their experiences of both individual graphemes and syllable blocks. The results showed that synesthetes often experienced syllables in a single color, unrelated to the color of individual graphemes – consistent with the syllabic nature of Hangul. Nevertheless, *some* syllables inherited their color from their initial grapheme, suggesting residual influence of alphabetic processing. Our findings demonstrate how synesthetic experiences reflect unique features of the synesthete’s language. A comprehensive examination of synesthesia in Korean could thus provide novel insights into the cognitive representation of non-alphabetic writing systems.