# Orthographic representations during heritage language processing: Insights from Korean

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## Introduction

Korean uses **two** scripts:

**Hangul** – the native Korean alphabet (alphabetic syllabary)
**Hanja** – borrowed Chinese characters incorporated into Korean according to Korean phonotactics (logographic)

Hangul characters combine differently to create 2,000 distinct syllables, of which native Korean words make full use, but Sino-Korean words use only 440 of the possible combinations. This means that

(1) the Korean lexicon can **be divided into two sub-lexicons, one which is native Korean, and one which is Sino-Korean**, as a result of this duality of writing systems, and

(2) within the Sino-Korean lexicon, there is **repeated use of the same syllable to represent different meanings in Sino-Korean.**

| | homographs | homophones | heterographs |
|---|---|---|---|
| 학교 'school' | 학 | [hak] | 學 'learning' |
| 학대 'abuse' | 학 | [hak] | 虐 'harm' |
| 학립 'longing' | 학 | [hak] | 鶴 'crane' |

## Previous work

Cho & Chen (1999) have found both scripts to play key role in processing of Korean — two structurally different scripts provide flexibility in semantic access

Kim et al. (2021, 2022) have found that native speakers of Korean actively rely on the contributions of Hanja during lexical processing.

Yi (2009) posits morphological effects and conceptualizes the role of Hanja at the level of morphological processing; however, the effects of Hanja seems beyond those of a simple process of sequential combinatorics.

It remains unclear whether comparable patterns of processing would be observed in heritage speakers of Korean, who are exposed to the same saturation of Sino Korean in their everyday vocabulary and are likely to have developed their own conceptual understanding of Hanja, even if not literate to the same extent as native speakers.

## Research questions

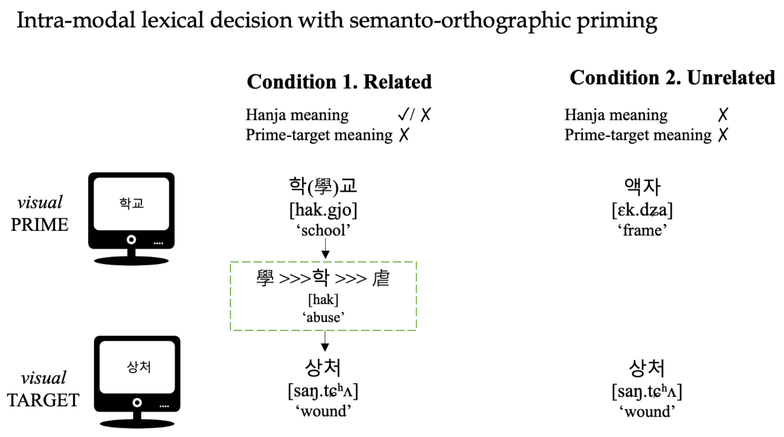
- Does processing of Korean recruit the contributions of script? Are mental representations enriched by more orthographic and script-related information?
- How do the effects of script vary for speakers with differential abilities, particularly in written language, i.e., heritage speakers of Korean?

## Experimental design

Primes were Sino-Korean words, containing a homographic morpheme with more than one meaning.

Both primes and targets were presented visually, and participants were asked to respond to only the target items.

### Experimental conditions




- Native speakers were tested in Korea at three different universities, and heritage speakers were tested at the University of Oxford in the UK.
- Native and heritage speakers were classified according the number of years lived outside Korea, whether their dominant societal language was Korean or English, and whether their pre-university education was in Korean or English.

## Discussion

Hanja **is** represented in some way in our mental representation and lexical knowledge of Sino-Korean for both heritage and native speakers, that seems more than simple structural combinatorics.

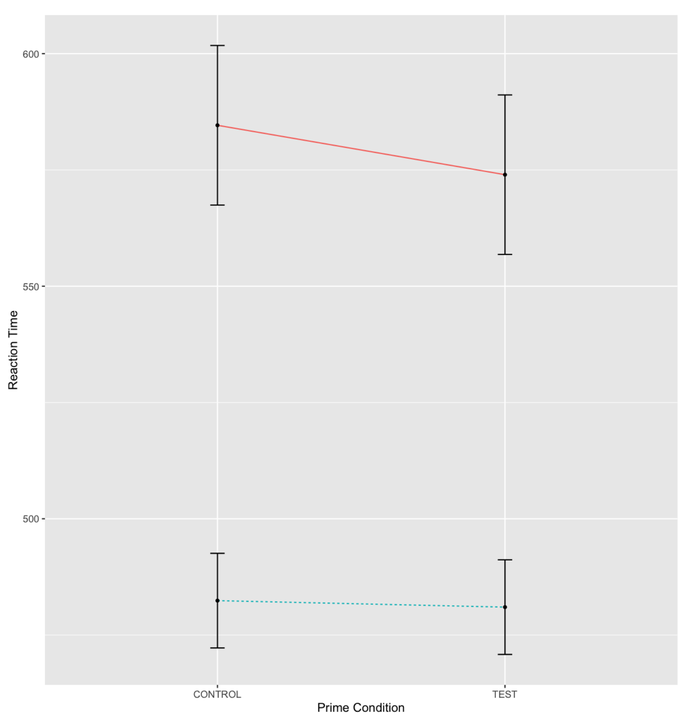
The effects are different; **native speakers** recruit contributions of semantics of Hanja but at a cost, **inhibiting** processing, while **heritage speakers** also recruit similar representations but **benefit** from doing so from the spreading activation from one Hanja to another.

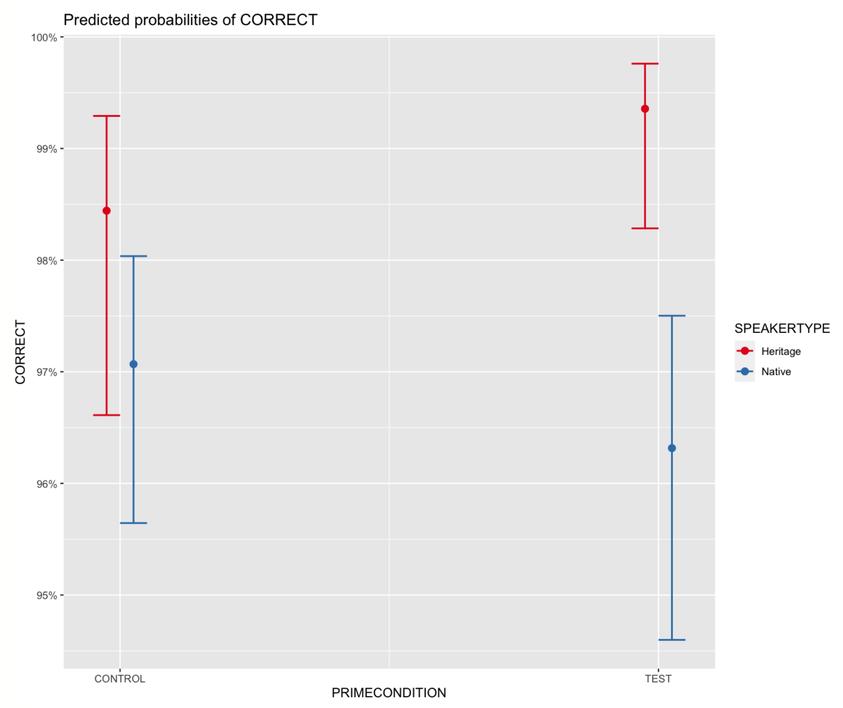
Hangul-Hanja connections that adult speakers are less sensitive to by virtue of such connections being part and parcel of the adult grammar are more acutely processed by heritage speakers, hence difference in performance.

➢ The semantics of Hanja create **implicit semantic networks that combine to form the Sino-Korean mental lexicon for both native and heritage speakers, but their reliance on this network varies significantly.**

## Findings

Heritage speakers were significantly slower than native speakers, with noticeable difference between Related-Unrelated change in RTs for heritage, relative to native speakers (**left**), but also heritage speakers performed better in the task than native speakers (**right**).

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