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# Japanese Kanji Processing Pilot



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## Introduction

- Different orthographies are processed differently
- Previous research has indicated that Chinese hanzi (logographic writing system) is processed semantically
- Japanese kanji (although logographic) have on- and kun- reading distinctions, and may be processed differently
- Previous research has shown Japanese kanji to be processed phonologically, but only compound word stimuli were used
- Previous research did not control for word frequency extensively
- Previous research did not specify their participants' exposure to other languages (i.e. Chinese hanzi)
- Previous research has not looked extensively at possible processing differences between L1 and L2 Japanese speakers
- Previous research has shown very mixed results for across script priming with Japanese, due to lack of research on how Japanese kanji is actually processed

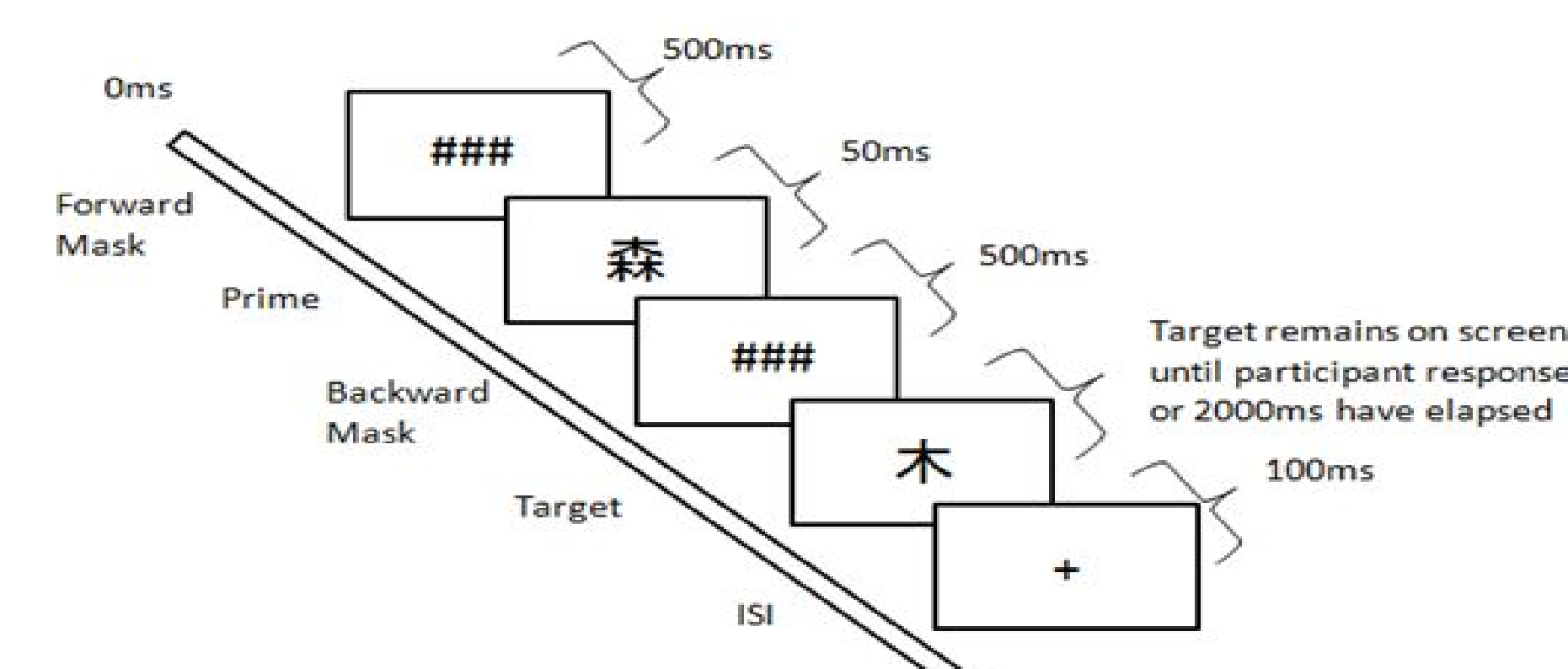
## Hypotheses

1. L1 speakers will show stronger priming effects than L2 speakers
  - as they are expected to process more automatically
2. Phonological primes will have a stronger effect than semantic primes for both L1 and L2 speakers
  - kun-reading preference for standalone kanji
  - high frequency kanji effects

## Methodology

- Participants: 9 in total
  - 5 L1 speakers (1 male, 4 female)
  - 2 L2 speakers (1 male, 1 female)
  - 2 Heritage speakers (1 male, 1 female)
  - Participant age range: 19 - 41 (n=25)
- Participants were asked to complete:
  - Japanese Cloze Task
  - Short Language Background Questionnaire (LBQ)
  - Long version of the LBQ (if the participants had significant previous exposure to Chinese)
- Forward masked priming (50ms) lexical decision task
  - 4 sets of identity primes, control primes, phonological primes and semantic primes
  - Stand alone high frequency Japanese kanji targets
  - Stand alone Chinese hanzi pseudowords
- The participants' accuracy and reaction times (RT) were measured via button pressing

Sample Stimuli

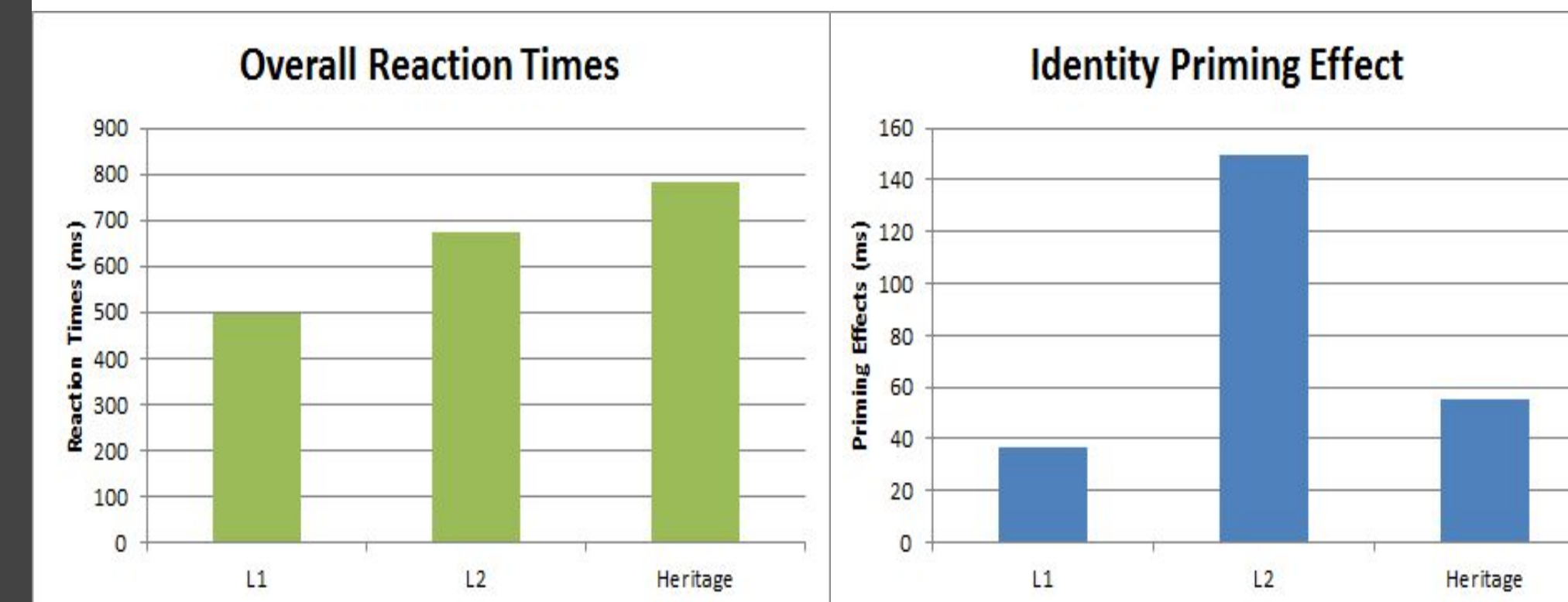


Target	Phonological Prime	Semantic Prime	Control
木	氣	森	月
ki	ki	mori	tsuki
tree	spirit	forest	moon

(Vinerte 2015)

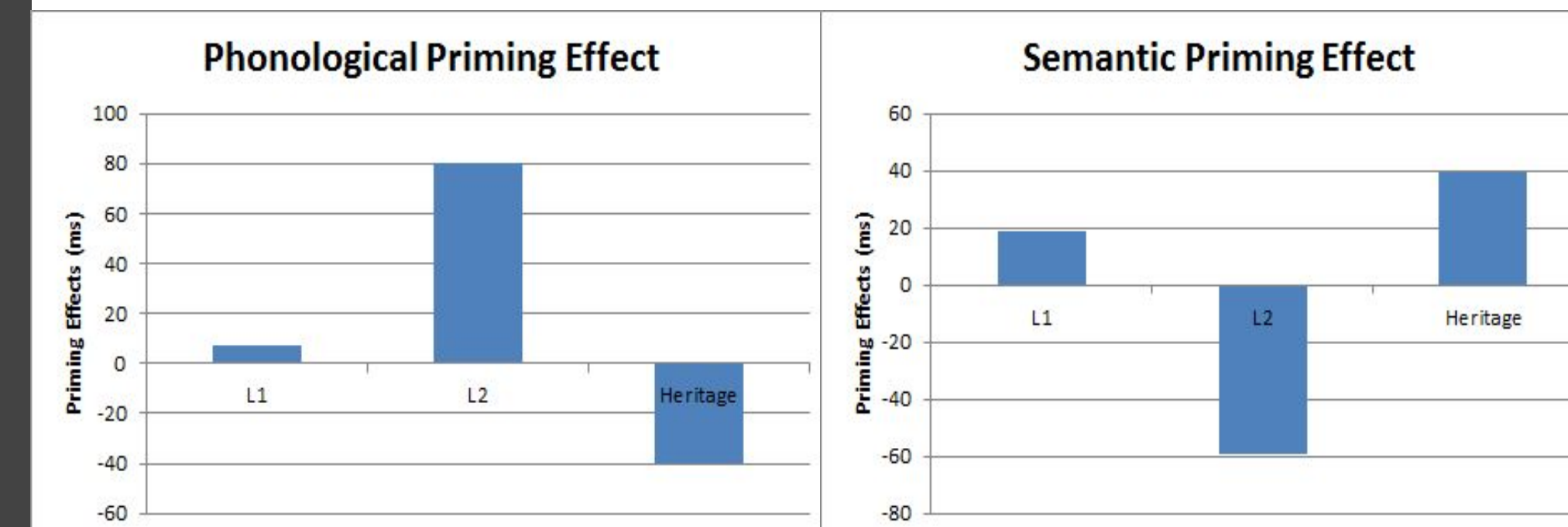
## Results

- L1 speakers showed stronger priming effects than L2 speakers
- L1 speakers showed stronger semantic priming effects
- L2 speakers showed stronger phonological priming effects
- Heritage speakers showed stronger semantic priming effects



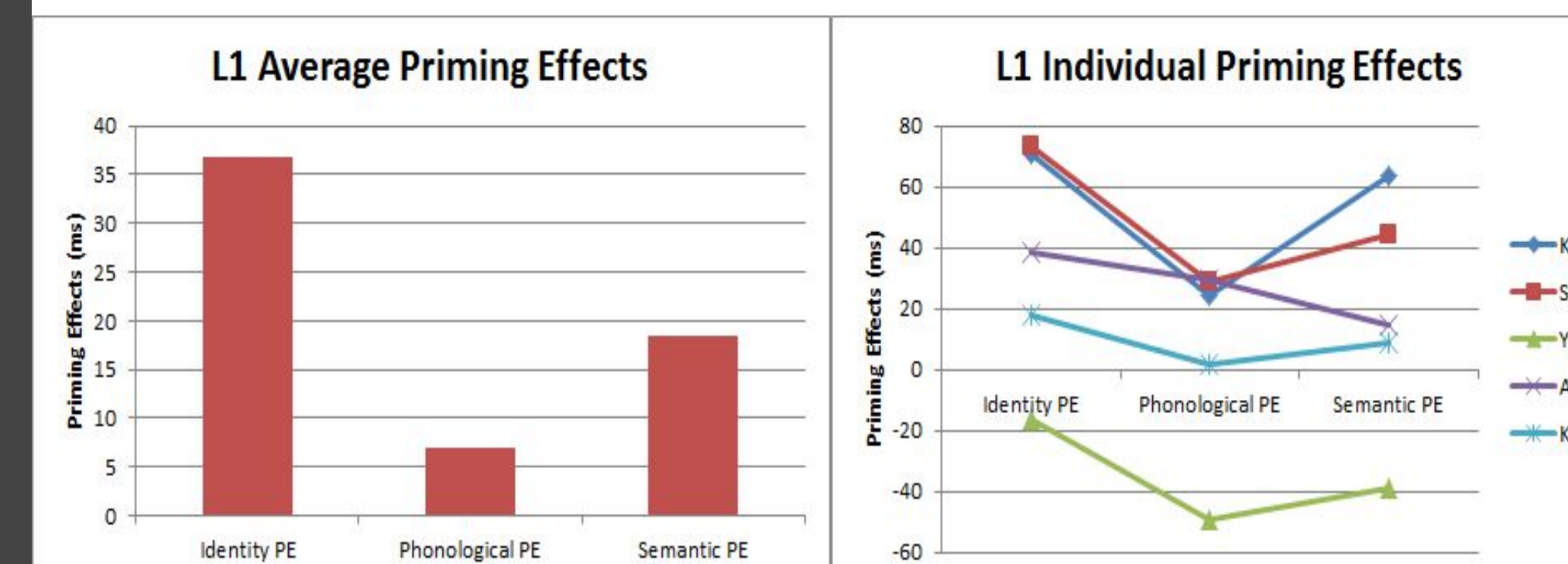
L1 speakers show a lower reaction time overall (L1>L2>Heritage).

All groups show identity priming effects with L2 speakers showing the strongest effect (L2>Heritage>L1).



L1 and L2 speakers show phonological priming effects with L2 speakers showing a stronger effect (L2>L1>Heritage).

L1 and Heritage speakers show semantic priming effects with Heritage speakers showing a stronger effect (Heritage>L1>L2).



Overall, L1 speakers show stronger semantic priming effects than phonological priming effects.

With the exception of participant AK04, all L1 speakers showed a stronger semantic priming effect.

## Conclusions

- In line with hypothesis 1, L1 speakers showed stronger overall priming effects
- Contrary to hypothesis 2, L1 speakers of Japanese showed stronger semantic priming effects than phonological priming effects
- Additional research with L1 speakers will be required to explain the processing difference in participant AK04 (to decide whether or not they are actually an outlier)
- L2 speakers processed phonologically, likely due to formal instructional settings which tend to put more emphasis on pronunciation
- Heritage speakers processed semantically like the L1 speakers, despite their L1 (Japanese) no longer being their dominant language, they are still able to guess the meaning of words even if they were unable to read the actual words

## Future Directions

- Stricter participant selection criteria
  - High proficiency in Japanese for L2 participants
  - Due to the stimuli, potential participants should have no prior exposure to Chinese
  - Participants' age of acquisition
- The font of the stimuli
  - Chinese hanzi words and Japanese kanji words had slightly different stroke thickness, despite our efforts to correct it
- Running participants in different language environments
  - only ran participants in an English language environment for our experiment

## References

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