



The Representation of Polysemy in Mandarin Verbs: *Chī*, *Dǎ*, and *Xǐ*

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ABSTRACT

A semantic judgment priming task was performed purporting to examine different accounts as to how senses of three semantically complex Mandarin verbs *chī* ‘eat’, *dǎ* ‘hit’, and *xǐ* ‘wash’ are represented in the mental lexicon. All the prime stimuli (verb-noun phrases) were constructed with the basic sense of the three critical polysemous verbs, whereas three groups of targets were prepared for the task. These included verb-noun phrases with the basic sense, closely-related senses, and distantly-related senses of the verbs. The results indicate linearly decreasing priming effects for senses moving from the basic senses, through the closely-related senses and to the distantly-related senses, disconfirming the separate-entry view while providing evidence for a shared representation among polysemous senses in Mandarin.

Keywords: lexical ambiguity; polysemy; sense relatedness; priming

1. BACKGROUND

There are two rivaling hypotheses pertaining to the nature of polysemous senses in the mental lexicon:

The Separate-Entry View

- Each sense of a polysemous word is represented individually, and if there is a core meaning, it may not play an important role (Klein and Murphy, 2001).

The Core Representation View

- Polysemous senses share a core representation.
- Different types of polysemy may yield distinct processing patterns (Klepousnioutou, 2002; Brown, 2008).

Most of the previous studies tended to choose many different polysemous words as materials but dealt with only two senses of these words in the experiment. While for semantically complex polysemous words bearing differently-extended senses in Mandarin, it should be asked how they are represented in the mental lexicon.

2. RESEARCH QUESTIONS

- Do degree of sense relatedness and degree of familiarity play a role in semantic processing time?
- Are polysemous senses stored separately or do they share a core meaning or any general representation?

3. METHODS

Participants

- 22 male and 23 female native speakers of Mandarin age 19-40 ($M=26$).

Table 1: Examples of the Stimuli

	<i>chī</i>	<i>dǎ</i>	<i>xǐ</i>
Primes (9 for each verb)			
Basic Sense	<i>chī niúpái</i> (to eat steak)	<i>dǎ cáipàn</i> (to hit the umpire)	<i>xǐ wàzi</i> (to wash socks)
Targets (18 for each verb)			
Same Sense	<i>chī tángguǒ</i> (to eat candies)	<i>dǎ xiǎohái</i> (to hit kids)	<i>xǐ guōzi</i> (to wash pots)
Closely-Related Senses	<i>chī wěiyá</i> (to attend a year-end party)	<i>dǎ páiqiú</i> (to play volleyball)	<i>xǐ wēnquán</i> (to take a bath in a hot spring)
Distantly-Related Senses	<i>chī bàizhàng</i> (to lose a battle)	<i>dǎ cǎogǎo</i> (to write a draft)	<i>xǐ yuānqū</i> (to right a wrong)

Materials

- 27 primes, 54 targets, and 27 filler pairs were prepared.

Procedure

- Subjects responded to both primes and targets in the semantic judgment task. There were 81 trials in total. A short break was allowed after every 27 trials.
- A familiarity questionnaire using the 7 Scale Likert scale was administered after the priming task.

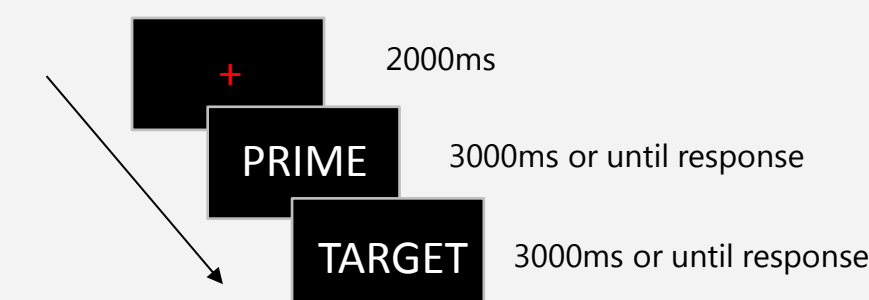


Figure 1: Example of a trial display

4. RESULTS

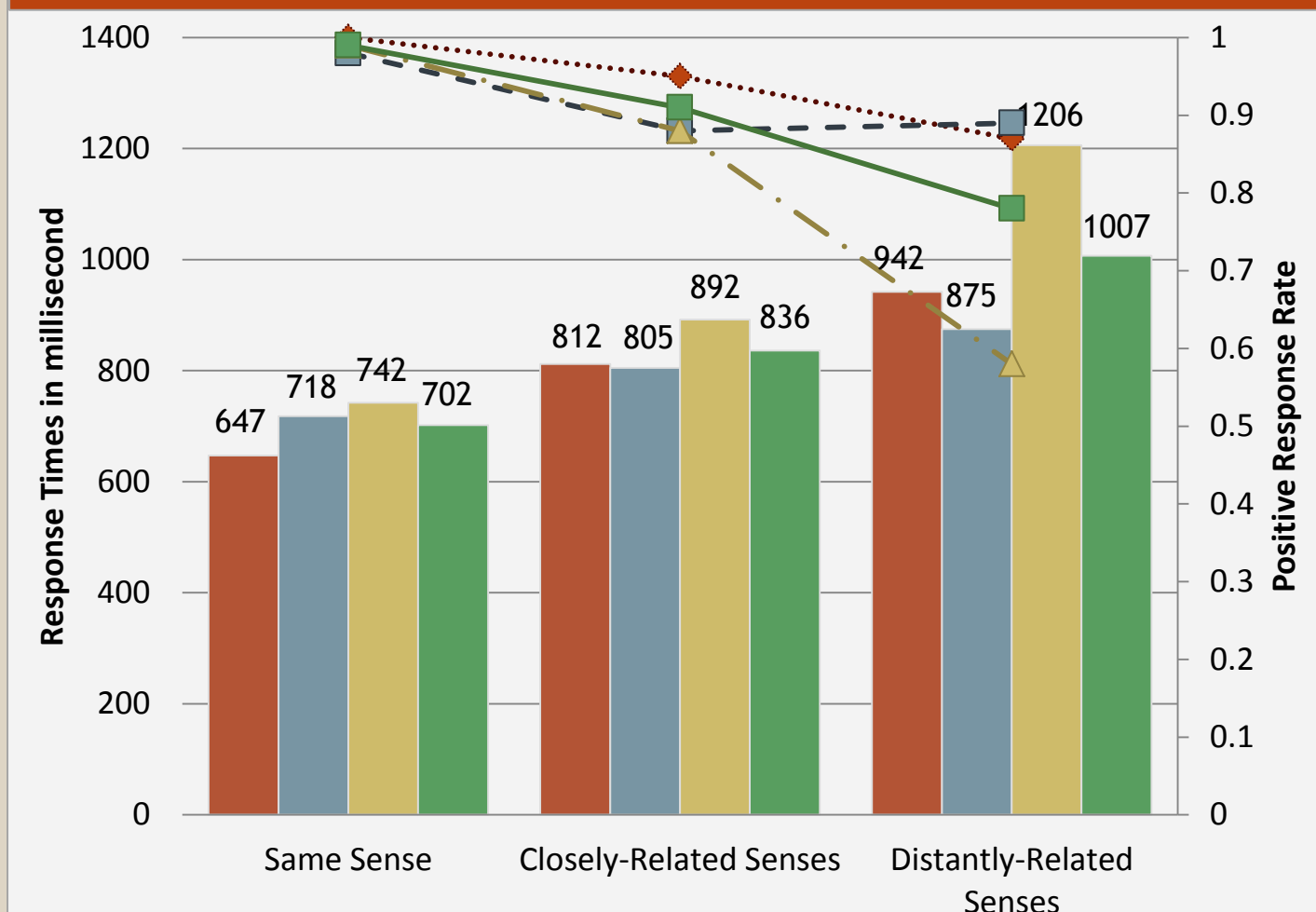


Figure 2: Mean Response Times and Positive Response Rate for Each Condition

4.1

- Only positive responses (yes) to the targets were included in the reaction time data.
- The less the target verb sense related to the basic sense, the lower the acceptability rate became. This also yielded a longer positive response time.
- In the latter two conditions, *dǎ* was processed the fastest, in particular ‘Distantly-Related Senses’ (e.g., *chī guānsī* ‘to be sued’: 1092ms, *dǎ jiāodào* ‘to deal with someone’: 799ms)

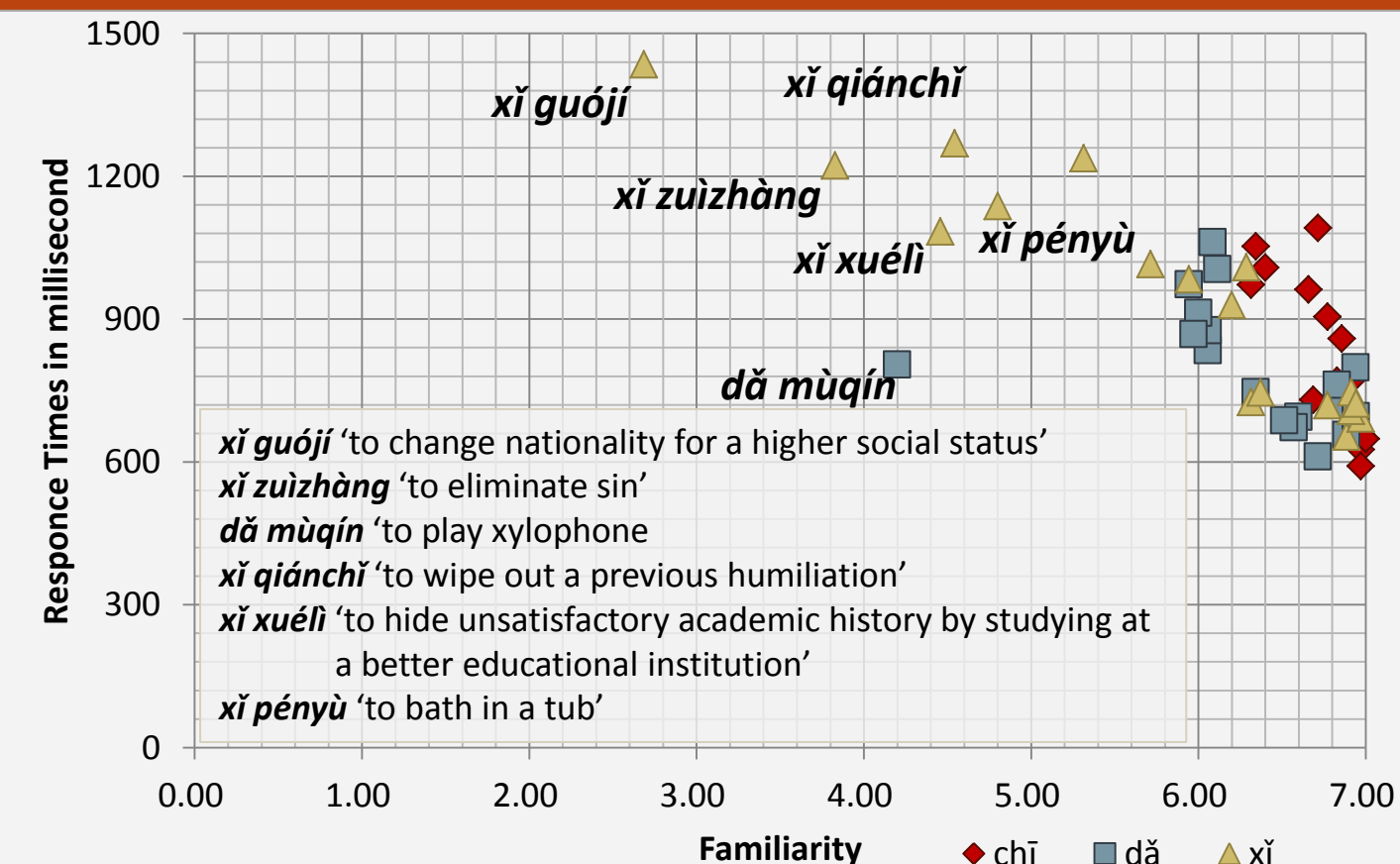


Figure 3: Mean Response Times and Familiarity for Each Target

- Xǐ* had the longest average RTs and greatest RTs difference of the three conditions. (cf. Figure 3: Familiarity)

4.2

- A 3 (Condition) \times 3 (Verb type) ANCOVA with mean Familiarity as a covariate revealed a significant linear relationship between Familiarity and transformed RTs, $F(1, 44) = 18.82$, $p < 0.0001$, $\eta^2 = 0.30$.
- Neither significant effects of Verb Type were observed, nor was there an interaction between Condition and Verb Type.
- Main effects of Condition were found, $F(2, 44) = 11.19$, $p = 0.0001$, $\eta^2 = 0.34$.

4. RESULTS (cont.)

Table 2: Least Squares Means for Effect of Each Pair of Conditions Using Tukey-Kramer Test ($p < .05$)

Condition	Same Sense	Closely-Related Senses	Distantly-Related Senses
Same Sense		$q = -2.85$ ($p = 0.02$)	$q = -4.73$ ($p < .0001$)
Closely-Related Senses	$q = 2.85$ ($p = 0.02$)		$q = -2.59$ ($p = 0.03$)
Distantly-Related Senses	$q = 4.73$ ($p < .0001$)	$q = -2.59$ ($p = 0.03$)	

- The model accounts for a significant amount ($p < 0.0001$) of the variation in the experiment, nearly 73% of it (R-Square = 0.73).

5. DISCUSSION

- The preliminary results contradict the separate representation account in that the priming effects for ‘Closely-Related Senses’ was larger than that for ‘Distantly-Related Senses’. This indicates a correlation between semantic relatedness and semantic overlap.
- The findings imply a shared representation, the size of which may differ according to the degree of semantic relatedness.
- Two possible explanations:
 - Closely-related senses (mostly metonymically extended) share a core-meaning with the basic sense, while distantly-related senses (mostly metaphorically extended) are listed as separate entries.
 - Semantic hierarchy: The size of the shared core semantic feature varies for each extended sense according to its relatedness to the basic sense.

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ACKNOWLEDGMENT

- This work is particularly supported by Ministry of Science and Technology (MOST 102-2410-H-003-018-MY2) in Taiwan.
- A special thank you goes to Ministry of Science and Technology (MOST-103-2922-I-003-062) for subsidizing registration fee and travel cost of the 2014 Conference on the Mental Lexicon.