On the semantics-driven disambiguation in the processing of Korean comparative constructions

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Introduction

- **When, and how does the disambiguation mechanism work when it encounters ambiguous sentences?**
  - Particularly, what are the roles of the lexical-semantic features of incoming words in disambiguation process?

- **In Korean, some comparative constructions show a locally ambiguous structure.**
  - (1) Tasha-TOP Mary-than Sue-ACC like
    (TOP = Topic, ACC = Accusative, NOM = Nominative)
  - → (1-1) [Tasha-TOP **Mary-ACC** like]-than Sue-ACC more like
    "Tasha likes Sue more than Tasha likes Mary." **(Mary as Theme)**
  - → (1-2) Tasha-TOP [**Mary-NOM** Sue-ACC like]-than Sue-ACC more like
    "Tasha likes Sue more than Mary likes Sue." **(Mary as Experiencer)**
  - ⇒ Given Minimal Attachment (Frazier, 1979), (1-1) is expected to be selected at the object position(=Sue-ACC).

- **But the strength of semantic association between the compared words might play a critical role.**
  - (2) Tasha-TOP chef-than cooking-ACC like
    - → Same ambiguity with (1), but its interpretation such as (1-2) would be preferred against Minimal Attachment due to the strong semantic relationship between 'a chef' and 'cooking'.

- **How do the semantics-driven factors influence the disambiguation processing in the Korean comparatives constructions?**

Experiment

1. Sentence Completion Task

- **Participants:** 34 Korean native speakers (female = 21, M = 23 y.o.)
- **Stimuli:** Total 60 sentences (20 targets x 3 conditions (See Tab.1), 180 fillers
- **Analysis:** Paired t-test (two-tailed)

Conditions	Examples
[a] None association	Tasha-TOP Mary-than Sue-OBJ _____
[b] Weak association	Tasha-TOP Mary-than shopping-OBJ _____
[c] Strong association	Tasha-TOP chef-than cooking-OBJ _____

< Tab. 1 The conditions and examples of target sentences in Exp. 1>
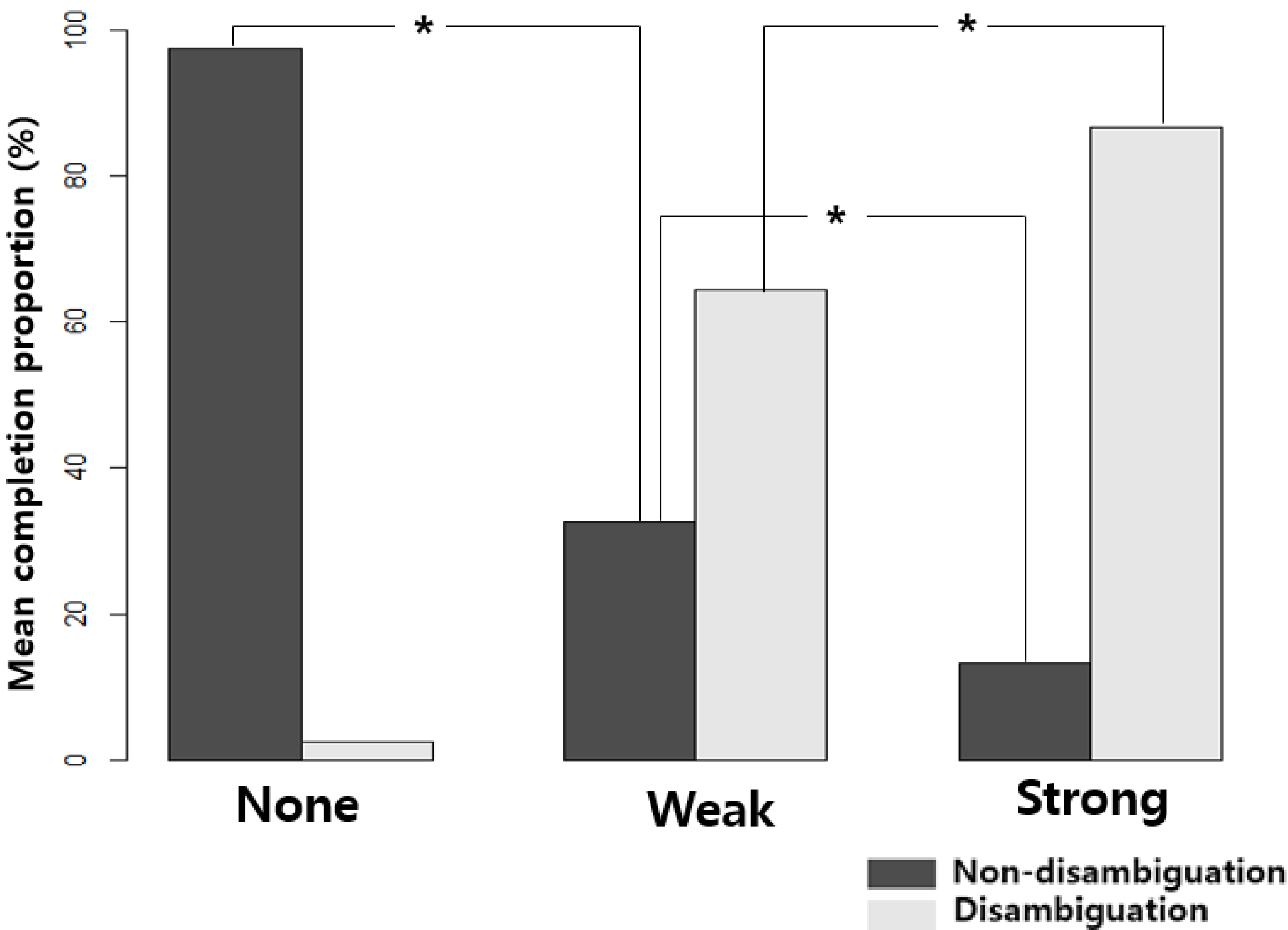
< Fig. 1 The sentence completion proportion for each condition in Exp.1 *p < .05 >

- **As the strength of semantic association increases, the sentence completion proportion for disambiguation increases and vice versa.**
  - In the strong association condition, the completion proportion that yields disambiguation such as 'do well', 'make more' increased conspicuously.
  - In the weak association condition, the completion proportion that yields disambiguation decreased and the completion proportion that bears ambiguity(non-disambiguation) such as 'like', 'love' increased.
  - In the none association condition, the completion proportion for ambiguity increased evidently.

2. Forced-Choice Comprehension Task

- **Participants:** 44 Korean native speakers (female = 27, M = 22 y.o.)
- **Stimuli:** Total 30 sentences (15 targets x 2 conditions (See Tab.2), 45 fillers
- **Analysis:** Mcnemar's Chi-squared test (two-tailed)

- **Given the result for the weak association condition in the Exp.1, we had a question on how Korean speakers comprehended the comparative construction with this condition when they are in the situation as below.**

"Choose ONLY ONE interpretation that comes up in your mind between these two choices as soon as you read the quoted sentence."

⬇

Conditions	Examples

[a] None association	"Tasha-TOP Mary-than Sue-OBJ like"
	1. Tasha likes Sue more than Tasha likes Mary.
	   (=**Mary as Theme**)*
	2. Tasha likes Sue more than Mary likes Sue.
	   (=**Mary as Experiencer**)

[b] Weak association	"Tasha-TOP Mary-than shopping-OBJ like"
	1. Tasha likes shopping more than Tasha likes Mary.
	   (=**Mary as Theme**)
	2. Tasha likes shopping more than Mary likes shopping.
	   (=**Mary as Experiencer**)

*The parenthesized phrases didn't provided to the participants.

< Tab. 2 The conditions and task examples in Exp. 2 >
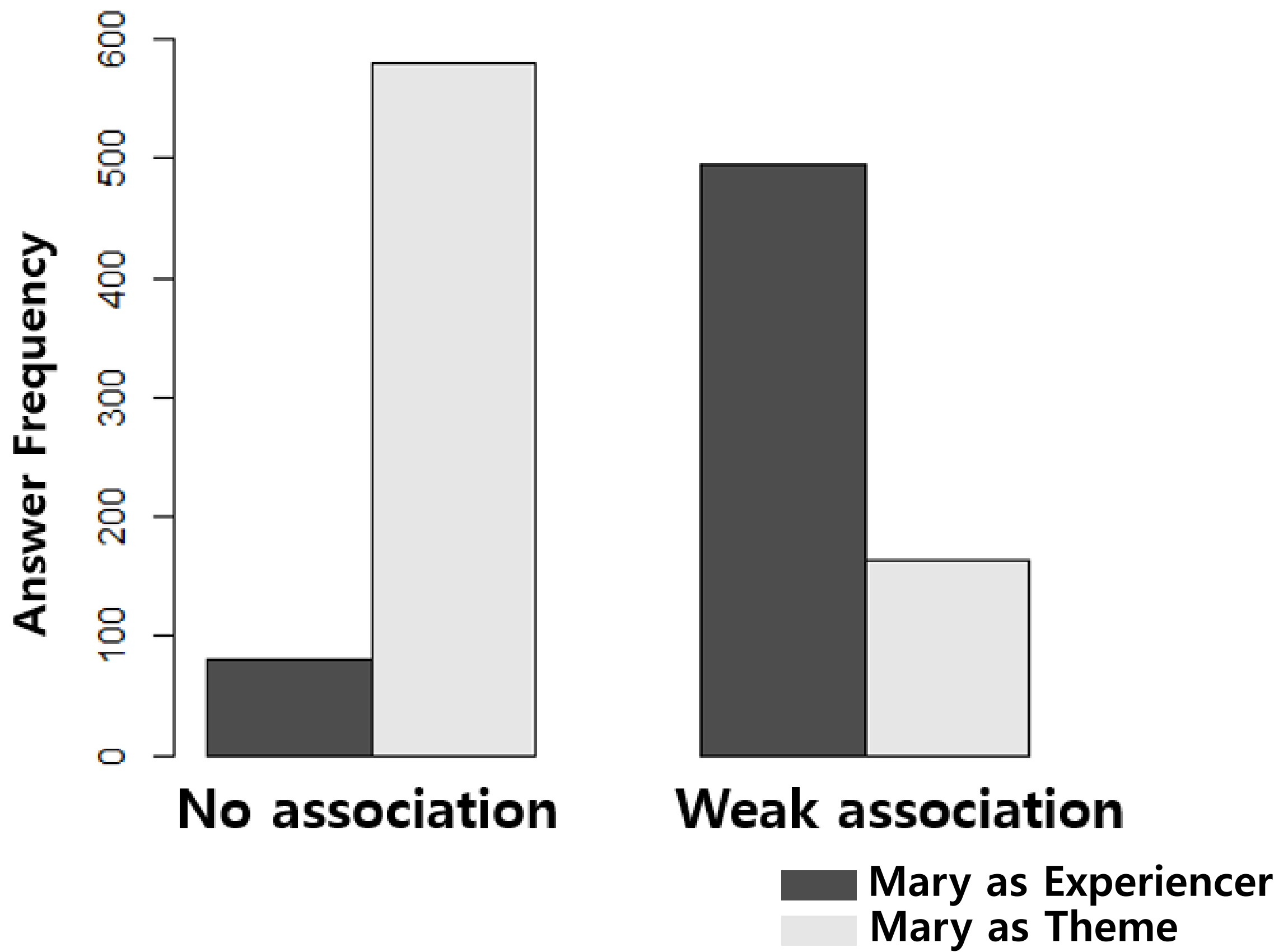
< Fig. 2 The answer frequency in Exp.2 >

- While most participants answered 'Mary as Theme' interpretation in the no association condition, they answered 'Mary as Experiencer' one in the weak association. The difference of the answer frequency between these two condition was significant ($\chi2$ (1) = 28.24, p < .05).

Take-Home messages

- **The strength of semantic association between the compared words modulates the attachment strategy for the disambiguation process in Korean.**
  - → The choice for the thematic role of the complement of the comparative postposition '-than' can be changed with the nouns that carry a semantic association.
- **In Korean comparative constructions, it seems the incremental parsing model (Kamide and Mitchell, 1999) is favored, which assumes the parser builds a partial structure at every possible position, not the head-driven parsing model (Pritchett, 1991) that assumes the parser waits until it encounters a word that could play a main role such as verb.**
- **If so, one could ask how the disambiguation process works with a sentence that have different types of semantic association simultaneously such as below.**

  Tasha-NOM **Mary-than Sue-ACC** like-and Jane-NOM **chef-than cooking-ACC** like
  vs.
  Tasha-NOM **Mary-than Sue-ACC** like-and Jane-NOM **Clara-than Amy-ACC** like

  ⇒ **Do Korean speakers main the preceded interpretation until the end of the sentence, or change the interpretation due to the semantic association strength?**

Frazier, L. (1979). On comprehending sentences: Syntactic Parsing Strategies (Doctoral Dissertation). University of Connecticut, USA.
Pritchett, B. (1991). Head position and parsing ambiguity. *Journal of Psycholinguistic Research, 20*, 251-270.
Kamide, Y., & Mitchell, D. C. (1999). Incremental pre-head attachment in Japanese parsing. *Language and Cognitive Processes, 14*, 631-662.