Effects of literal and metaphoric linguistic context in the mental lexicon for Spanish speakers

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Introduction

The organization of words in the mind and the ability to evoke them is a core issue in the explanation of semantic memory. The results of semantic norm studies represent a snapshot of a moment. Generally, these studies are not designed to collect information on the within-subject effects of linguistic and nonlinguistic context during feature evocation or semantic association. Depending on the context, a word may acquire different meanings, occasionally literal or metaphorical. Since the activation of metaphorical mappings is contextual and they tend to freeze (see Lakoff & Johnson, 1980; Bowdler & Gentner, 2005), it is possible that the difference in context does not affect the mental lexicon, the semantic domains evoked do not change, and no distinct semantic networks are generated for a literal or metaphorical contextualized clue.

Aims

To study how linguistic context impacts the semantic domains evoked and the semantic networks that convey them by manipulating the contexts among metaphorical, literal and filler alternatives for ten metaphors present in the Rioplatense Spanish.

Methods

Tabla 1. *Translation of Spanish priming by condition for the clue HORNO "Oven".*

Condition	Linguistic context	Control
Literal	Gas is a state of matter. It takes on the shape and volume of the container. In this state, the molecules interact weakly with each other, without making bonds. This is possible under certain conditions of temperature and pressure.	Which concept was defined in the text you read at the beginning of the essay? Choose the option that best describes it by pressing the corresponding key. a. Achievement b. Temperature c. Difficulty d. No Remembering
Metaphoric	Difficulty is an impediment to the full development of objectives. To achieve them, it becomes necessary to use more resources or tools. The origin of a difficulty can be diverse.	
Filler	The hug is a token of love or a greeting. It is carried out with the arms around the person receiving the gesture. A hug allows to externalize a feeling of friendship, affection, love, affection, fraternity or sympathy.	

After reading a short text (prime), participants were instructed to read a word (clue) and, immediately, provide five words that they considered to be associated with the cue (context-forced association). For each clue, a prime was provided to a literal and a metaphorical semantic domain.
Control shows .91 ACC in remembering.

Participants

- *n*= 120
- W= 73 | M= 47
- *M*= 29; *SD*: 11.26
- + 18 years old Rioplatense Spanish speakers

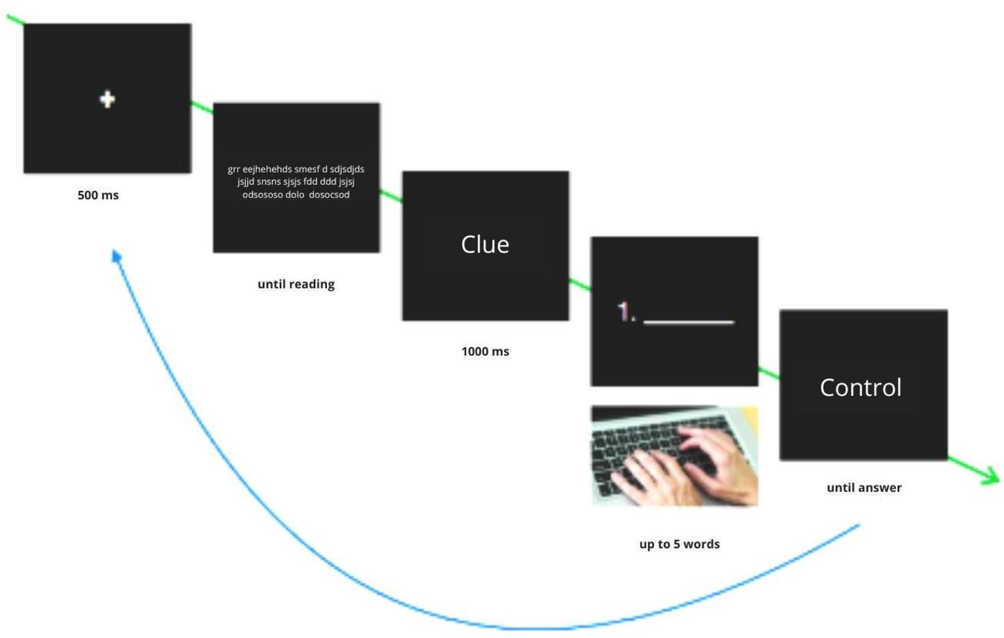

Figure 1. Task steps

Results: Semantic network

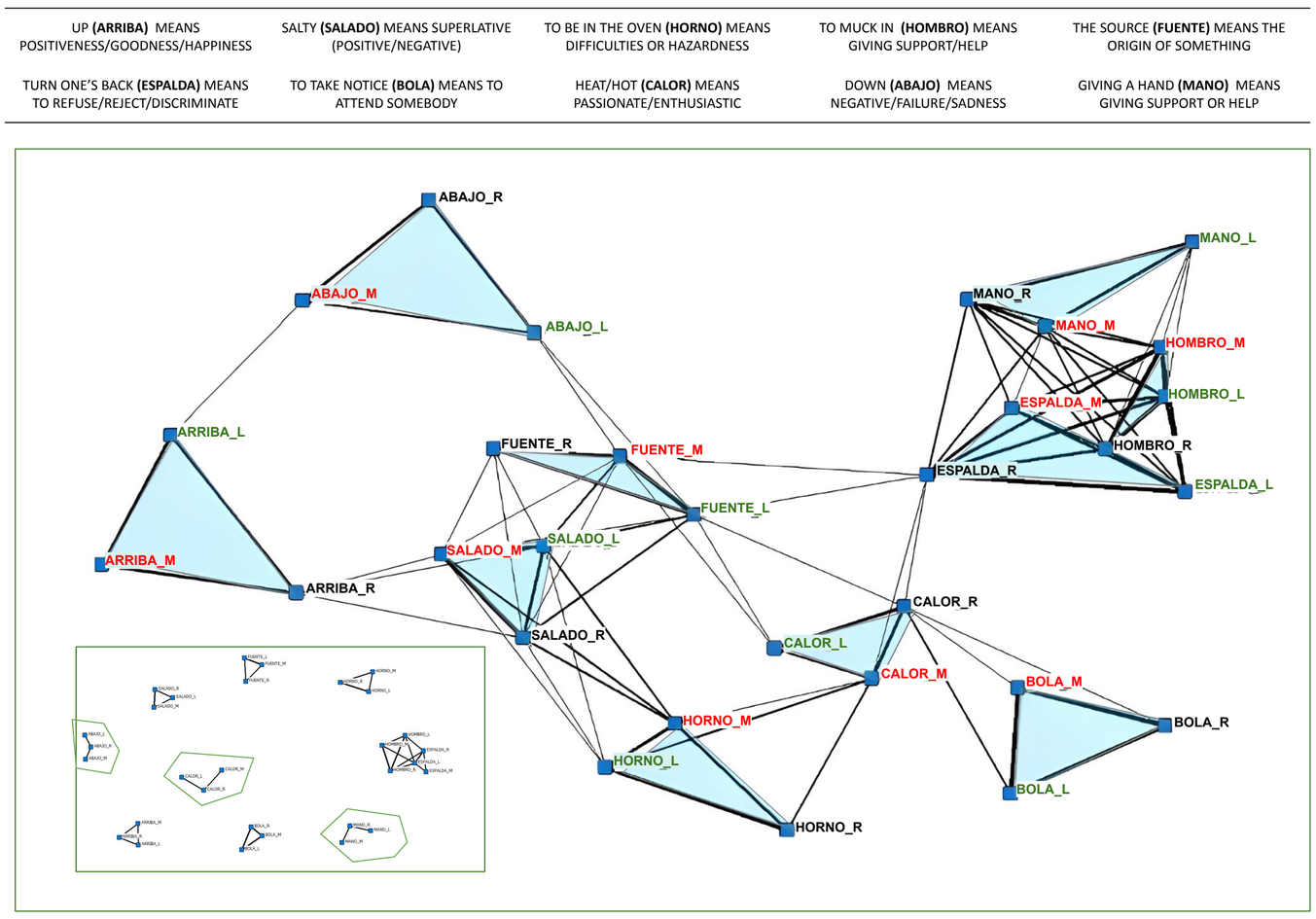

Figure 2. Cluster representation of the cosine similarity matrix. Main picture: cut-off at r = .10. Right embedded picture: cut-off at r = .50. The letter at the label of the nodes indicates the framing. For example, in the node CALOR_M (with red characters), the M indicates the metaphorical framing.

Pearson's correlation for the three networks (metaphorical [M], literal [L] and filler [R]) showed a correlation of p= 0.83 between the three groups.

Results: Semantic category preferences

Table 2. Semantic typological distribution of associate by framing without filler clues (residuals are in parenthesis).

Category	Literal context		Metaphoric context		*p*(value)
	Cases	*p*	Cases	*p*	
Entity	1384 (7.89)	.36	1118 (-7.89)	.30	<.001
Introspection	1046 (-14.30)	.27	1718 (14.30)	.43	<.001
Situation	681 (6.04)	.19	517 (-6.04)	.13	<.001
Taxonomy	704 (2.60)	.18	649 (-2.60)	.16	.142
Total	3815 (2.23)	1	4002 (-2.23)	1	

Discussion

The visualization of the similarity cut-offs (from .10 to .50) shows some effects as the stringency increases: i) some links between literal and metaphorical nodes are lost (ABAJO, CALOR, MANO), ii) the HOMBRO-ESPALDA cluster is the only one that holds at the most stringent cut-off (.50) and iii) all other clusters show a discontinuity between clues. This result suggests a decoupling between the lexical items forming the metaphors examined. In turn, the disengagement of literal and metaphorical framing in the cases of ABAJO, CALOR and MANO is the relevant finding for the aim of the study. The found clustering of metaphoricity-literality groupings with respect to the clues may be partly because of the metaphors chosen, i.e., that they refer to very distant domains (both source and meta) in lexical semantics or that the source domain ruled their clustering. The analysis of semantic category preferences of clue-associate pairs showed a higher selectivity of introspective relations for metaphorical context. The results open some questions about the effects of lexicalization on the transparency of semantic mapping mechanisms that could ground the semantic projection and evolution of lexical items.

Instruments

- For collecting data:
- Psychopy (Pierce, 2007)

- For semantic network data:
- Definition Finder and Synonym Finder softwares (Vivas et al., 2014)
- UCINET software (Borgatti & Everett, 1997)

- For labeling semantic categories:
- Spanish adaptation (Macedo et al., 2023) of the coding instruments created by Wu and Barsalou (2009) and Wiemer-Hastings and Xu (2005) to categorize semantic relationships.

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