Native language processing of cognates in general academic vocabulary in multilinguals

Vedrana Gnjidić

Outline:

- introduction

- previous studies

- objective and research questions

- materials, methods

- the pilot experiment – tools, results

- applicability

Native language processing of cognates in general academic vocabulary in multilinguals

general academic vocabulary

- abstract
- not specific to any scientific field
- cognate (*parcijalan, tendencija, formirati*)
- non-cognate (*podroban, obrazložiti, predodžba*)

cognates in GAV

- cognates with Latin and Greek roots → frequent in formal registers of many languages

- "non-concrete, low in imagery, low in frequency, and semantically opaque" (Corson 1997)

cognates - processing advantage over non-cognates

connectionist processing models (shared features → more information available)

affordances (CLA)

Previous studies: cognate processing (advantages)

behavioural studies (bilinguals + trilinguals)

- L1 <u>word association</u> (van Hell and de Groot 1998)

- <u>L1 word association, lexical decision</u> (van Hell and Dijkstra 2002,double cognates with L2 or L3)

- L2 <u>lexical decision</u> (Dijkstra et al. 2010)

- L1 <u>lexical decision</u>, (L1/L2, L1/L3 cognates, Van Hell and Dijkstra 2002; L1/L2/L3 cognates, Szubko-Sitarek 2011)

- L3 <u>lexical decision</u>, triple cognates (Lemhöfer, Dijkstra, and Michel 2004; Szubko-Sitarek 2011)

- L2 form-similar cognates in L1 <u>sentence reading</u> (Lemhöfer, Huestegge, and Mulder 2018, eye tracking).

electrophysiological studies

- L2 <u>lexical decision</u> (Peeters, Dijkstra, and Grainger 2013)

- <u>translation task</u> (time-locked to L1) (Yudes, Macizo, and Bajo 2010)

- L1, L2 <u>semantic categorisation</u> (Midgley, Holcomb, and Grainger 2011), intermediate-level foreign language learners

- L1 <u>lexical decision</u> (Bice and Kroll 2015), intermediate-level foreign language learners

Previous studies: Croatia

experimental

- generalized <u>lexical decision</u> task (Cergol Kovačević 2012)

- <u>lexical decision</u> (Anđel et al. 2015)

other perspectives

- contact linguistics in specific registers (e.g., Papić Bogadi 2015; Perković 2016)

- translatology (e.g., Antunović 2005)

- TLA, third language acquisition (Letica Krevelj and Štokovac 2012, Letica Krevelj 2016)

Objective and research questions

- **objective**: investigate L1 processing of form-similar cognates belonging to an **abstract** register (Croatian general academic vocabulary) with unbalanced learners of two foreign languages

- Are internationalisms in an abstract register processed more easily than non-internationalisms from the same register?

- Does crosslinguistic awareness influence the extent of such facilitation?

- How does learning foreign languages influence processing in an abstract register of the native language?

Methodology

Words in isolation:

- L1 semantic categorization task

- **ERPs**

- advantaged sensitivity of ERP technology → intermediate level foreign language proficiency

- continuous measure of processing, direct measure of brain electrical activity

Words in context:

- L1 short-text reading task

- **eye tracking**

- more ecologically valid for cognate processing in sentences

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Experimentally: comprehension - the influence of L2 on L1

Pen-and-paper: crosslinguistic awareness (L1, L2, L3)

Stimuli

- popular science literature (*Facta* – an imprint of Algoritam)

- Croatian Psycholinguistic Database

- cognate and non-cognate vocabulary (formirati vs. obrazložiti)

- Croatian - (German) - English

- corpus frequencies → h*rWaC*

- abstractness ratings → CPD (+ supplemented)

- subjective frequency ratings → participants

Participants

- university students, N~40-45

- intermediate-level (B1+/**B2**) proficiency in English

- pre-intermediate (**A2**/A2+) proficiency in German

- form-similar cognates present in many languages → participants actively familiar with them in Croatian and English

Pretesting

Language proficiency:

- *Dialang* - English, German

- non-speeded lexical decision + vocabulary in context


Cross-linguistic awareness:

- VerT

- multilinguals notice cognates as affordances (Berthele 2008; Otwinowska-Kasztelanic 2011)

- productive cognate sensitivity in L1, L2 and L3

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- verbal pattern recognition (analytical ability)

Experiments

1) EEG (ERPs) – processing cognates in isolation

- L1 **semantic categorization** task

- stimuli: cognate + non-cognate GAV verbs/verbs related to food preparation

- abstractness, frequency

- DV: mean N400 amplitude
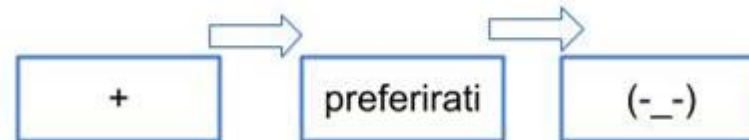
2) Eye tracker – processing cognates in context

- 4 short texts
- 2 versions of each text (Latin square design)
- a) target words = cognates (L1)
- b) target words = non-cognate variants (L1)

- DV: total fixation time, second pass time, number of regressions

Potrudit ćemo se *realizirati* sve predviđene ciljeve.

Potrudit ćemo se *ostvariti* sve predviđene ciljeve.

Pilot experiment

Pilot: options

PsyToolkit

- program & run cognitive-psychological experiments

- all-in-one: design, collect, store, analyze, download

- experiments library, online documentation, examples (lexical decision, go/no go)

- non-commercial

- phones/keyboards?

GORILLA™ experiment builder

- slightly less intuitive

- more elegant

- attention, decision making, memory

- linguistics: (audio) naming task, categorization task, self-paced whole sentence reading, vocabulary learning (multiple choice, forced recall)…

- eye tracking – beta options

Pilot: task

- semantic categorization: food preparation/gen. ac. voc.

- stimuli: verbs – 120 (C, NC, FP)

- 12 practice items

Participants (summary)	
N (participants)	28
	computer science, mathematics, medicine, music, sociology…
M (age)	22.7 (min = 20, max = 25)
M (N of foreign languages)	1,96 (min = 1, max = 4)
average proficiency in L2 (English)	B2
average proficiency in L3 (German/Spanish/Italian)	A2
average proficiency in L4	A1

Pilot: results

- 2 non-cognates causing confusion : pohraniti (to store);

   sačinjavati (to be comprised of)/začiniti (to season)

RT	M	SD	min	max
cognates	729.02	116.59	524.97	1051.33
non-cognates	759.35	114.46	533.59	1075.15
food preparation	728.36	94.01	562.48	989.03

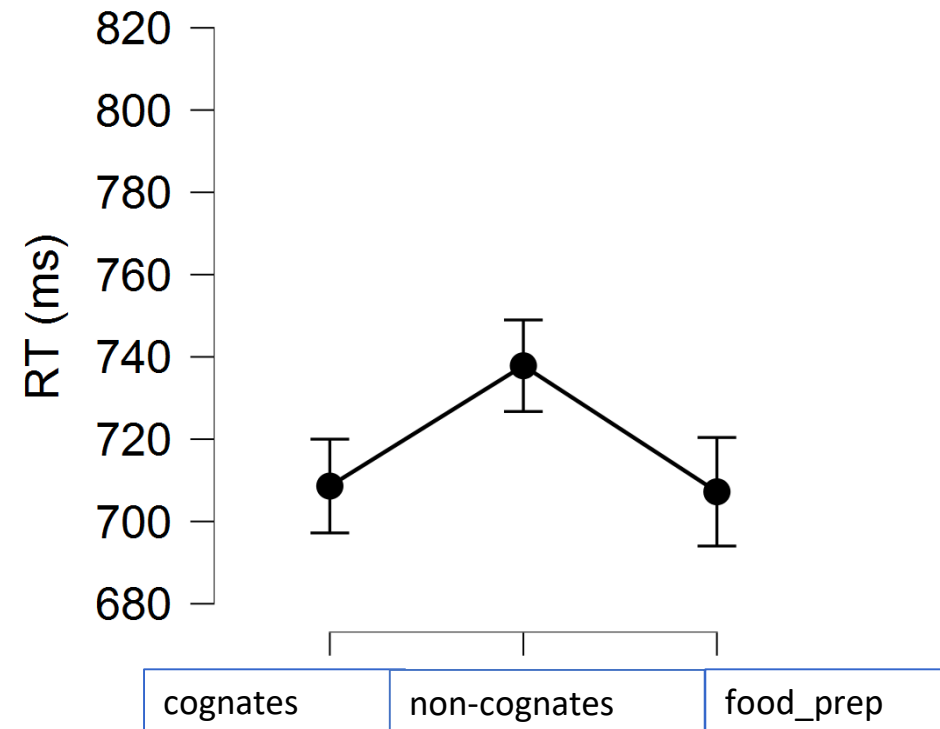Kliknite da biste dodali tekst

- repeated measures ANOVA: $F_{(2, 58)} = 8.78$, $p < .001$, $\eta^2 = 0.232$

- post hoc tests:

cognates/non-cognates; t = -3.542, p = .002, *d* = -.647

cognates/foodprep; t = 0.168, p = .867, *d* = .031

non-cognates/foodprep; t = 3.710, p = .001, *d* = .677

The cognate facilitation effect during semantic categorization?

- GAV cognates categorised faster than GAV non-cognates as belonging to academic vocabulary

- cognate and non-cognate GAV verbs - not stat. sig. different in abstractness ratings or frequency

- morphological cues → internationalism → more likely to belong to the academic language register

- non-cognate GAV verbs require a deeper level of processing (a more detailed access to meaning) in order to be categorized?

- not sufficient - "miksati" (*to mix*/*mixen*), "dinstati" (*dünsten*), "panirati" (*panieren*), "karamelizirati" (*caramelize*, *karamellisieren*)

- do faster behavioural responses in a semantic categorization task actually mirror facilitated processing of meaning or was the categorisation more oriented towards identifying the verb as an abstract internationalism (as opposed to concrete verbs and non-cognate abstract GAV verbs) by recognising specific letter clusters?

Applicability

content

– cognate facilitation effect → abstract register, L1 context

methodology

– semantic processing (electrophysiological + behavioural perspective)

– a new CLA measure – abstract register

implications

– experimental assessment of the importance of an integrative approach in FL teaching (developing cross-linguistic awareness)

– deep reading of young adults (study materials) - understanding abstract words

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