First language processing of compounds in late bilinguals

Serkan Uygun and Ayşe Gürel
Potsdam University and Boğaziçi University
serkanuygun2014@gmail.com and agurel@boun.edu.tr

Introduction

1. Background

- Native speakers develop different L1 representations as they become L2 users and their L1 knowledge may diverge from monolinguals in various linguistic domains (Cook, 1991; 2002; 2003; Grosjean, 2001).

2. Why study compounds?

- Exploring compounds can help us identify how complex morphemic units are represented in the mental lexicon.

3. Models of compound processing

- **Decomposition:** one or both constituents are activated
- **Full-listing:** no constituent morpheme activation (i.e. direct access)
- **Dual-route:** transparent compounds are decomposed, opaque compounds are stored as whole units

4. Previous findings on L1 compound processing

- **Constituent 1 is important**
  Lacruz (2005); Taft & Forster (1976): lexical decision task in English
  Lima & Pollatsek (1983): priming study in English
- **Constituent 2 (head) is important**
  Juhasz et al., (2003): eye movement study in English
  Marchack (2011); Matthias (2006): priming study in English
- **No effect of constituent transparency = decomposition**
  Libben et al., (2003); Shoolman & Andrews (2003): masked priming study in English
  Juhasz (2007): eye movement study in English
- **Transparency effect of the constituents = dual-route**
  MacGregor & Shytrov (2013): EEG study in English
  Strathis (2014): lexical decision task in English
  Sandra (1990); Zwitserlood (1994): semantic priming study in Dutch

5. Compounding in Turkish

- Productive word formation process.
- Right-headed (Göksel & Haznedar, 2007; Kunduracı, 2013).

6. Previous studies in Turkish compound processing

- **Özer (2010):** morphological priming in picture naming
  Morphologically related primes < unrelated primes = decomposition.
- **Uygun (2016):** masked priming in Turkish
  Both constituents were activated in partially-transparent compounds
  Only constituent 2 (the head) was activated in transparent-transparent compounds

The Study

1. Aim of the study

- To investigate potential changes in late bilinguals' processing of L1 compounds.

2. Research questions

- How do native Turkish speakers process compounds in Turkish?
- How do L1 Turkish-L2 English late bilinguals process compounds in Turkish?
- Does semantic transparency of the constituents influence the processing?
- Is constituent 2 (head) a stronger prime than constituent 1?

3. Participants

- 73 monolingual Turkish speakers
- 34 high-proficiency Turkish-English adult bilinguals residing in Turkey

4. Tasks

- Masked priming task using E-prime 2.0 (Schneider, Eschman & Zuccolotto, 2002)

5. Stimuli

- 10 partially transparent compounds (PT): (e.g., *büyükelçi* 'ambassador', *büyük* 'big', *elçi* 'delegate')
- 10 transparent-transparent compounds (TT): e.g., *kuzeydoğu* 'northeast', *kuzey* 'north', *doğu* 'east'
- 10 pseudocompounds (PSC): e.g. *fesleğen* 'basil', *fes* 'fez', *leğen* 'bowl/pelvis'
- 60 monomorphemic words (MONO): e.g. *kaplumbağa* 'turtle'
- 90 nonwords

STIMULI	C1 PRIME	C2 PRIME	UR PRIME	TARGET
PT Compound	büyük	elçi	masa	BÜYÜKELÇİ
TT Compound	kuzey	doğu	çanta	KUZEYDOĞU
Pseudocompound	fes	leğen	kafa	FESLEĞEN
Monomorphemic	kaplum	bağa	kitap	KAPLUMBAĞA

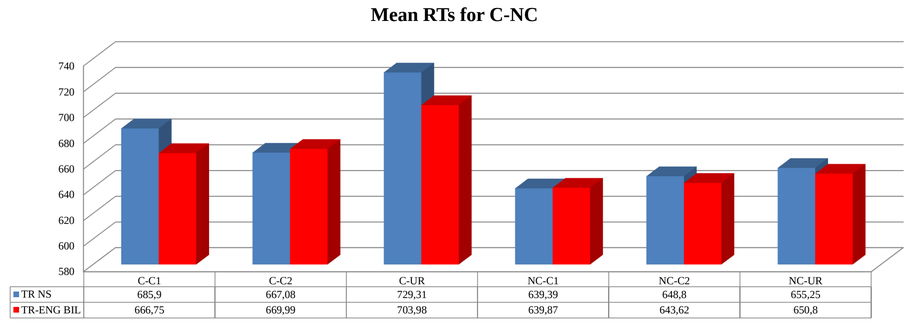
6. Procedure

A forward mask (#####) was presented in the middle of the screen for 500 ms; followed by the prime presented for 50 ms, followed immediately by the target. The target item remained on the screen until the participant pressed the "Yes" or "No" buttons.

Results

1. Compound vs. Noncompound Words

A 2 x 3 x 2 Mixed ANOVA for the RTs revealed a significant main effect of **word type** (F=66.731; p<.001), **prime type** (F=11.114; p<.001), and the **interaction of word type and prime type** (F=7.014; p<.002).



C-C1: Compound Constituent1; C-C2: Compound Constituent2; C-UR: Compound Unrelated; NC-C1: Noncompound Constituent1; NC-C2: Noncompound Constituent2; NC-UR: Noncompound Unrelated

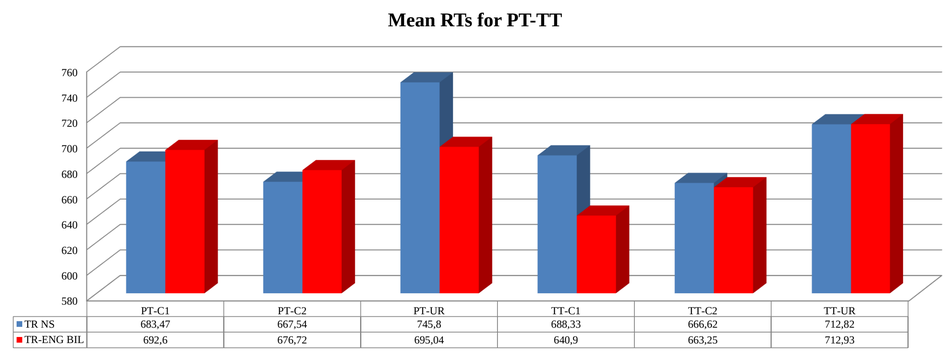
- Compound word RTs > Noncompound words RTs (*p*<.001).

- **Compounds:**
- Constituent 1 and unrelated prime (p<.001)
- Constituent 2 (head) and unrelated prime (p<.001) for both groups.

- **Noncompounds:**
- No priming effects.

2. Partially-transparent vs. Transparent-transparent Compounds

A 2 x 3 x 2 Mixed ANOVA for the RTs revealed a significant main effect of **prime type** (*F*=10.863; *p*<.001) and the **interaction among word type, prime type, and group** (*F*=5.219; *p*<.007).



PT-C1: Partially Transparent Constituent1; PT-C2: Partially Transparent Constituent2; PT-UR: Partially Transparent Unrelated; TT-C1: Transparent-Transparent Constituent1; TT-C2: Transparent-Transparent Constituent2; TT-UR: Transparent-Transparent Unrelated

- **Prime type**
- Significant between constituent 1 and unrelated prime (p<.001) and constituent 2 (head) and unrelated prime (p<.001) suggesting constituency-independent decomposition.
- **Interaction**
- Monolinguals: both constituent 1 (*p*<.001) and constituent 2 (*p*<.001) triggered significantly faster RTs than the unrelated prime in partially transparent compounds, it was only constituent 2 (*p*<.001) that revealed the same result in transparent-transparent compounds.
- Bilinguals: no priming effects were observed in partially transparent compounds, but a significant difference was found between constituent 1 and unrelated prime (*p*<.008) in transparent-transparent compounds.

Conclusion

- Turkish monolinguals employ decomposition regardless of semantic transparency in processing compounds.
- Bilinguals employ a dual-route model as they were affected by the semantic transparency of compounds.
- Qualitative and quantitative changes may occur in L1 morphological processing of late but highly proficient L2 users

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University of Potsdam • Faculty of Human Sciences • Potsdam Research Institute for Multilingualism • Campus Golm • Karl-Liebknecht-Strasse 24-25 • Haus 2 • 14476 Potsdam • Germany