

Introduction

Research on bi-morphemic word processing spans several decades and has been conducted using a number of methodologies in different modalities and languages; Indo-European as well as Semitic.

Only a handful of studies (e.g. Meinzer et al., 2009; Pliatsikas et al., 2014; Wheeldon et al., 2018; Schuster & Lahiri, 2018) have focused on the processing patterns of tri-morphemic words with (i) two suffixes (German *danken* > *dank-bar* > *Dank-bar-keit*) and (ii) two suffixes one of which could be a zero morpheme (English *eye_N* > *eye_V* > *eyeing*).

Results point to speakers' sensitivity to derivational depth and thus the degree of morphological complexity. Studies on both English and German morphology have thus shown that there is a difference in processing between bi-morphemic (e.g. *run_V* > *running*) and tri-morphemic words (e.g. *eye_N* > *eye_V* > *eyeing*) with greater processing effort required during the integration of morphologically more complex, i.e. tri-morphemic words.

Tri-morphemic words are, however, not necessarily a linear string of morphemes, particularly when they consist of both a suffix and a prefix (e.g. *un-(helpful)* or *(unhappy)-ness*). This raises questions concerning the access pathways to the stem in prefix-stem-suffix tri-morphemic words where affixes are not sequentially aligned. Moreover, in tri-morphemic word processing, interference effects from embedded suffixed words are possible in view of prior research showing inconsistency in priming between suffixed-suffixed words (cf. Marslen-Wilson et al., 1994; Grainger et al., 1991).

Research Questions

- Are tri-morphemic words (prefix-stem-suffix) decomposed leading to the activation of the stem in the same way as bi-morphemic words (stem-suffix)?
- Do tri-morphemic words prime embedded suffixed words (*unhappiness* > *happiness*) despite indications of suffixed-suffixed word interference effects in previous research?

Methods

- Three separate visual delayed priming experiments (cf. Drews & Zwitserlood, 1995) with Bengali morphologically complex items
- 5-7 items between prime and target
- Participants responded to both primes and targets.



ISI: 2000ms
Display time: 800ms

- Purely form and purely semantically related pairs included as control conditions
- In all experiments, the prime was made up of the more complex word and the target was morphologically simpler, thereby tapping into decomposition processes
- All participants were native speakers of Bengali recorded in Kolkata (India)
- Experiment 1 as baseline measure of morphological priming in bi-morphemic, suffixed items

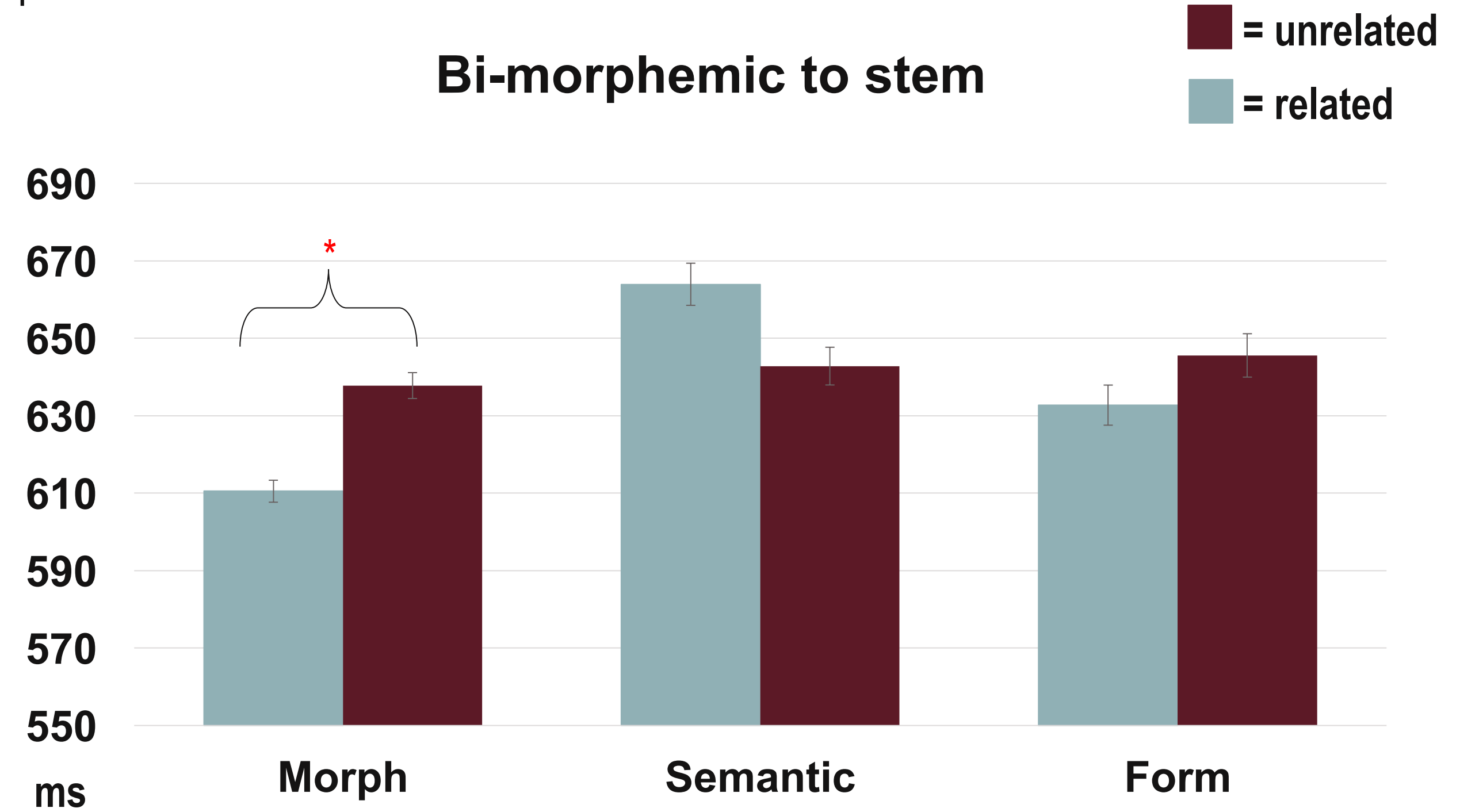
Table 1: Sample stimuli for Experiments 1-3

	Prime Configuration	Prime	Target	Target	p-value
Exp1 (n=58)	BI-MORPHEMIC	<i>icch-uk</i> 'willing'	<i>iccha</i> 'inclination'	STEM	p < .001*
Exp2 (n=59)	TRI-MORPHEMIC	<i>((On-icch)-uk)</i> 'reluctant'	<i>iccha</i> 'inclination'	STEM	p < .001*
Exp3 (n=67)	TRI-MORPHEMIC	<i>((On-icch)-uk)</i> 'reluctant'	<i>icch-uk</i> 'willing'	SUFFIXED	p < .001*

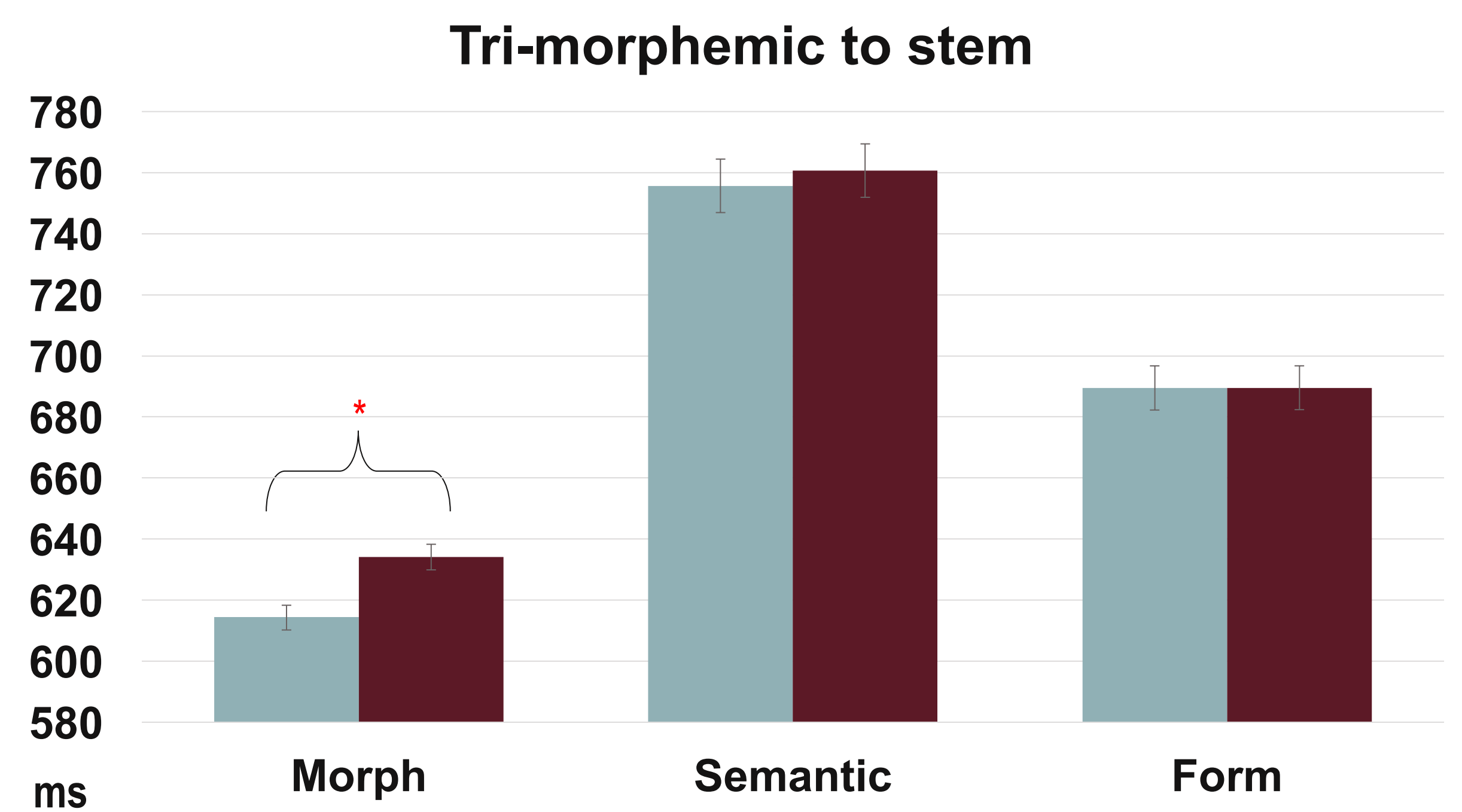
Results

Analysis

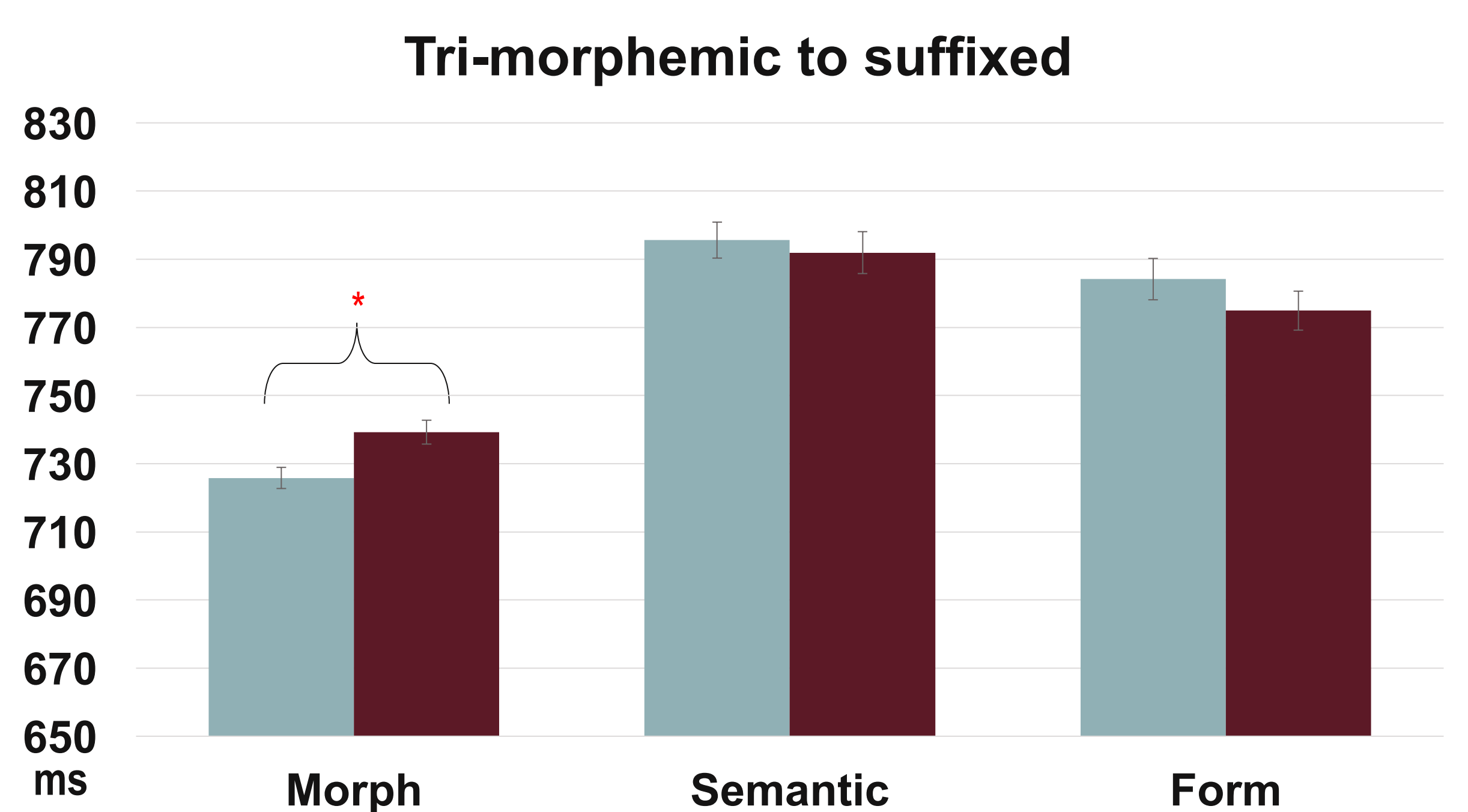
In all three experiments, reaction times were analysed using linear mixed effect modelling with Relatedness (Related vs. Unrelated) and Condition (Morph vs. Semantic vs. Form) as independent factors.



In Experiment 1, significant priming was only observed in the morphological condition. No semantic or form priming emerged.



In Experiment 2 where the prime was tri-morphemic, again only morphologically related words led to the recognition of a stem form. Note that compared with Experiment 1, the degree of priming was somewhat reduced (27ms vs. 20ms).



In Experiment 3, we again only see morphological priming. No interference effects between the tri-morphemic prime and an embedded suffixed target word were observed.

Discussion

- In all three experiments, only morphologically related words lead to priming. No priming effects are observed in any of the control conditions (semantics or form).
- Q1: Do tri-morphemic words (prefix-stem-suffix *unhappiness* > *happy*) prime the stem in the same way as bi-morphemic words (stem-suffix *happiness* > *happy*)? – **YES**, although a slight reduction in degree of priming is observed, indicating sensitivity to depth of derivation.
- Q2: Do tri-morphemic words prime embedded suffixed words (*unhappiness* > *happiness*) despite indications of suffixed-suffixed word interference in previous research? – **YES**, we find no evidence for interference effects between tri-morphemic prefix-stem-suffix words and their embedded suffixed counterparts.

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Selected References

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