

Background

The morpho-orthographic level

- Longtin et al. (2003) and Rastle et al. (2004) studied the effect of semantic transparency on early stages of visual word recognition:
 - significant priming effect for transparent words (dealer-DEAL)
 - significant priming effect for opaque words (corner-CORN)
 - no priming effect for orthographic control words (brothel-BROTH)
- Critically, opaque pairs yield more facilitation than orthographic pairs **in lexical decision, masked priming** paradigms

Task effects

- The morpho-orthographic pattern **is not found** when a **same-different task** is used in place of lexical decision (Dunabeitia et al. 2011):
 - significant priming effect for transparent words (dealer-DEAL)
 - significant priming effect for opaque words (corner-CORN)
 - significant priming effect for orthographic control words (brothel-BROTH)
- However, in a cross-case same/different task, a reference word is presented **before** the prime-target pair appears on screen, possibly affecting the way the target is processed



- Reaction times in a cross-case same/different task are not indicative of the **direct processing of the target**
- Does a different pattern emerge because of the question asked to the subjects ("is the target identical to the reference?" vs. "is the target a word?") or because of the different sequence in which the stimuli appear ("reference-prime-target" vs. "prime-target" only)?

Aim of this Study

- Testing **directly** the effects of the task on the morphological processing
 - We devised a modified version of the cross-case same/different task, **where the target word is preceded by anything but the prime**
 - We introduced fixations on the target as a direct measure of the processing

Materials and Methods

Participants

- 45 Italian students, skilled readers, from the University of Milano-Bicocca

Materials

- 132 prime-target pairs (compared to target preceded by unrelated primes)
 - 44 transparent: artista-ARTE, artist-ART, dealer-DEAL
 - 44 opaque: retaggio-RETE, legacy-NET, corner-CORN
 - 44 orthographic: corallo-CORO, coral-CHOIR, brothel-BROTH

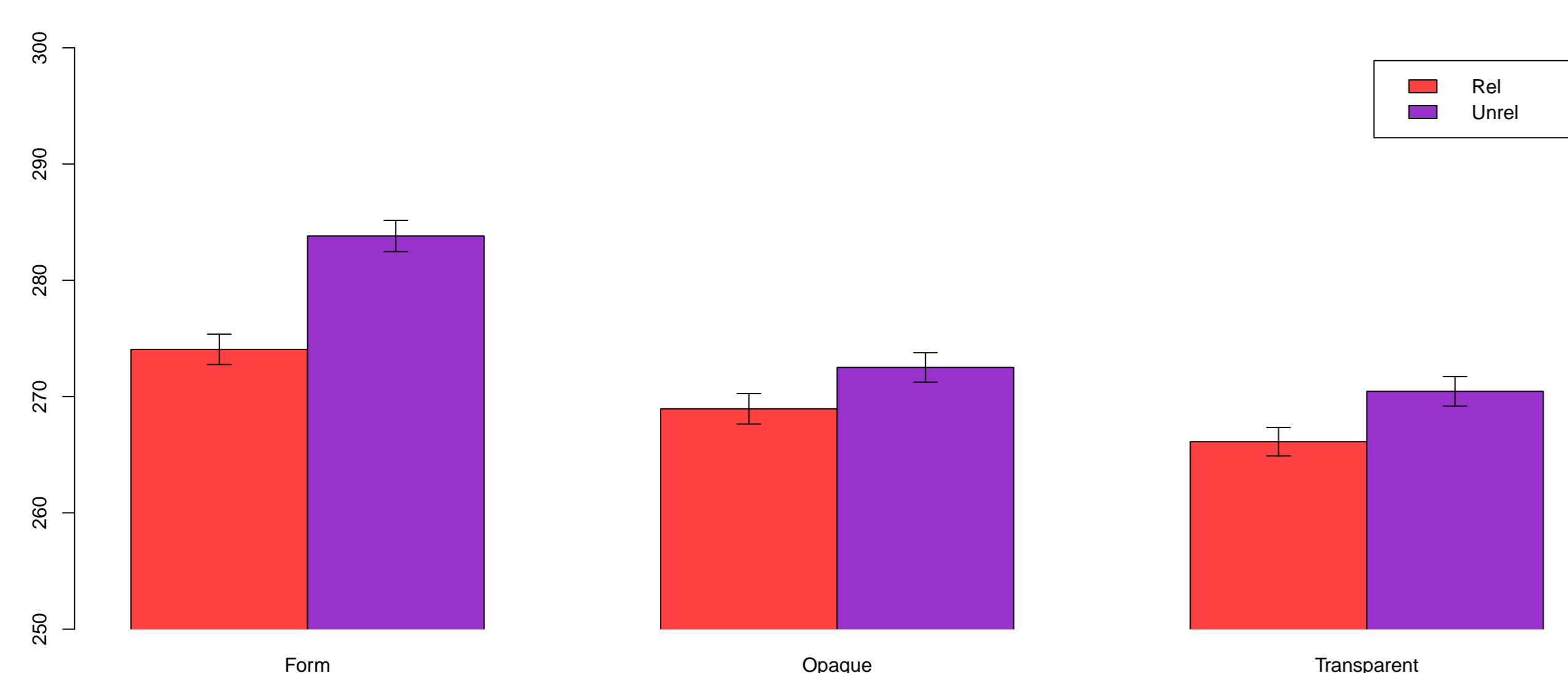
The task

- A target word was presented on the left edge of a computer screen together with a reference word on the right, that could either be identical to the target (e.g., HOUSE-house) or an unrelated word (e.g., HOUSE-bank).
- Targets were preceded, in the same location, by masked primes (SOA=33ms) with a transparent (e.g., dealer-DEAL), opaque (e.g., corner-CORN), or form (e.g., brothel-BROTH) relationship with them.
- Participants had to decide whether target and reference words were the same.
- Eye movements during the target screen were recorded with an Eyelink 1000.



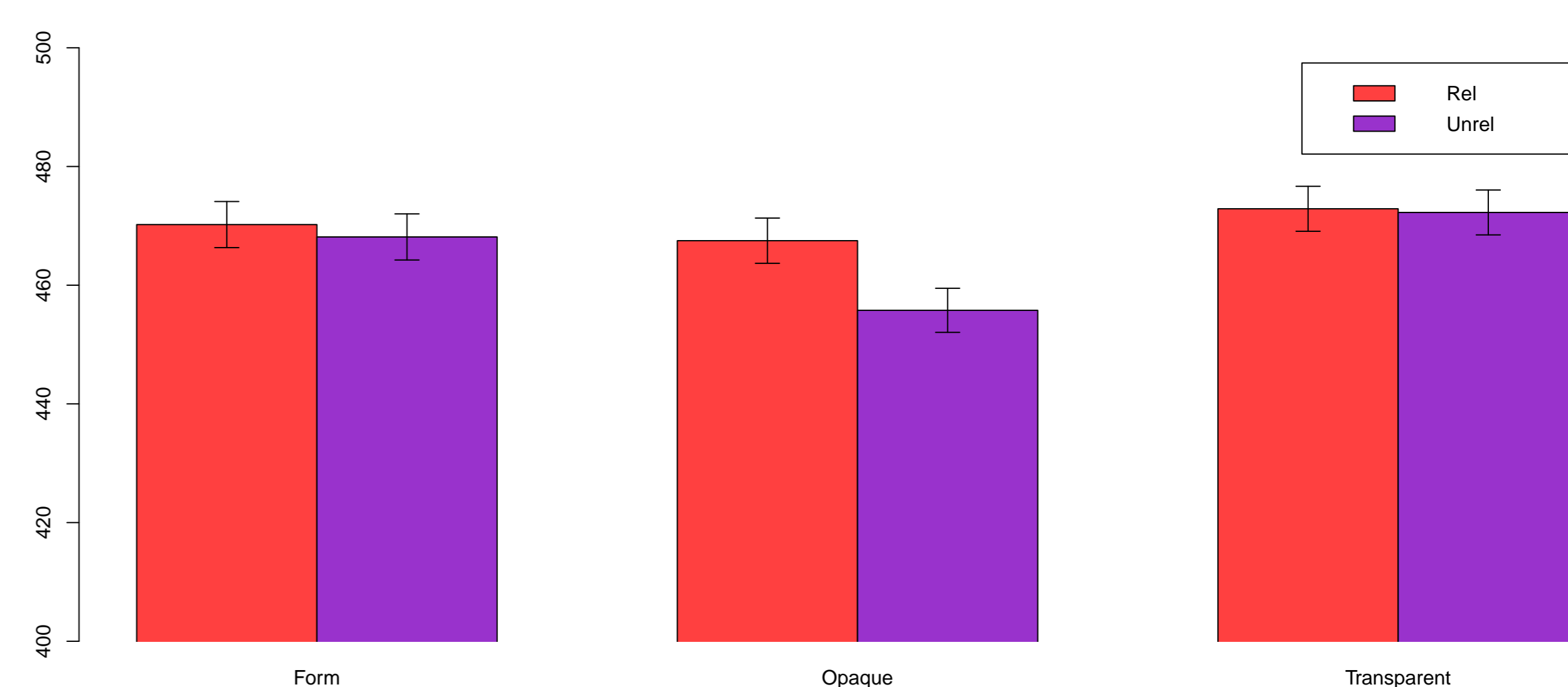
Results

First fixation duration



- The interaction between condition and relatedness was not statistically significant
- Main effect of relatedness: Estimate=0.06942 ; t value= 2.933

Gaze duration



- No significant interaction emerged
- No significant main effect of the variables of interest emerged

Conclusions

Discussion

- A priming effect was found and it did not differ in the Form, Opaque and Transparent conditions, thus showing a **purely orthographic effect**.
- Measuring directly the processing of the target word, we found an orthographic effect in response to an orthographic task.
- It is possible to compare these results to the results of Marelli et al., 2013 (a semantic task with a paradigm very similar to the one used here and with the same stimuli), and to hypothesize that the task can radically change the way a stimulus is processed. *The interaction between task and paradigm should however be tested directly.*
- Moreover, the effect was evident only on first fixation durations (a measure of early processing), suggesting that the task may preactivate the system for relevant cues at specific processing levels, rather than changing the overall processing of a word.

References

- Dunabeitia, J.A., Kinoshita, S., Carreiras, M., and Norris, D. (2011). Is morpho-orthographic decomposition purely orthographic? Evidence from masked priming in the same-different task. *Language and Cognitive Processes*, 26, 509-529.
- Longtin, C., Segui, J., and Halle, P. (2003). Morphological priming without morphological relationship. *Language and Cognitive processes*, 18, 313-334.
- Marelli, M., Amenta, S., Morone, E.A., and Crepaldi, D. (2013). Meaning is in the beholder's eye: Morpho-semantic effects in masked-priming. *Psychonomic Bulletin and Review*, 20, 534-541.
- Rastle, K., Davis, M.H., and New, B. (2004). The broth in my brother's brothel: Morpho-orthographic segmentation in visual word recognition. *Psychonomic Bulletin and Review*, 11, 1090-1098.