

Conceptual processing in bicultural bilinguals: effects of cultural congruency in a visual world eye-tracking study

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How bicultural bilinguals access conceptual information across languages remains debated. The Bilingual Dual Coding Theory [1] predicts that conceptual representations for translation equivalents vary with context of acquisition: bilinguals who acquire both languages in the same cultural environment likely share one mental representation for L1 and L2 labels, whereas those who acquire them in different cultural environments may develop distinct representations shaped by context-specific perceptual experiences. To test this hypothesis, we administered a visual world eye-tracking paradigm to two groups of participants: Bicultural Bilinguals (Italian–English bilinguals in the UK; $n = 40$) and Monocultural Bilinguals (Italian–English bilinguals who acquired English in Italy and never lived abroad; $n = 56$). Both groups completed two sessions, one in Italian and one in English, in a randomised order. Participants viewed four images on screen (target, semantic competitor, two distractors) while listening to an audio cue in the session language that indicated which picture to click. 32 pairs of prevalidated target images depicted objects whose perceptual features are typically Italian or typically British, yielding culturally congruent trials when the language of the auditory cue and the cultural connotation of the target picture matched, and incongruent trials when they did not match. Accuracy and eye-movement data were collected online via Labvanced. Eye-movement data were analysed using growth curve analysis, with orthogonal polynomials (linear, quadratic, cubic terms), modelling fixation proportions to the target as a function of congruency, group, and language session, with random intercepts by participant and item. Monocultural Bilinguals show a clear saliency effect: typically British images attract more fixations prior to target onset in both sessions (ITA, $p < .001$; ENG, $p < .001$), suggesting unfamiliarity rather than linguistic processing. After target onset, overall looks to the target did not differ; however, slope analyses on the linear term reveal a steeper increase in target fixations in congruent trials in the Italian session ($p < .001$), and in incongruent trials in the English session ($p < .001$), suggesting that the conceptual representations activated by the target word, in both languages, encompass perceptual features of typically Italian referents, facilitating fixations to typically Italian images on screen, irrespective of the language of the auditory cue. Bicultural Bilinguals show no consistent congruency effect, suggesting competition between co-activated representations, consistent with dense L1–L2 interconnections at both lexical and semantic levels.

References

[1] Paivio, A., & Desrochers, A. (1980). A dual-coding approach to bilingual memory. *Canadian Journal of Psychology*, 34, 388–399.

Figures and Tables

Figure 1. Proportion of fixations to target over time, split by congruency condition, group, and language. Time 0 corresponds to target onset + 200ms to account for saccade planning.

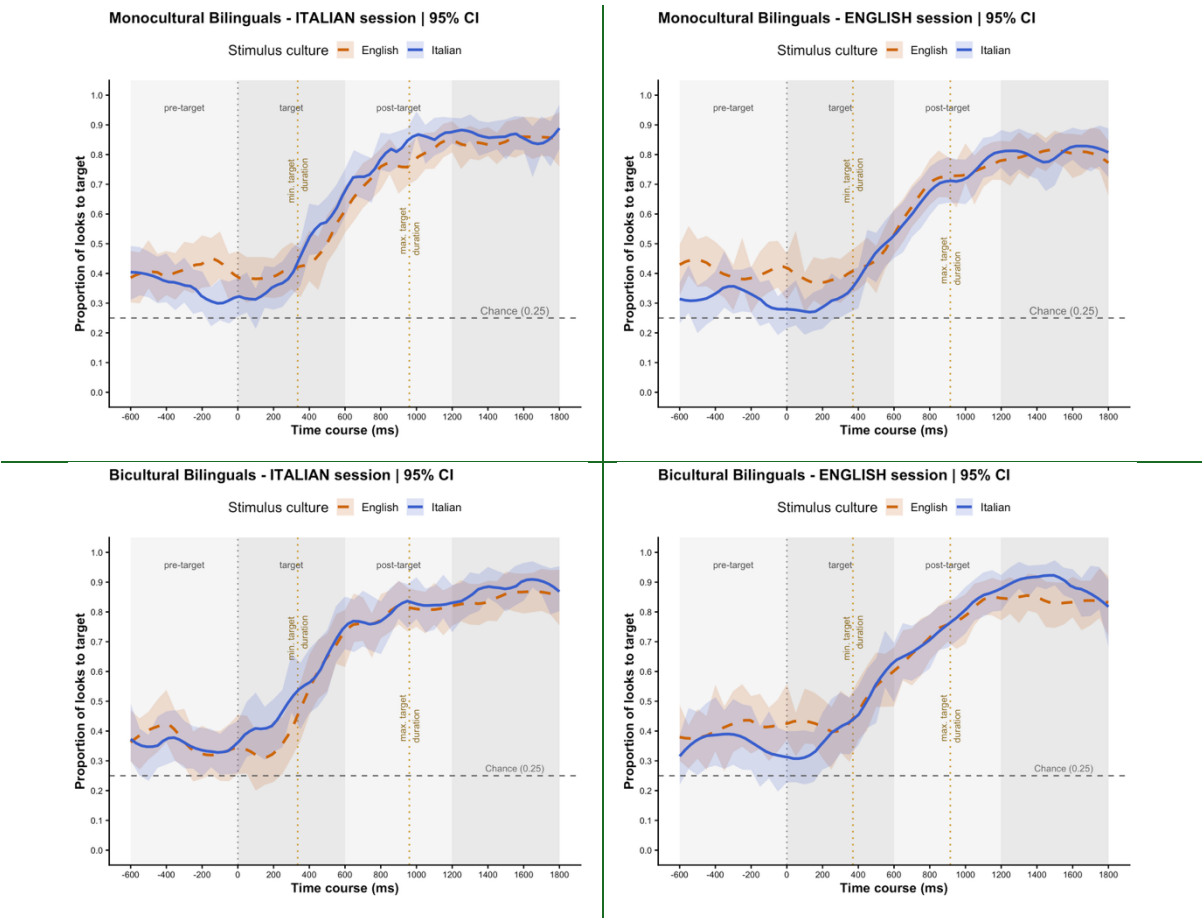


Figure 2. Example of visual displays in the two conditions (“congruent” on the left, “incongruent” on the right).

