

## Cerebral asymmetries in context sensitivity during figurative language processing in L1 and L2

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According to the traditional approach to the division of labor between the right and left hemispheres in processing language, the left hemisphere is biased towards literal processing whereas the right hemisphere towards metaphorical processing (see Burgess and Chiarello, 1996, for a review of studies suggesting LH bias towards literal interpretations). More recently, however, this traditional approach has been undermined. Thus, Giora et al. (Giora et al., 2000) claim that, rather than equating the LH with literal and the RH with metaphorical processing, one should think in terms of the salience of either type of meaning. On this view, the LH is primarily responsible for processing salient (more frequent, conventional, prototypical, or familiar) meanings (i.e., meanings coded in the mental lexicon, see Giora's Graded Salience Hypothesis, 1997, 1999, 2002, 2003), whereas the RH for interpreting nonsalient meanings (i.e., those less frequent and not coded in the mental lexicon). This view is compatible with Beeman's Fine-Coarse Coding theory (Beeman 1993, 1998), which suggests that the RH activates a broad range of distantly related semantic fields and maintains multiple activation of various meanings, even those incompatible with context, while the LH "finely codes" information, selectively choosing only the closest and most relevant aspects of meaning. This view has been repeatedly supported in various studies showing the priming of contextually inconsistent and grammatically incongruent words in the RH, as opposed to the LH, which selectively activates only the dominant (salient) and strongly associated meanings (see, for example, Anaki et al., 1998, Burgess & Simpson 1988; Faust & Chiarello 1998). A recent series of divided visual field studies (see, for example, Faust & Mashal 2007; Kacinik & Chiarello 2007) seem to support the Fine-Coarse Coding theory, showing the RH advantage for the processing of novel, nonsalient metaphorical expressions and distant semantic relationships and LH advantage for contextually relevant, conventional, familiar (salient) expressions containing close semantic relationships. Previous research results seem inconsistent though with regard to the sensitivity of both cerebral hemispheres to contextual constraints. While the Fine-Coarse Coding theory suggests that the RH should be less sensitive to sentence context, in that it maintains the activation of multiple, contextually inconsistent interpretations, the results of the divided visual field priming study reported by Kacinik and Chiarello (2007) clearly indicate that the RH may be as sensitive to contextual factors as the LH (both hemispheres were shown to benefit from contextual bias in activating only contextually congruent targets).

In light of these inconsistencies, the aim of the study described in this paper was to verify the Fine-Coarse Coding theory with regard to the processing of idiomatic expressions in L1 and L2 by Polish-English and Spanish-English bilinguals. It employed the divided visual field paradigm combined with lexical decision priming, which allowed examination of the relative activation of contextually compatible and incompatible salient and nonsalient idiom meanings in the two hemispheres. The experiment aimed at investigating each hemisphere's ability to select contextually consistent aspects of meaning of potentially ambiguous idiomatic expressions. In the experiment, ambiguous (having both a nonliteral and a literal interpretation) idioms, both L1 (Polish/Spanish) (Block 1) and L2 (English) (Block 2), were embedded either in unconstraining (ambiguous) or constraining (unambiguous) context (clearly favoring their conventional idiomatic interpretation), and presented centrally, followed by laterally presented target words related to the figurative meaning of the idiom, literal meaning of the last word of the idiom, or unrelated. Results indicate differences in context sensitivity of the left and right hemispheres in the monolingual and bilingual processing modes.

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