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## The perception and cognition of opposites

Since time immemorial, it has been recognized in various scientific domains that opposition/contrariety (here used as interchangeable terms) represent a primal relationship in the human cognitive architecture. Early philosophers discussed its fundamental role for many concepts (e.g. pre-socratic philosophers and Aristotle). Since the 1970s, both linguists and psycholinguists have emphasized its significance, and a great deal of time has been devoted to the study of antonyms as a special semantic relationship. Contrariety is still the subject of a good deal of research (e.g. Jones et al., 2012; Kelso & Engström, 2006; Paradis et al., 2015; van de Weijer et al., 2014).

This presentation focuses on an ongoing research program within the field of Psychology, which develops Aristotle's observation that every variation is within opposites (Cat. 5, 4a 30-34). This new approach to opposition is firmly based in perception and the issue in question concerns whether the special status of what has up to now been considered a lexical or semantic relationship derives from the fact that contraries are grounded in perceptual structures. The theoretical and methodological frameworks used in this approach pertain to Experimental Phenomenology of Perception and involve rigorous experimental investigation of the basic structures of human direct (inter-observable) experience.

Many aspects have been investigated, from the perception of spatial properties in ecological environments (Bianchi et al., 2011a; 2013) to the recognition of contrary patterns in simple visual and acoustic configurations (Bianchi & Savardi, 2008a), mirror reflections (Bianchi et al., 2008b; Savardi et al., 2010) and human gestures (Bianchi et al., 2014). Evidence of a direct link between experiences of space and experiences of contrariety has been found. The results emerging from studies in the field of perception have also been extended to other areas of spatial cognition. For example, the role of contraries in divergent thinking in insight problem solving has been investigated (Branchini et al., 2015, 2016) as has whether perceptual assessment of the structures of opposites can assist in modelling contrast in the understanding of negation (Bianchi et al., 2011b), humour (Canestrari & Bianchi, 2013, 2014) and irony (Cori et al., 2016). In a medical context, spontaneous understanding (in terms of opposites) of one's health's condition and the risks and commitments involved in treatments have also been studied (Bianchi et al., submitted).

The main findings, new questions and the potential for collaborative research or panels inspired by this innovative approach are discussed. The basic thought-provoking question that the presentation aims to stimulate concerns whether a multidisciplinary, comprehensive approach to "contraries/opposites" going beyond disciplinary boundaries that up to now have limited research on this issue will allow cognitive scientists to discover something new about the cognitive roots of this special relationship which has been recognized for so long as being fundamental to human cognition.

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