ABSTRACT WORDS and SOCIAL DEVELOPMENT

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Typically abstract words are defined as those words which do not have a material object as referent. We will re-define the distinction between concrete and abstract words referring to the different bodily and social contexts in which they are acquired. We intend Words As Tools (WAT), that is tools that allow us to act and operate in a social context (Wittgenstein, 1953; Clark, 1998).

Our proposal extends embodied views assuming *two* sources for developing a thorough theory of word meanings: an individual one, the embodied individual experience, and a socially embodied one. This second source is crucial in particular for abstract words. While we could construe the embodied concept BALL without any help from language, the same situation does not hold in the case of "freedom" (Borghi & Cimatti, 2009).

research challenge

Being able to explain abstract words is a major challenge for embodied theories (Barsalou & Wiemer-Hastings, 2005; see a review in Glenberg et al, 2008).

Embodied accounts assume that both abstract and concrete words are grounded in the sensorimotor system.

However, evidence in favour of these views, though compelling, is confined to domains that are quite specific.

"ball"

«Think of the tools in a tool-box: there might be a hammer, pliers, a saw, a screw-driver, a rule, a glue-pot, nails and screws. -– The functions of words are as diverse as the functions of these objects. (And in both cases there are similarities). Of course, what confuses us is the uniform appearance of words when we hear them spoken or when we meet them in script and print» (Wittgenstein, *Philosophical Investigations*, I, § 11).

proposal

In keeping with embodied theories we propose that the acquisition of concrete words starts from the sensorimotor non linguistic experience. For abstract words, the mechanism could be the opposite. In our view, abstract words are kinds of words that, due to the fact that do not refer to a single element but to complex relations, need to be acquired mainly linguistically.

It is primarily the linguistic experience that helps us in collecting a variety of bodily states, internal and external experiences, etc. These bodily states and introspective experiences emerge and are recognized once they are named. This *naming* typically takes place in a social context.

"freedom"

"freedom"

"freedom"

findings it can account for

This view can explain a number of empirical findings:

- results showing that abstract words are acquired later than concrete ones (McGhee-Bidlack, 1991)

- results on Mode of Acquisition (MOA) showing that in the first grades acquisition is mainly perceptual, later it is mainly linguistic (e.g., Wauters et al, 2003).

- studies highlighting the role played by social emotions for abstract words (Kusta et al., 2009).

- data for brain imaging studies showing that left hemisphere areas, and especially Broca's area, are more active for abstract than for concrete words (Sabsevitz et al, 2005).

- results of studies with patients and of behavioural studies showing that abstract and concrete words are characterized by qualitatively different principles of organization: abstract words rely more on semantic associations, concrete words more on semantic similarity (Crutch & Warrington, 2005).

- studies showing that the influence of the different spoken language is stronger for abstract than for concrete words (Boroditsky, 2001).

- At a theoretical level, our work is in line with the idea that abstract words activate both simulations and linguistic information (Louwerse & Jeuniaux, 2008; Barsalou et al., 2008; Prinz, 2002).

evidence needed

Need for further empirical evidence, in particular:

Cross-linguistic, cross-cultural: abstract words should be more variable and influenced by the different cultures and spoken languages.

Developmental: abstract words should be acquired more frequently in linguistic contexts compared to concrete words (different MOA).

Neural underpinnings: parallel neural networks? All words should activate sensorimotor areas, abstract words should activate more linguistic but also social and emotional areas.

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