Ad Hoc Whorf: How language shapes minds on three time scales

Daniel Casasanto[1]
[1]Cornell University, casasanto@cornell.edu

Keywords: Linguistic relativity, Ad hoc cognition, Context

According to the Ad Hoc Cognition framework (Casasanto & Lupyan, 2015), our minds are continually being shaped by the contexts in which we use them. Language is a highly systematic, nearly ubiquitous part of the context in which we use our minds. Therefore, language should exert a continual shaping effect on cognition. Why, then, do most studies of linguistic relativity demonstrate stable changes in speakers' thinking that correspond to enduring features of their languages?

This apparent paradox between linguistic relativity and Ad Hoc Cognition can be resolved if we posit that the contexts in which we use our mind can be either sources of change or sources of stability. When aspects of the context are stable, then aspects of the mind that depend on them are also stable; when aspects of the context change then aspects of the mind that depend on them may change accordingly. According to the Ad Hoc Cognition framework, the languages we speak (like other aspects of the context) should shape our thinking on at least three overlapping timescales ranging from milliseconds (i.e., activation dynamics) to minutes (i.e., local context) to lifetimes (i.e., experiential relativity; Casasanto & Lupyan, 2015).

Linguistic relativity effects operating on the shortest timescale are the most obviously compatible with Ad Hoc Cognition. For example, color words appear to influence color judgments, but only when experimental participants are allowed to activate lexical representations in the moment, during the task. When participants performed a concurrent verbal interference task they no longer showed language-specific patterns of color judgment (Winawer et al., 2007). These results suggest that language has not permanently warped speakers' perceptual color space; rather, lexical categories influence the construction of color categories online, in the moment that colors are being perceived and classified.

Linguistic relativity effects operating on the longest timescale present the greatest apparent challenge to Ad Hoc Cognition. For example, adults represent musical pitches consistent with the spatial metaphors in their native languages, even during non-linguistic tasks. Dutch speakers conceptualize pitches as high and low, whereas Farsi speakers conceptualize them as thick or thin (Dolscheid et al., 2013). Language-specific pitch representations persist despite verbal interference, suggesting that linguistic metaphors' effects on the mind are long-term, not online. But are these effects immutable? Further studies show that training Dutch speakers to use Farsi-like pitch metaphors in the laboratory causes them to conceptualize pitches as thick and thin (presumably transiently), like native Farsi speakers.

Together, these studies show that when the linguistic context is stable, language-specific patterns of conceptualization also appear stable. But when the linguistic context changes – either because language has been temporarily disabled (in the case of color) or because new patterns of linguistic experience have been introduced on a timescale of minutes to hours (in the case of pitch) – speakers' conceptualizations reflect these short-term changes. The ad hoc nature of our mental representations can be revealed by manipulating aspects of our linguistic experience that are ordinarily unchanging.

References

Casasanto, Daniel & Gary Lupyan. (2015). All concepts are ad hoc concepts. In E. Margolis & S. Laurence (Eds.), *The conceptual mind: New directions in the study of concepts* (pp. 543-566). Cambridge: MIT Press.

Dolscheid, S., Shakila Shayan, Asifa Majid & Daniel Casasanto. (2013). The thickness of musical pitch: Psychophysical evidence for linguistic relativity. *Psychological Science, 24*(5), 613–621.

Winawer, J., Nathan Witthoft., Michael C. Frank, Lisa Wu, Alex R. Wade & Lera Boroditsky (2007). Russian blues reveal effects of language on color discrimination. *Proceedings of the National Academy of Sciences of the USA, 104,* 7780–7785.