

Thoughts on the table. Gesture as a tool for thinking in blind and visually impaired children.

Anna Jelec

Adam Mickiewicz University, Poznań

The theory of embodiment (Lakoff and Johnson 2003; Gibbs et al. 2004) explains the origin of meaning by postulating that thought is influenced by sensorimotor experience (Robbins and Aydede 2009). However, the relation between the body, mind and environment is not unidirectional. Not only do we derive information from the world, but we are also able to use it as an extension of the mind through epistemic actions, strategies that minimize the cognitive load by offloading it onto the environment (Kirsh and Maglio 1994). Although research on the role of gesture in language often focuses on its communicative function, studies show that spontaneous gesture facilitates thinking (Goldin-Meadow 2005), provides information about thought inaccessible through language (Alibali et al. 1993, 1997), is congruent with the theory of embodied representations (Hostetter and Alibali 2008), and spontaneously occurs even in persons who could not have learned it visually (Iverson and Goldin-Meadow 1997) suggesting a broader importance of gesture for working memory and cognition. Bearing in mind those features of gesture, this study investigates its role as epistemic action. 12 blind and severely visually impaired children and young adults, as well as a control group of 7 young adults were interviewed for the purpose of the study. Participants were asked to explain a set of abstract and concrete concepts while their speech and gestures were recorded. If gesture indeed plays a role in reducing the mental load by externalizing thought, more gestures should be produced for concepts that are more difficult to describe (in this case: abstract, intangible concepts). Preliminary data analysis of gesture type, number and gesture per word rates shows that abstract concepts not only generate more gestures, but also prompt blind and visually impaired speakers to use more simulation gestures, thought to confirm the embodied mind hypothesis (Hostetter and Alibali 2008). A number of examples demonstrates that abstract concepts in blind children are strongly grounded in their experience of real-world situations. Although the topic would benefit from further research, it is clear that gesture is not merely a tool for communication, but rather a way of extending the capabilities of the mind.

References

- Alibali, Martha Wagner, Lucia M. Flevaris and Susan Goldin-Meadow. 1997. 'Assessing knowledge conveyed in gesture: Do teachers have the upper hand?' , *Journal of Educational Psychology* 89, 1: 183–193.
- Alibali, Martha Wagner, Susan Goldin-Meadow and others. 1993. 'Gesture-speech mismatch and mechanisms of learning: What the hands reveal about a child's state of mind' , *Cognitive psychology* 25: 468–468.
- Gibbs, Raymond W., Paula Lenz Costa Lima and Edson Francozo. 2004. 'Metaphor is grounded in embodied experience' , *Journal of Pragmatics* 36, 7: 1189–1210. (date of access: 14 Dec. 2012).
- Goldin-Meadow, Susan. 2005. 'The two faces of gesture: Language and thought' , *Gesture* 5, 1-2: 1–2. (date of access: 22 Jan. 2013).
- Hostetter, Autumn B. and Martha Wagner Alibali. 2008. 'Visible embodiment: Gestures as simulated action' , *Psychonomic Bulletin & Review* 15, 3: 495–514. (date of access: 25 Jan. 2013).
- Iverson, Jana M. and Susan Goldin-Meadow. 1997. 'What's communication got to do with it? Gesture in children blind from birth.' , *Developmental Psychology* 33, 3: 453. (date of access: 9 Jan. 2013).
- Kirsh, David and Paul Maglio. 1994. 'On distinguishing epistemic from pragmatic action' , *Cognitive Science* 18, 4: 513–549. (date of access: 15 Feb. 2013).
- Lakoff, George and Mark Johnson. 2003. *Metaphors We Live By*. (2nd edition.) University Of Chicago Press.

- Robbins, Philip and Murat Aydede. 2009. 'A short primer on situated cognition', in: Murat Aydede and Philip Robbins (eds.), *The Cambridge handbook of situated cognition.* , 3–10. (http://sites.google.com/site/philipmovealpha/short_primer.pdf) (date of access: 13 Feb. 2013).
- Alibali, Martha Wagner, Lucia M. Flevaris and Susan Goldin-Meadow. 1997. 'Assessing knowledge conveyed in gesture: Do teachers have the upper hand?' , *Journal of Educational Psychology* 89, 1: 183–193.
- Alibali, Martha Wagner, Susan Goldin-Meadow and others. 1993. 'Gesture-speech mismatch and mechanisms of learning: What the hands reveal about a child's state of mind' , *Cognitive psychology* 25: 468–468.
- Gibbs, Raymond W., Paula Lenz Costa Lima and Edson Francozo. 2004. 'Metaphor is grounded in embodied experience' , *Journal of Pragmatics* 36, 7: 1189–1210. (date of access: 14 Dec. 2012).
- Goldin-Meadow, Susan. 2005. 'The two faces of gesture: Language and thought' , *Gesture* 5, 1-2: 1–2. (date of access: 22 Jan. 2013).
- Hostetter, Autumn B. and Martha Wagner Alibali. 2008. 'Visible embodiment: Gestures as simulated action' , *Psychonomic Bulletin & Review* 15, 3: 495–514. (date of access: 25 Jan. 2013).
- Iverson, Jana M. and Susan Goldin-Meadow. 1997. 'What's communication got to do with it? Gesture in children blind from birth.' , *Developmental Psychology* 33, 3: 453. (date of access: 9 Jan. 2013).
- Kirsh, David and Paul Maglio. 1994. 'On distinguishing epistemic from pragmatic action' , *Cognitive Science* 18, 4: 513–549. (date of access: 15 Feb. 2013).
- Lakoff, George and Mark Johnson. 2003. *Metaphors We Live By*. (2nd edition.) University Of Chicago Press.
- Robbins, Philip and Murat Aydede. 2009. 'A short primer on situated cognition', in: Murat Aydede and Philip Robbins (eds.), *The Cambridge handbook of situated cognition.* , 3–10. (http://sites.google.com/site/philipmovealpha/short_primer.pdf) (date of access: 13 Feb. 2013).