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evolution, brain, and linguistic structures

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abstracts

Karola Pitsch, Anna-Lisa Vollmer, Katharina Rohlfing & Britta Wrede
Bielefeld University, Germany

Action modification in adult-child-interaction: On the interplay of gesture, interaction and cognition

Learning is a social and interactional endeavor, in which the learner generally receives support from his/her social environment. Developmental research has demonstrated that – when talking or presenting new actions to their young infants – tutors/adults not only modify their speech, but also their gestures and motions (Brand et al 2002, Fernald & Mazzie 1991). Other studies have suggested that such modifications scaffold children’s acquisition of language and action (Gogate et al 2000, Brand et al 2002). While the parameters of such action modifications have been well investigated (Rohlfing et al 2006, Vollmer et al 2009), studies barely consider (a) the variability in parental behavior, i.e. the fact that not every parent modifies her/his behavior in the same way, and (b) the learner’s reactions in situ and how these might, in turn, shape the tutor’s actions.

In this paper, we assume an interactional perspective (stemming from EM/CA) and propose to investigate how tutors modify their actions and gestures during the course of the interaction and in the light of the recipient’s/infant’s conduct. For a given activity, which concrete actions/gestures/hand trajectories do tutors perform? How are these, moment-by-moment, shaped with regard to the recipient’s feedback? And how might their concrete performance invite specific forms of recipient action?

Our analysis will be based on videotaped data from a semi-experimental setting, in which parents were asked to present a set of 10 manipulative tasks both to their infant and to another adult. The corpus comprises 64 groups of participants stemming from three different age groups: (i) pre-lexical infants (8 to 11 months old), (ii) early lexical infants (12 to 24 months), (iii) advanced lexical infants (25-30 months). – In an initial investigation we have been able to show – on the basis of a small data set of the pre-lexical infants (8 to 11 months) – a loop between the tutor’s/adult’s manual actions and the recipient’s/infant’s gaze: the infant’s gazing behavior is consequential for the concrete ways in which the adult’s hand trajectories are shaped both in space and time (Pitsch et al 2009). Based on this, we will now extend our scope of analysis towards (a) a larger data sample investigating all three different age groups and (b) linking qualitative and quantitative analysis. In doing this, we will need to take into consideration – beyond the recipient’s ‘gaze’ behavior as in pre-lexical infants – the different stages of the infants’ cognitive development as they exist in the three different age groups and how these transpire in the concrete interaction, i.e. the feedback the infants are able to give and how the tutors deal with it when performing their actions and gestures. On a methodological level, we will use a combination of (i) qualitative investigation derived from ethnomethodological Conversation Analysis, (ii) semi-automatic computational 2D hand tracking and (iii) quantification.

Isabella Poggi¹, Florida Nicolai², Laura Vincze² & Rachele Luberto²
(1) University of Roma Tre, Italy; (2) University of Pisa, Italy

Vagueness in gesture, face and gaze

This work describes a type of gestures used during discourse that we call “gestures of vagueness”. Take this narration of a Tweety and Sylvester cartoon:

She’s nitting a sweater uhm that’s funny because his fur becomes part of the yarn so she’s making a sweater with the cat’s fur and then he realizes that he’s loosing his fur and pulls back his fur and the yarn and comes out of the yarn basket with a uhm tricoloured uhm outfit.

In synchrony with *uhm tricoloured*, the subject repeatedly rotates her right hand open. The gesture is performed in a loose manner, with a low muscular tension, and means: “I am vague in what I am saying because the specific details of the topic I refer to are not important for ongoing narration”.

In cognitive terms, vagueness means that the beliefs we assume about a certain topic only concern general and not specific aspects of it. Vagueness is the opposite of precision, that implies conveying beliefs about each specific aspect of a topic; but it also differs from ambiguity. An ambiguous utterance can be interpreted in two or more different ways; we do not know which to assume, but once we decided – once ambiguity is resolved – that belief is specific and precise. In vagueness the belief we assume is only one, but concerns a general class of things, not specific examples or subclasses of it.

Since in narration we are bound to the Gricean norms of quality and quantity, that impose to tell not more nor less than what is relevant, when we can’t or don’t want to go into details we sometimes meta-communicate we are not precise, implying we can afford doing so because details are not necessary for understanding the bulk of our discourse. We may do so by gestures, gaze or facial expression, thus informing both on the certainty (precision) of our beliefs and on the relative importance of information in the structure of our discourse.

A facial signal of “vagueness” is the grimace of pressing lower lips on upper lips, with lip corners downward, that means “I don’t know”. In gaze, briefly and softly closing eyes, possibly while moving head horizontally, means: “I can pass over this”.

Gestures conveying vagueness generally share the following features:

1. the handshape is generally one of the most basic and easy ones
2. the movement trajectory is generally curve
3. the gesture may have two opposite rhythms: either very fast with brief amplitude, or soft with very low tension
4. it tends to be repeated, possibly assuming a cyclic form in the shape of a circle
5. it is produced with low muscular tension.

These motor features provide a cue that the gesturer attributes a low importance to being precise in the beliefs simultaneously conveyed by words, as if telling: “I am relaxed, not tense, since speaking of this is not very important”.

Our work analyses some gestures of vagueness, aiming to characterise their nature and function.

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