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## Commitment sharing as crucial step toward a developmentally plausible speech act theory?

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From the point of view of cognitive development, the present paper by Bart Geurts is highly relevant, welcome and timely. It speaks to a fundamental puzzle in developmental pragmatics that used to be seen as such, then was considered to be resolved by many researchers, but may return nowadays with its full puzzling force.

The puzzle in question is the following: on broadly Gricean accounts, how should young children ever be able to start communicating, given that even basic conversation requires heavy cognitive machinery of recursive higher-order mindreading, and given that young children appear not to be such higher-order mindreaders yet? (Which, in fact, as much research suggests, they may actually become over development as a consequence rather than as a precursor of language acquisition.)

This puzzle has been most clearly described by Richard Breheny in 2006 in the form of a trilemma (Breheny 2006):

- (i) Verbal communication requires higher-order intentionality (that is, a propositional attitude “Theory of Mind” – as it is often called in developmental psychology – that involves concepts of belief, etc.)
- (ii) Young children before age 4 do not yet have such a Theory of Mind; yet
- (iii) Young children clearly do engage in verbal communication.

Which of the three mutually incompatible premises has to go, or at least to be qualified? Breheny and many researchers in the field at that time considered (ii) and (iii) to be empirically untouchable – (iii) for obvious reasons, and (ii) on the basis of decades of Theory of Mind research that suggested that children before age 4 do not yet operate with explicit “belief” and other propositional attitude concepts (e.g. Wellman et al. 2001). They thus opted for dropping or qualifying (i): Even if complex

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and reflective adult communication may need to be described along Gricean lines, at least for basic forms of communication, one may do without the full-blown Gricean machinery of recursive mindreading.

However, around the same time as Breheny's paper appeared, Theory of Mind research was revolutionized and yielded a completely novel picture regarding (ii). Beginning with a landmark paper by Onishi and Baillargeon (2005), numerous studies administered novel paradigms to test Theory of Mind with non-explicit measures such as eyetracking, habituation, spontaneous interaction and priming. These studies suggested that long before they solve standard verbal False Belief and related tasks (around age 4), children operate with a precocious, implicit Theory of Mind that can be tapped, for example, in their looking behavior (for review, see Scott and Baillargeon 2017). Similarly, adult studies suggested that these largely automatic and unconscious forms of Theory of Mind may remain in operation throughout the lifespan and actually underlie a lot of spontaneous conversation (for review, see Schneider et al. 2017). In light of these findings, a completely new response to the trilemma came into focus, and indeed became the predominant solution in the field: (ii) has to be dropped (or at least to be qualified), while (i) and (iii) remain perfectly in place, and thus a standard Gricean picture can be vindicated. The basic puzzle of developmental pragmatics – how very young children could ever begin to become Gricean communicators – thus was considered to be solved.

Recently, however, the empirical tables have been turning, and the puzzle may now re-appear in full force. A large and ever growing body of subsequent studies has uncovered a serious replication crisis with regard to implicit Theory of Mind tasks. Both in infant and adults, hardly any one of the original implicit measures could be independently replicated so far (e.g., Dörrenberg et al. 2018; for review, see Kulke and Rakoczy 2018; Kulke et al. 2018a, 2018b; Powell et al. 2017). And for those tasks that could be replicated, their validity turned out to be questionable, either since the effects disappeared once more stringent controls were introduced or because the findings were subject to alternative and more parsimonious explanations (e.g., Kulke et al. 2018b; Phillips et al. 2015; Priewasser et al. 2017; Santiesteban et al. 2014, Santiesteban et al. 2015).

The current empirical situation is thus very complex, confusing and puzzling (for a recent debate, see Baillargeon et al. 2018; Poulin-Dubois et al. 2018). In light of the existing evidence, we do not know whether there is indeed such a thing as implicit Theory of Mind before age 4. To settle this question conclusively, there is currently a large-scale, multi-lab replication endeavor under way. Under the roof of the “ManyBabies” initiative, (Frank et al. 2017), this initiative

involves virtually all the authors of original papers as well as those of replication attempts, and brings together – in the spirit of “adversarial collaboration” (Mellers et al. 2001) – researchers from widely diverging theoretical backgrounds in order to test whether there is robust evidence for implicit infant Theory of Mind.

Returning now to Breheny’s dilemma, the status of premise (ii) thus remains basically unclear until the findings from the large-scale replication studies are coming in. In the meantime, however, one better be prepared for a solution to the trilemma that survives regardless of the outcomes of the replication studies. One better be prepared, in particular, for a solution that does NOT strongly presuppose the falsity of (ii).

The present proposal by Bart Geurts is a highly valuable and timely step into this direction by developing a solution to the trilemma that drops or at least qualifies (i) rather than (ii). From all we currently know about infant social-cognition, the early development of communication may indeed best be described by a picture like the one sketched here: Acquisition of language and discourse is first and foremost the acquisition of a normatively structured social practice. Entering into this practice plausibly needs to build on basic forms of social cognition such as joint attention, etc. (Tomasello 2014), and on children’s early sensitivity to normative relations (Perner and Roessler 2012; Rakoczy and Schmidt 2013) – but such basic forms of social cognition do not amount to full-fledged propositional attitude concepts yet. Full-fledged Theory of Mind, involving meta-representational propositional attitude concepts and thus enabling higher-order recursive mindreading, then grows out of early language experience rather than vice versa, and such complex Theory of Mind then enables the later acquisition of Gricean communication.

Needless to say, many open questions will need to be addressed in future work, and many details will need to be filled out in order to yield a more comprehensive picture from such a sketch. For example, how exactly are children’s early normative notions of commitments and related matters to be characterized? Or, how do early commitment-based and later Gricean forms of communication relate to each other? Does the latter over-write the former? Or do we keep both in our communicative repertoire across the lifespan (for example, reverting to Gricean analyses only in the case of indirect speech acts and the like)? All in all, the present sketch clearly has the potential for setting the stage for developing a stable solution to the puzzles of developmental pragmatics.

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