I ain't got no body: Developmental psychology must be embodied and enactive, as well as "social"

A. P. Craig[a] and L. Barrett[b]

[a]*University of Cape Town, Commerce Faculty, Management Studies, Rondebosch 7700, Cape Town, South Africa;* [b]*School of Biological Sciences, University of Liverpool, Liverpool L69 7ZB, United Kingdom.*
biblis@iafrica.com **L.Barrett@liverpool.ac.uk**

Abstract: Although we agree with the authors' criticism of the reigning approach to children's sociocognitive development, we raise three further issues. First, "mind talk" is not, in fact, any different from the other aspects of the social world about which children learn. Second, there is no choice between either the "single mind" or the "social context." Finally, there is a spurious separation between organism and environment.

In this target article, the authors take issue with the reigning "individualistic" approach in theories of children's development of social understanding. In what follows, we want to support their criticism of this approach, but in somewhat different terms. We therefore raise three questions for the authors to consider.

1. What if we were "Antipodeans"? Richard Rorty's (1980) interesting thought experiment regarding persons without minds, the Antipodeans, has something to teach us as far as "constructing an understanding of mind" goes. Among these people, according to Rorty, "neurology and biochemistry had been the first disciplines in which technological breakthroughs had been achieved, and a large part of the conversation of these people concerned the state of their nerves." Also, given the state of their knowledge of physiology, "each well-formed sentence in the language which anybody bothered to form could easily be correlated with a readily identifiable neural state" (p. 71). Using this device, Rorty wanted to show that nothing "hangs on the distinction between mind and body," that the "mind" is not something about which we have to have knowledge, and that "No predictive or explanatory or descriptive power would be lost if we had spoken Antipodean all our lives" (p. 120). We introduce Rorty's story here to undermine any attachment to learning mind-talk as special, as somehow requiring answers different in kind (i.e., more focused on the inner experiences or the "free mind" of the developing organism) from those answers dealing with the norms, habits, rituals, beliefs, and practices of the social group to which the child belongs. In these terms, therefore, we want to rule out "theories of mind" on two counts: (1) as theories *of* anything, and (2) *as* theories (for the latter, cf. Millikan 1995, pp. 51–82).

In addition, we want to cast aside "simulation theory" and especially its focus on "introspection," and propose that children are most likely to be genetically endowed with strong pattern recognition abilities and the tendency to establish correlations between, in "our" case, mind talk and various associated behaviours, first in others and later in themselves, after the onset of language. This follows from Millikan's (1995) views that folk psychology merely describes "the competence" of "certain devices inside us" and that it is properly the job of the neuroscientist to look for the devices that show particular kinds of competence. Concerning ourselves thus with "certain devices inside us" places our position alongside those favouring attention to our genetic endowments regarding learning.

2. Does gradual learning necessarily imply constructivism? The fact that learning is gradual does not seem to favour one or another theory on the relationship between "the social" and the tools or resources with which the child becomes proficient. That is, the connective changes made during learning and the synaptic adjustments the brain undergoes (as change is steered by both one's genetic heritage and culturally specific, unique experiences), all take time (cf. Churchland 1996). Phrased differently, gradual change alone does not privilege a more *social* or *constructive* focus on things.

In order to support their view, the authors must do more than provide evidence to show that social history shapes individual differences in time and space. In other words, what remains empirically open has to do with the mechanisms of transmission between social history and individual knowledge acquisition – specifically, how this transmission occurs from case to case or task to task (through internalisation, in Vygotsky's terms, or gradual construction, in the terms of the authors, or the twin mechanisms of assimilation and accommodation, in Piaget's model of knowledge development).

The only thing that seems certain is that one's knowledge of the world, or "that small part of it that is relevant to one's own practical concerns . . . is embodied in the peculiar configuration of one's 1014 individual synaptic connections . . . which are set to progressively more useful values during learning and development" (Churchland 1996, p. 5), and that these configurations are the result of a "merging" of organism and environment (in Millikan's [1995] terms); there is therefore no choice between "the single mind" and the "social context," contrary to Raver and Leadbeater's (1993) assertion; it is a bewitchment precisely of the kind that Wittengenstein warned against.

3. Is there any such thing as a "single mind"? To expand on this point, it seems to us that, once we move away from such misleading distinctions, labels ("theory-of-mind"), and other bewitchments and from our tendency to utter inarticulate sounds (another Wittgensteinian jab at bad thinking), we are probably in a better position to come up with answers to why-questions; for example, why "aspects of social interaction are correlated with social understanding." As Millikan (1995) states: "There is no clear line but only the most arbitrary demarcation between the organism considered as process and its environment. The organismic process has no skin." (pp. 179–80). Hence merely adding – in some or other old or new configuration – "the social," as the authors suggest, does not clarify the relationships between learning and maturity/development, nor its other or related side, organism and environment.

What has to be worked out are the modes of connection between these processes and factors, and these probably differ from case to case. That is, we suspect that the gap between, for example, "initial knowledge" in the domains of "physics, psychology, number, and geometry" (cf. Spelke 1994, p. 433) and "our mature knowledge," which, as Spelke tell us, "does not appear to be shared by infants" (p. 435), will be filled in through the bits and pieces of time- and place-appropriate features which are mediated to the developing organism by its caregiver(s) (cf. Feuerstein's description of "mediated learning experience" [Feuerstein 1980, p. 15], which is a clinical elaboration of Vygotsky's Zone of Proximal Development [Vygotsky 1978, p. 86]). It is these changes over time, whereby "initial" infant knowledge is displaced, revised, and overturned on its route to becoming adult knowledge, that seem to us to offer empirical possibilities for examining the interaction between development and learning and organisms and environment. That a refocus on embedded cognition occasions methodological adjustments is also recognised (cf. Craig 2003). Thus, once we slough off any lingering attachment to an isolated "mind," our theories of learning will automatically bring brain into world (and vice versa) and will consider cognition in context (Clark 1999; Hutchins 1995; Rowlands 1999).

Children, chimpanzees, and social understanding: Inter- or intra-specific?

Timothy J. Eddy

Psychology Department, Salem State College, Salem, MA 01945.
timothy.eddy@salemstate.edu

Abstract: Theories of children's understanding of mind benefit from rigorous interpretations of demonstrations of similar understandings in closely related species. This commentary describes how Carpendale & Lewis's (C&L's) argument could be made more persuasive with a more rigorous interpretation of the studies of chimpanzees' understanding of mind.

https://doi.org/10.1017/S0140525X04300038 Published online by Cambridge University Press

Carpendale & Lewis (C&L) provide a long-overdue treatment of the development of social understanding as influenced by social interactions. As such, their target article goes a long way in reconciling the ideas of Wittgenstein, Piaget, and Vygotsky. When removed from evolutionary considerations, C&L's arguments might lose considerable appeal. In an effort to place their work in a larger evolutionary context, and in the context of what the authors call the "lean interpretation" of joint attention, they cite some work suggesting that chimpanzees "do not appear to understand the psychological significance of gaze direction" (sect. 3.1, para. 8). Curiously, considering the authors' thesis that social interaction plays a major role in constructing understandings of mind, they fail to discuss the social matrix of the chimpanzees so referenced.

Povinelli and Eddy (1996) carried out a series of studies that appear very similar to the ones that C&L cite from Povinelli (1999). That is, the 1996 work included findings that, to quote C&L (sect. 3.1, para. 8),

> chimpanzees trained to beg with a hand-out gesture and given the opportunity to beg for food from one of two experimenters sitting side-by-side are initially just as likely to beg from someone with her eyes closed, with her head turned away, or even with her head covered by a bucket as they are to beg from someone with her eyes open.

These are some of the exact findings of Povinelli and Eddy (1996). Unfortunately, I have been unable to obtain reprints of the Povinelli (1999) report from his lab, so it is unclear whether he has replicated nearly our entire series of experiments (14 studies with chimpanzees and one with young children) or whether C&L are actually referring to Povinelli and Eddy (1996). Regardless of the answer to that question, the 1996 report brings to the fore an additional interpretation of the chimpanzee findings distinct from C&L's "lean interpretation," which has a direct bearing on one of the central ideas they raise.

Specifically, in the 1996 work, one of the interpretations of the chimpanzees' failure to take into the account the visual perception of others concerned the interspecific nature of the tasks. That is, the chimpanzees in those studies were required to reason about the visual perception of members of a different species (human experimenters). According to this interpretation, the chimpanzees in these studies might in fact show very different results if required to reason about the visual perception of other chimpanzees (rather than humans).

Because these studies have not actually been carried out, it is unclear whether the failure of the chimpanzees under these circumstances is because they lack the capacity to make attributions of visual perception to others (C&L's "lean interpretation") or because they have simply been asked to make attributions to member(s) of the wrong species. Given the human tendency to attribute mental states to some (but not all) animals (see Eddy et al. 1993), this becomes a distinct possibility when applied to chimpanzees.

Where would an acceptance of the "chimpanzees' failure due to the interspecific nature of the tasks" interpretation leave C&L's ideas concerning the development of children's social understanding? Probably not in a fundamentally different place from where it is now. Having said that, if explicit linkages between the development of differing (or similar) abilities in members of different species can be made with data that have singular (rather than multiple) interpretations, then such ideas could be placed squarely and firmly in our growing understanding of the relation between psychological phenomenon and evolutionary facts.

ACKNOWLEDGMENTS

I thank David Gow for his information, support, encouragement, good humor, and worthiness as a colleague; and thanks to Alessandra Bianchi for proofreading at the eleventh hour.

More than a context for learning? The epistemic triangle and the dialogic mind

Charles Fernyhough

Department of Psychology, University of Durham, Science Laboratories, Durham DH1 3LE, United Kingdom. **c.p.fernyhough@durham.ac.uk**

http://www.dur.ac.uk/c.p.fernyhough

Abstract: Theory-of-mind (TOM) competence is under-specified in Carpendale & Lewis's (C&L's) account. In the neo-Vygotskian alternative outlined below, TOM development is driven by the internalisation of dialogic exchanges which preserve the triadic intentional relations of interactions within the epistemic triangle. On this view, TOM competence stems from children's ability to operate flexibly with the multiple perspectives manifested in internalised dialogue.

Carpendale & Lewis (C&L) pull together an impressive range of findings on social-environmental influences on theory-of-mind (TOM) development, and set out a welcome new theoretical framework for understanding how such capacities might emerge within interpersonal interaction. Where their article is less satisfying is in specifying those cognitive mechanisms that might result from such developmental processes. That is, the authors give an interesting and plausible account of how TOM competence *develops*, but they never really say what it *is*. In particular, the authors are unclear about whether the epistemic triangle serves primarily as a context for learning the criteria for the correct application of mental state terms, or whether it goes on to play a role in children's subsequent solo reasoning about the mind. The authors hint that they have the latter in mind when they note that children's facility with mental state language, developing hand-in-hand with their understanding of the social contexts within which such language use is appropriate, allows them to become "able to think about situations abstracted from their practical context of interaction and . . . to anticipate and reason about situations such as the false belief task" (target article, sect. 4.1, para. 9). At the same time, this account leaves it unclear whether the end product of development, namely TOM competence, amounts to much more than the correct application of mental state terms and concepts in accordance with externally derived criteria for their use. In this case, an unsatisfactorily individualistic account of TOM competence appears to have slipped in through the back door, and one is left wondering what the C&L account can offer that the conventional theory-theory cannot.

It is here that the authors could have gone further with their interest in the work of Vygotsky. Although Vygotsky did not directly address the problem of TOM development as it has been characterised by researchers in this area, several aspects of his writings are potentially relevant here. First, Vygotskian ideas can be useful in an *enculturation* account of the sort that C&L discuss in section 2.1. Second, the idea of *naïve participation*, which sees infants being drawn into practices that they will only later come to understand (Vygotsky 1934/1987, Ch. 4), is central to C&L's conception of how an "initial, fragile social understanding" (sect. 4.1, para. 9) can become transformed into a fully fledged TOM. Third, Vygotsky's concept of the *zone of proximal development* (Vygotsky 1934/1987, Ch. 6) provides a framework for understanding how sensitive input from caregivers can "scaffold" children's acquisition of mental state terms and concepts (Meins et al. 2002). Fourth, Vygotsky's idea that language can be used as a *psychological tool* (Vygotsky 1930/1978) in augmenting pre-existing cognitive capacities suggests that private and inner speech may play important roles in mediating children's own reflections on the nature of mental states and processes (Meins et al. 2003). Finally, the Vygotskian notion of *internalisation* of semiotically mediated interpersonal activity (Vygotsky 1931/1997) may prove useful for our theorising about how children's developing TOM abilities are rooted in their experience of social exchanges.

I suggest that it is this latter aspect of Vygotsky's theory that can make the difference between an essentially individualistic account of TOM development based primarily on the learning of terms for

https://doi.org/10.1017/S0140525X04300038 Published online by Cambridge University Press