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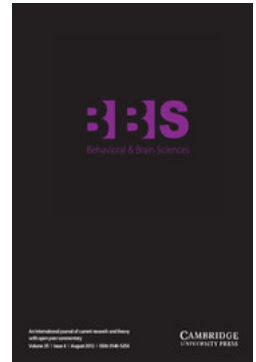
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The roots of social understanding in the attachment relationship: An elaboration on the constructionist theory

Peter Fonagy

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opment of children's social understanding¹ within the confines of the three prominent models of theory of mind acquisition have been at best partial. They reject both the enculturation and the extant developmental propositions (maturation, theory-theory, and simulation) in favour of a model that assumes that social understanding is an emergent property of the child's experience of certain regularities in interaction with others. The "epistemic triangle" (i.e., referential interactions between infant and caregiver about the object) is assumed inevitably to generate the discovery that others sometimes have different beliefs about the world from one's own. If we, taking the point of view of the infant, assume the existence of a stable external world, the actions of others in communicative interactions can only be understood given the supposition that they have different beliefs about aspects of the world. Children achieve comparable levels of development at similar ages simply because of the commonalities of their experience. The corollary of this is that differences in the acquisition of social understanding are to be understood in terms of crucial differences in their experience of triadic interactions. For example, our results from the London Parent-Child Project (Fonagy et al. 1997) that children securely attached at one year were significantly more likely to pass the Belief-Desire reasoning test at five and a half years ($n = 90$, $p < .005$, $OR = 3.8$, $CI: 1.5-9.9$) may be understood in terms of attachment being a good marker for a cooperative parent-child relationship, which, according to constructionist theory, is the ideal context for the development of knowledge.

Although I do not fundamentally disagree with either the spirit or the details of the case advanced in the target article, there are important gaps in the model advanced by the authors. The target article is helpful in drawing attention to the common ground between Bowlby's (1980) and Piaget's (1945/1962) thinking, particularly in relation to Piaget's notion of schemes and Bowlby's assumptions concerning internal working models. However, how do secure-autonomous internal working models in the parent lead to the kinds of cooperative relationships "that might permit unrestrained communication, that allows participants to understand each other fully" (Habermas 1983/1990)? We have to assume a dialectic model of self-development (Hegel 1807) where the child's capacity to create a coherent image of mind is critically dependent on an experience of being clearly perceived as a mind by the attachment figure. The now overwhelming evidence for the transgenerational transmission of attachment security is consistent with this (van IJzendoorn 1995), and this may link to the emergence of mentalisation in the child (for a review, see Fonagy et al. 2002). Accumulating transgenerational evidence suggests that mothers who conceive of their own childhoods largely in mental state terms are more likely to go on to develop secure attachments with their children (Fonagy et al. 1991; Target et al., in press) and to have a more differentiated mentalised picture of their infant (Muzik & Rosenblum 2003; Slade et al. 2001), which in turn is associated with more mind-minded comments (Muzik & Rosenblum 2003) and infant security (Slade et al. 2001). As the work of Elizabeth Meins and colleagues (2001) suggests, mothers whose state of mind with respect to attachment may be described as secure (Main 2000) expose the infant to more mental state language, which in turn advances the child's social understanding.

Yet, more than mental state language, the coherence with which the child's mental state is perceived may be the critical variable. In a study by David Oppenheim (Koren-Karie et al. 2002; Oppenheim & Koren-Karie 2002), mothers were asked to narrate a videotaped playful interaction that they had just had with their infant. Mothers who were reflective in their narratives, able to see various experiences through the child's eyes and gain new insights as they talked, were far more likely to have securely attached infants than mothers who either had preset conceptions of the child which they appeared to impose, or disengaged from trying to understand what was on the child's mind. Most pertinent was the observation that disorganised attachment classification was associated with mothers who were incoherent, switching between the above categories and not fitting well into any of them. Thus,

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Peter Fonagy

Sub-Department of Clinical Health Psychology, University College London, London WC1E 6BT, United Kingdom. p.fonagy@ucl.ac.uk
<http://www.psychol.ucl.ac.uk/psychoanalysis/peter.htm>

Abstract: It is argued that constructionist theory provides only a partial account of how secure attachment leads to better social understanding. In addition to cooperative parent-child relations, the more efficient arousal and affect regulation system of secure infants, and developmental moderators of the processes of imitation, may play a part in explaining the association and offer clues as to how effective social understanding is generally acquired.

Carpendale & Lewis (C&L) make a strong case that past attempts at accounting for the influence of social interaction on the devel-

“mind-mindedness” and security of attachment in the caregiver appear to go together and are associated with a coherent working model of the child that is richly imbued with representations of internal states. This is the substance of the collaboration and cooperativeness at the heart of constructionist theory.

Cooperative relationship rooted in the coherence of the perception of the child’s mental state may not be the only factor. The development of the key psychological capacities that underpin theory of mind may be grounded in the attachment relationship (Fonagy & Target 2002; Fonagy et al. 2002). It is quite probable that an important mediator of the association of secure attachment and theory-of-mind development lies in the regulation of physiological arousal. Secure attachment may be conducive to mentalising because it facilitates an optimal level of arousal (Field 1985; Kraemer 1999; Panksepp et al. 1999). Mentalising depends substantially on optimal prefrontal cortex functioning (Adolphs 2003; Blair & Cipolotti 2000; Rowe et al. 2001; Siegal & Varley 2002; Stuss et al. 2001). Medial and orbital prefrontal cortices have been linked to the regulation of interpersonal relationships, social cooperativeness, moral behaviour, and social aggression (Damasio 2003; Davidson et al. 2000; Greene & Haidt 2002; Kelley et al. 2002; Schore 2003). The optimal functioning of the prefrontal cortex in turn depends on optimal arousal. Neurochemical regulation of the prefrontal cortex is complementary to that of posterior cortex and subcortical structures² (Arnsten 1998; Arnsten et al. 1999). Arnsten and Mayes (Arnsten 1998; Arnsten et al. 1999; Mayes 2000) have argued that when arousal exceeds a certain threshold, it is as if a neurochemical switch is thrown. This switch shifts us out of the executive mode of flexible reflective responding into the fight-or-flight mode of action-centred responding. Those with insecure or disorganised attachment relationships are sensitised to intimate interpersonal encounters and experience higher arousal, and the relative level of arousal in the frontal or posterior part of the cortex readily shifts posteriorly.

Similar arguments could be mounted in relation to effortful control. The capacity to inhibit a dominant response in place of a subdominant one is a key achievement of early development (Kochanska et al. 2000; Rothbart et al. 2000). It also appears to be powerfully predicted by security of attachment at one year (Kochanska 2001; Kochanska et al. 2000; Kreppner et al. 2001). Mentalising involves setting aside immediate physical reality in favour of a less compelling reality of the other’s internal state. Previous studies have linked the acquisition of effortful control to performance on the false belief tasks as they follow a common developmental timetable and share a common brain region and yield common types of pathology (Carlson & Moses 2001). Hence, we would argue that children with a background of secure attachment are more rapid in their acquisition of mentalisation in the context of social relationships because secure attachment has equipped them with the capacity appropriately to attend selectively to critical aspects of such interactions.

More recently one of the most creative writers in this field, George Gergely (2003), has identified two strategies of imitation in 14- to 18-month-old infants; 14-month-olds use an observational learning strategy based on an active process of evaluation of situational constraints using the principle of rational action (Gergely & Csibra 1997; 2003), imitating only when the other’s action is not explained by situational constraints and therefore points to the affordance property of the object (Gergely et al. 2002). (In a modified replication of Meltzoff’s famous study of the infant imitating the experimenter switching a light on in a box by touching it with his head, Gergely et al. [2002] showed that imitation does not occur when the hands of the actor are visibly constrained, and when the infant interprets the use of the head as a rational action justified by the actor’s immobilisation and not relevant to the infant because the infant’s hands are free.) Four months later, the physical constraints appear irrelevant (Gergely 2003), as the infant imitates regardless of the observed physical constraints; it is assumed that this is because the infant presumes a cooperative intention to teach on the part of the actor. Thus, by 18 months the

infant presumes that the actor as a rational mental agent has already tested the rationality of the novel action him- or herself.

Gergely’s work has an important qualification for constructivist theory insofar as that the gradual emergence of mentalisation appears to change the experience of the “epistemic triangle” for the infant. The experience of interchange evolves from a teleological experience at 14 months to the beginning of a mentalistic one by 18 months.³ Gergely (2003) argues that one of the central environmental factors that contributes to the shift from teleological emulation to the assumption of a cooperative intention to teach, is previous experience of “benevolent teaching” interactions initiated by the caregiver. It is likely that in dysfunctional attachment contexts, the infant learns to interpret parental initiation of eye contact and other communicative attention-directing behaviours as cues signalling that potentially harmful interactions are likely to follow. The infant may develop the defensive coping strategy of inhibiting the mentalistic interpretation of such communicative behavioural cues. Hence, in severely dysfunctional attachment contexts, infants are likely to fail to interpret mentalistically the communicative referential cues of the demonstrator as indicating a benevolent and cooperative intention to teach.

In brief, while broadly accepting the constructivist model, we suggest (1) that specific capacities (arousal regulation, effortful control) link the secure base that generates secure attachment with evolving symbolic function; (2) that the link of the secure base phenomenon to the development of mentalisation will be increasingly understood to be causal rather than correlational, in that the group of capacities that underpin adequate social understanding (what Bogdan [1997] called interpretation) are evolutionarily tied to it; in other words, that the evolutionary function of the attachment relationship in humans goes beyond the protection of the vulnerable infant to providing an environment within which social understanding may be acquired; and therefore, finally (3) that deficits in attachment create a vulnerability in the child to later environmental challenges.

NOTES

1. Our preferred term for social understanding has been “mentalisation” (see Morton 1989).

2. As the level of cortical activation increases through mutually interactive norepinephrine alpha 2 and dopamine D1 systems, prefrontal cortical function improves on capacities such as anticipation (shifting of attention), planning/organisation, and working memory. With excessive stimulation, norepinephrine alpha 1 and dopamine D1 inhibitory activity increases; the prefrontal cortex goes “off-line,” and posterior cortical and subcortical functions (e.g., more automatic functions) take over. Increasing levels of norepinephrine and dopamine interact such that above threshold, the balance shifts from prefrontal executive functioning to amygdala-mediated memory encoding and posterior-subcortical automatic responding (fight-flight-freeze).

3. In this sense, of course, the constructivist account skirts circularity but gets round it by the assumption of the gradual emergence of the mentalising capacity.

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