Commentaries

The Role of Contingency Detection in Early Affect–Regulative Interactions and in the Development of Different Types of Infant Attachment

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Commentary on DeOliveira et al., 2004

As DeOliveira et al.’s timely and rather comprehensive review of the literature on attachment disorganization makes it very clear, for current models of early socio-emotional development as well as for theories of developmental psychopathology, probably the most intriguing and theoretically challenging discovery provided by recent developments in attachment theory is the objective identification and descriptive characterization of Disorganized infant attachment (e.g., Main & Solomon, 1986). There is a quickly growing body of research evidence representing a number of different methodological approaches (such as longitudinal and correlational studies, physiological and cortisol measures, genetic studies, and new experimental paradigms) about the nature of Disorganized attachment that provide challenging and highly suggestive new information guiding current attempts to develop theoretical models of the psychosocial environmental—and possibly also biological—factors that may contribute to the early etiology of Disorganized attachment (e.g., George & Solomon, 1999; Koós & Gergely, 2001; Liotti, 1992; Lyons-Ruth & Jacobvitz, 1999; Main & Hesse, 1990) as well as to its links to later psychopathological problems involving dissociative disorders (Carlson, 1998) and possibly borderline personality disorder (Fonagy, Gergely, Jurist & Target, 2002; Fonagy, Target, Gergely, Allen & Bateman, 2003).

DeOliveira et al.’s theoretical approach to the etiology of Disorganized attachment starts with a very helpful review of the infant attachment literature on disorganization showing that the different current theories all converge on the view that Disorganized infant attachment represents ‘a fundamental dysregulation of emotion’ and that ‘the behavior of disorganized infants suggests that they are experiencing intense negative affect but that they are unable to regulate this affect within the attachment relationship’ (p. 5). This leads the authors to the conjecture that to understand the nature and causes of the core problem of affect-dysregulation in Disorganized attachment one
needs to examine current theories of the normal developmental processes leading to early emotion regulation and socialization. One can then ask how these models could account for the serious derailment of emotion-regulative processes in Disorganized attachment as a result of the specific atypical patterns of emotional interactions that characterize the abnormal and atypical attachment environments of disorganized infants (involving neglect, abuse, and unresolved maternal mental states in relation to loss or trauma). Following this approach, DeOliveira et al. single out and critically examine two current models of early emotion regulation and socialization, namely, Gianino and Tronick’s (1992) Mutual Regulation Model, and Gergely and Watson’s (1996, 1999) Social Biofeedback Model of Affect-Mirroring that is based on their more general model of Contingency Detection and Maximization in infancy.

DeOliveira et al.’s detailed analysis of the basic assumptions that the two theories make about the nature and function of early emotion-regulative mother–infant interactions perceptively reveals some major theoretical differences between these two models. By criticizing different aspects of both theories, the authors make some specific proposals as to how the two models can be seen as fruitfully complementing each other leading to a more encompassing understanding of early emotion socialization and regulation processes. They then propose their own version of integrating the Mutual Regulation and the Social Biofeedback Model (see their Figure 1) and proceed to apply this integrated new theory to account for the etiology of Disorganized attachment.

In what follows, I will first comment on some criticizable aspect of DeOliveira et al.’s characterization of particular features of the Gianino and Tronick model on the one hand, and of the Social Biofeedback theory on the other. I will argue that while their suggestion that the two models can be seen as complementing each other is partly correct (and useful), they do not fully realize the degree to which the basic assumptions of the two theories differ concerning the goal-directed organizational properties of mother–infant emotion–regulative interactions and of the kind of role the infant is seen to play in them. I shall then provide some clarifying comments about DeOliveira et al.’s slightly mistaken portrayal of the workings and functional characterization of Gergely and Watson’s contingency detection and maximizing model and the kinds of modifications it generates in the infant’s interactive behaviour. Finally, I shall discuss DeOliveira et al.’s hypothesis according to which the two types of deviant parental affect-mirroring styles (‘marked, but categorically incongruent’ versus ‘categorically congruent, but unmarked’) identified by Gergely and Watson (1996) play specific causal roles in the formation of Avoidant versus Ambivalent patterns of infant attachment, respectively. I will argue that while these types of deviant affect-mirroring are indeed likely to contribute to a number of dysfunctional and pathological aspects of affect-regulation in the different categories of insecure attachment (as originally proposed by Gergely and Watson, 1996), they nevertheless do not seem to sufficiently differentiate between the typical parental reactivity patterns associated with the specific attachment categories to be considered to be their central and specific etiological determinants. I will suggest that a potentially more useful approach may be to focus on the more inclusive and general concept of differential patterns and degrees of contingent parental reactivity as the causally relevant differentiating etiological factor in early attachment organization. The formation of different types of attachment strategies can then be seen as specific behavioral adaptations brought about by the application of the infant’s contingency detection and maximization mechanism to these general patterns of contingent parental reactivity (see Watson, 2001).
1. Some Difficulties Faced by the Proposed Integration of Gianino and Tronick’s Mutual Regulation Model, and Gergely and Watson’s Social Biofeedback Model

There are (at least) two major theoretical differences between Gianino and Tronick’s (1992) Mutual Regulation Model, and Gergely and Watson’s (1996, 1999) Social Biofeedback Theory of affect-mirroring. One concerns the assumed functional nature of the goal-directed organization of early emotion-regulative mother–infant interactions and the specific role that the infant is seen to play in them. The other concerns the innate versus interactively constructed origins of the infant’s early understanding and degree of initial awareness of the functional meanings and dispositional properties of differential emotion states of the self and the other. DeOliveira et al. are quick to pick up these fundamental differences in the two theories and they develop some interesting critical points about them in their proposed integration of the two approaches.

Both theories assume that infants exhibit two types of behavior, each serving a different (innately specified) adaptive goal. The first such goal, equally assumed by both approaches, is that of direct affective self-regulation. Both theories agree that there are some rudimentary infant behaviors that are active from very early on and that are specialized to directly modify (mostly, attenuate) the level of stimulus-induced affective arousal experienced by the infant: such are the capacities for bodily withdrawal from looming stimuli, or turning away the head and/or closing the eyes to avert the over-arousing effects of impinging external stimulation.

The first significant difference between the two theories emerges in their assumptions about the functional role played by the second type of behavior in question. These infant responses can be considered communicative or at least interactive in nature (examples include affect-displays, arching of the body, kicking, smiling, cooing, crying, etc.) insofar as they are (1) directed towards the interacting attachment figure, and (2) their intensity, duration, and frequency can be actively modified or modulated by the infant. What leads the infant to express and modulate these other-directed behaviors? According to Gianino and Tronick, such behavioral displays actively serve the interpersonal goal of achieving ‘mutual regulation’ or an interpersonal state of ‘reciprocity’ (other closely related terms that are used in this regard are ‘synchrony’, ‘matching’ or ‘mutual delight’: see Gianino & Tronick, 1992, p. 48). This model therefore emphasizes the active role and bi-directional regulatory influence that the infant’s responses are supposed to play in early mother–infant interactions.

In contrast, according to Gergely and Watson’s (1996, 1999) contingency detection and maximization model, the built-in goal of the contingency detection module that generates the variable range of infant responses during interactions with the caregiver is to discover the actual, objectively existing degree of contingent control or efficacy of his or her different behavioral displays over the caregiver’s specific evoked responses. The more control the infant registers, the more self-efficacy he or she will experience. Since the discovery of contingent control is positively arousing (Watson, 1972), as a by-product of contingency seeking, infants will discover repeatable ways of regulating their self-states through the induced interactive behaviors of the caregiver by exercising contingent control over aspects of her behaviors.

DeOliveira et al. criticize the contingency detection and maximization model, because—as they say—it ‘reveals little regarding how the infant acquires the skill to utilize affective signals in the complex arena of human interaction’ (p. 451). In fact,
I would take issue with this criticism, pointing out that the discovery of the contingent control power and degree of efficacy of one’s affective signals in relation to the caregiver’s evoked behavioral displays, as well as the simultaneously formed association between the infant’s affective display and the ensuing positive self-regulatory emotional impact that the evoked parental responses induce in the infant’s affective state, can provide a rather specific account of ‘how the infant acquires the skill to utilize affective signals in the complex arena of human interaction’. However, since DeOliveira et al. do not share this view, they conclude that ‘the Mutual Regulation model of Gianino and Tronick (1992) . . . provides the necessary complement to Gergely & Watson’s theoretical account, delineating the complex dyadic processes contributing to early emotion socialization’ (p. 451).

It seems clear then that DeOliveira et al. find Gianino and Tronick’s proposal that ‘Mutual Regulation’ is the interpersonal goal that organizes early mother–infant interactions not only acceptable and uncontroversial, but they also applaud the active regulatory role that the infant is portrayed to play from the start in such bi-directional affect–regulatory interactions. In contrast, I must admit that I tend to disagree with some of the important implications that follow from Gianino and Tronick’s ‘Mutual Regulation’ Model. Note that terms such as ‘mutual regulation’ unavoidably carry the implication that the infant actively displays and modulates his or her behaviors in the interaction not only to achieve self-regulation through evoking attuned, emotion-regulative reactions to her displays by the mother, but that he or she also actively tries to directly regulate and modulate the mother’s own affective states as well. (In what sense would the regulation be ‘mutual’ otherwise?) However, all the examples given by Gianino and Tronick of the infant actively achieving ‘mutual regulation’ or ‘reciprocity’ involve and presuppose a sensitive and attuned mother whose reactions to the infant’s expressive displays function to regulatively modify the infant’s internal affective state as it is perceived by the mother. But this kind of ability to induce and influence the mother’s reactive behavior to achieve self-regulation through her attuned reactivity is qualitatively different from the assumed goal of ‘mutual regulation’ which would seem to imply that the infant also aims to modify the mother’s internal affective states simply in order for the mother to feel more regulated herself. However, no examples of infant behaviors that would directly aim to regulate the mother’s state (with no consequent self-regulatory effect on the infant ensuing from the interaction) are provided by the Mutual Regulation Model.

The other difference between the two approaches that DeOliveira et al. bring into focus has to do with the possibly overly rich innate basis that the Gianino and Tronick model assumes concerning the initial availability and conscious access to the meanings of a relatively large set of differential basic emotions and their dispositional structure. The non-experientially based a priori availability of such a rich knowledge base about emotions is presupposed by the infant’s assumed ability to actively and skillfully use such emotion displays in dyadic, bi-directional ‘mutually regulatory’ communications with the caregiver. As DeOliveira et al. put it: ‘These fundamental abilities, pre-requisite for the child to function as a partner in the Mutual Regulation model, are viewed as pre-adaptive, hard-wired, or instinctive features of the newborn human’ (p. 445).

In contrast, Gergely and Watson’s Social Biofeedback Theory of affect-mirroring does not carry such a heavy innate burden as it specifies an explicit learning mechanism in the form of the contingency detection and maximization model that can explain how through early empathic affect-regulative-mirroring interactions the infant
can become gradually sensitized to the set of internal and external cues that constitute the differential emotions. Furthermore, the Gergely and Watson model assumes that the dispositional meaning of emotions is first learned by observing the action consequences of the emotion displays produced by others. The theory then proposes that these learned dispositional structures later come to be also attributed to the individuated differential emotion states of the self that had been previously made accessible through the sensitization process induced by the natural social biofeedback training that the mother’s empathic affect-mirroring displays provided for the infant. In comparing the two models, DeOliveira et al. conclude: ‘The Social Biofeedback model of early affect socialization provides an experiential alternative to the assumption that the human infant is endowed at birth with an implicit understanding of the dispositional content of emotion signals and with a basic ability to use these signals as feedback to regulate interactions with his or her mother’ (p. 448).


On p. 446 DeOliveira et al. try to explain the—admittedly not so simple—workings of Gergely and Watson’s (1996) contingency maximizing model, but in doing so they make a slightly confusing (but rather typical) mistake that I feel obliged to correct here. They write: ‘Contingency maximization refers to an infant’s motivation to increase both the conditional probability of a stimulus event given a response (sufficiency index) and the conditional probability of a response having occurred given the presence of a stimulus event (necessity index). The concept is intuitive once grasped—to illustrate, Gergely and Watson proposed that an infant will act so as (1) to increase the likelihood that its mother will smile after she (the infant) has smiled (the infant’s smile is sufficient to elicit a smile from the mother), and (2) to decrease the likelihood that the mother will smile in the absence of her own smile (the infant’s smile is necessary to elicit a smile from the mother).’

The problem with the above account is that it mixes up perceived contingencies with actual, objective contingencies. The description sounds as if the infant would be motivated to introduce certain (unspecified) actions into the interaction with the aim to increase the degree of the actual contingency that exists between a given type of infant response and the mother’s specific reaction to it. But it is important to understand that contingency maximizing is a mechanism which functions as a discovery procedure that attempts to identify or to zero in on the actual, objective contingencies that are assumed to exist in the real world. Therefore, what the infant tries to maximize is its perceived estimate of the actual contingency and she will do so only under specific conditions (see below) that indicate the possibility that she may have underestimated the actual degree of contingent control that she has over the stimulus event.

The distinction between perceived and actual contingencies is important, because the infant would need to do rather different things to change an actual contingency, than the kinds of modification in the tested response class that she needs to do to test whether her perceived degree of contingency actually underestimates her real degree of contingent control or not.

What are the conditions which signal to the infant that his estimated perceived contingency may in fact underestimate the actual, objective contingency, thereby activating the contingency maximization mechanism that then leads to certain specific types of modifications in the response class tested? Briefly, in order to ensure that his per-
The Role of Contingency Detection

The received degree of (estimated) contingency corresponds to (i.e., is a good estimate of) the actual contingency that exists between his response and an outcome event, the infant has to check if there is an imbalance between the perceived value of the sufficiency index and the perceived value of the necessity index. If the two indices, indeed, show a difference in the perceived magnitude of contingent control, this raises the logical possibility that, due to monitoring the wrong response class, the infant may have underestimated the actual contingency. In fact, the direction of the imbalance provides information about whether she may have underestimated the actual contingency by testing a too narrow or a too broad response class. So, if the sufficiency index is higher than the necessity index, then by broadening the response class monitored the infant may identify some stimulus events that she is actually controlling (thus increasing the necessity index), but that she previously mistakenly thought to be not under her control. In contrast, if she finds that the sufficiency index is lower than the necessity index, this instructs her to experiment with narrowing the response class tested. This may help to identify the more specific response that actually carries the causal power over the stimulus event, in which case the sufficiency index will increase. The point is that once the imbalance between the two indices has disappeared, or when it remains the same even after having experimented with widening or reducing the tested response class in the appropriate manner, then the infant can be certain to have discovered the actual degree of contingent control that she has over the stimulus event.

(For details, examples, and empirical support to suggest that all this is really happening, see Gergely & Watson, 1996; Watson, 1985.)

From the point of view of the present discussion, it may be informative that there is some experimental evidence suggesting that infants are not primarily motivated to increase their control as much as possible, but rather to discover the actual degree of control they have in relation to a given response of a particular attachment figure, and then they actually tend to stick to that habitual level of control. Bigelow (2001) in an elegant study has recently shown that in an attachment context infants prefer habitual levels of control over their mothers’ behavior, and become negatively motivated when they are given the chance—when interacting with a stranger—to produce higher than the habitual level of control that they have become accustomed to with their mother. Infants whose own smiling exerted a habitual level of (medium high) control over their mother’s smiling, were introduced into a new interactive situation with a stranger who showed more elevated responsiveness in terms of elicited smiling than did their mothers. These infants actually ended up smiling less and showed less positive affect with the stranger, instead of trying to go for the alternative of increasing their habitual level of efficacy.

3. Comments About the Hypothesized Etiological Role of Deviant Styles of Parental Affect-mirroring in Establishing Avoidant Versus Ambivalent Patterns of Infant Attachment

In Gergely and Watson (1996, pp. 1202–1203), speculating about some of the potential implications for developmental psychopathology of our Social Biofeedback Model of affect-mirroring and of the related hypothesis about the role of ‘markedness’ in interpreting parental affect-mirroring displays, we described two possible types of deviant mirroring styles that could be identified on the basis of our theory. One concerned the possibility of ‘lack of markedness’ that would produce ‘categorically congruent, but unmarked’ mirroring displays, while the other logical possibility identified
the potential existence of ‘marked, but categorically incongruent’ affect-mirroring displays. We speculated about what kind of pathological representational, emotion-regulative, and self-attributional consequences would be predicted by our Social Biofeedback Theory if such types of deviant parental mirroring styles would become dominant in the infant’s experience. We also briefly mentioned certain types of pathological parental dispositions that we thought may be expected to produce such deviant forms of affect-mirroring displays. As an example, we suggested that Preoccupied or Unresolved parents may be prone to produce ‘unmarked, realistic mirroring’ of negative affect. Based on our theory we further speculated that ‘unmarked’ mirroring of negative affect may induce a distorted emotional experience in the infant who (1) may attribute the mirrored emotion to the mother as her realistic emotional state (due to a lack of ‘decoupling’ that is normally triggered by the ‘markedness’ of the display), (2) due to the lack of ‘decoupling’ and the consequent misattribution of the emotion to the parent, the mirroring display may not become ‘anchored’ and associated with the infant’s own emotion state leading to a deficiency in establishing second-order representations for the infant’s primary emotions and to a consequently diminished level of emotional self-awareness and control, and (3) the infant’s negative emotion state will be escalated (rather than becoming modulated) by perceiving and attributing the unmarked negative emotion to the mother as her real emotion state. We pointed out that this set of consequences are similar to the emotional interpersonal dynamics described in projective identification that is the dominant defense in borderline personality disorder (see also Fonagy et al., 2002, 2003).

When discussing the other type of deviant mirroring involving ‘marked, but categorically incongruent’ affect-reflective displays, we suggested as an example that over-controlling parental attitude or defensively distorted parental perception of the infant’s affect may lead to such ‘marked, but incongruent’ mirroring displays. We then speculated following the lead of our Social Biofeedback Model that such mirroring displays may end up becoming associated with and forming (categorically incongruent) secondary representations for the infant’s actual primary affect states leading to distorted self-representations and misperceived affective states of the self.

Acknowledging the heuristic value of the above suggestions, DeOliveira et al. go a significant step further and make a specific proposal that causally links ‘marked, but incongruent’ mirroring to the establishment of Avoidant infant attachment on the one hand, and ‘categorically congruent, but unmarked’ mirroring to the development of Ambivalent attachment on the other (p. 449). There are some non-trivial problems, however, that I think this specific hypothesis needs to face.

First, when reviewing the literature for evidence to support the specific link between ‘marked, but categorically incongruent’ parental affect-mirroring and Avoidant infant attachment, DeOliveira et al. point out that Dismissing parents do tend to ‘distort and misattune to negative affect’ (p. 449). At the same time, however, they also herald evidence showing that ‘mothers of Avoidant infants tend not to perceive or respond to negative emotions’ (p. 449). Note, however, that while both of these descriptions may be true of Dismissing parents, no evidence is provided that it is the first type of parental reaction and not the second that contributes more significantly to the development of an Avoidant behavioral attachment strategy in infants. Note, however, that the second type of Dismissing parental attitude identified (i.e., low or no parental reactivity to negative infant affect displays) does not belong to the class of ‘marked, but incongruent’ affect-mirroring responses (which are, by definition, contingent reactions). Therefore, if it turned out that it is this kind of non-contingent dis-
missing parental attitude that leads to the strategically reduced affective expressivity of Avoidant infants, then the specific causal link hypothesized by the authors would not be supported. In fact, it is plausible to suggest that the lack of contingent reactivity to negative emotions is an important and central feature of the contingency profile of Dismissing parents whose effects on the infant do contribute significantly to the development of the Avoidant attachment strategy (cf. Watson, 2001). Such effects, for example, include a serious decrease in the infant's sense of the communicative efficacy of her negative affect displays as well as a diminished sense of the overall degree of causal control she experiences to have over the attachment environment. Note, however, that these detrimental effects are not the same as those that are predicted to result from 'marked, but incongruent' affect-mirroring responses (that, incidentally, many Dismissing parents may not produce with significant frequency at all).

Second, when arguing for the other hypothesized specific link between 'congruent, but unmarked' affect-mirroring and Ambivalent attachment, DeOliveira et al. point out (in agreement with Gergely and Watson, 1996) that parents with Preoccupied attachment are likely candidates for producing such 'unmarked' mirroring reactions to infant negative affect and that Preoccupied parental attachment representations have been associated with the development of Ambivalent infant attachment organization. However, the specificity of the hypothesized causal link becomes somewhat weakened when DeOliveira et al. go on to suggest (probably rightly) that 'unmarked' affect-mirroring is even more likely to characterize parents of Disorganized infants. Furthermore, reviewing the evidence for this latter proposal, the authors again include non-contingent unmarked parental displays (such as the unpredictable 'frightened and/or frightening' emotion displays of Unresolved parents described by Main and Hesse, 1990). But clearly, such parental reactions are not examples of 'unmarked' affect-mirroring responses that are always contingent on the infant's negative affect displays. Therefore, their potentially important etiological role leading to attachment disorganization is likely to be mediated by different mechanisms (see Watson, 2001) than the ones implicated in the consequences of 'unmarked' but contingent mirroring of negative affect.

Third, in general, the problem with DeOliveira's specific etiological hypothesis seems to be that the different parental types that have been associated (e.g., through the AAI) with the different categories of infant attachment simply do not map on to the two types of deviant mirroring styles in any clear-cut or empirically supported manner. Above we have seen that Unresolved parents who seem likely to produce 'unmarked, realistic mirroring' of negative affect, may nevertheless end up producing Disorganized rather than Ambivalent attachment. And consider abusive parents: some abusers can be totally neglective towards the child following the abusive episode (in which case they would be unlikely to produce either of the deviant mirroring styles with any significant frequency), some can take a denying attitude after their abusive episode in which case they may try to falsify the infant's negative affect by providing 'marked, but incongruent' mirroring, and some can be torn, guilt-ridden, and regressively childish following the abusive episode in which case they may react to the infant's negative affect by a corresponding 'unmarked and realistic' negative emotion display. While these all seem rather realistic outcomes (given the great variety of abusers around), we nevertheless know quite well that abuse is most strongly associated with Disorganized attachment, and is less frequent in the attachment background of Avoidant or Ambivalent infants.
Fourth, affect-mirroring interactions, the subject matter of our Social Biofeedback Theory, are but a very specific subtype of the much larger class of different types and patterns of contingent interactions that are, in turn, the subject matter of contingency detection and maximization theory. We have applied contingency detection theory to the special case of affect-mirroring, because we felt that this specific type of contingent interaction may have important consequences for—both normal and pathological—emotion socialization processes (including its potential effects on emotion sensitization, differentiation, second-order representation formation, and affective self-control processes). But affect-mirroring episodes are often quite rare and in many cases practically non-existent types of contingent events, especially when we compare them with the massive amount of experience that all infants have with different patterns of contingent responsivity characteristic of their attachment environment. Therefore, it seems to me a category mistake to try to identify as the etiologically most significant component that determines the different classes of infant attachment the types of affect-mirroring experiences that an infant is exposed to (however informative these may be otherwise). In fact, the different patterns of parental contingent responses and the different degrees and types of contingent effectiveness that the infant experiences in relation to them, seem to me to be the most natural domain in which to search for the adaptational origins of the different infant attachment types. It is at this level of analysis where formative patterns of contingent parental reactivity may become identified and to which infants develop their organized behavioral coping strategies embodied in the different types of infant attachment categories. From this point of view, it is somewhat unfortunate that DeOliveira et al.’s review, which has paid special attention to our contingency-based Social Biofeedback Theory, stopped at the level of trying to identify the etiology of different behavioral attachment styles as stemming from different types of parental affect-mirroring without considering as an alternative the larger domain of the differential patterns of contingent parental reactivity to which the particular infant attachment strategies can be seen as specific behavioral adaptations.

Therefore, in closing, I would like to call attention to John Watson’s (2001) recent and highly relevant contingency-based analysis that provides a systematic theoretical framework for considering the different types of behavioral attachment strategies as adaptations to different patterns of parental contingencies. According to this approach it is due to the infant’s application of her contingency detection and maximizing mechanism to the specific profiles of contingent parental reactivity that leads to the formation of the different types of infant attachment strategies. It is a pity that DeOliveira et al. did not include in their otherwise rather comprehensive review of the different models of the etiology of infant attachment categories Watson’s (2001) contingency-based theory that, I am convinced, would have greatly influenced and enriched their creative integrative attempt to identify new approaches to the etiology of Disorganized attachment.

References


Note

1. The quite large family of theories that are close in spirit to the above assumption of Gianino and Tronick’s Mutual Regulation model also tend to share the further assumption of ‘starting-state or primary intersubjectivity’ (e.g., Trevarthen, 1979; Braten, 1988; Meltzoff & Moore, 1998; Stern, 1995). This position is committed to the very strong innatist assumption that infants can from the start directly perceive or ‘read’ the internal emotional or intentional mental states behind the expressive displays of both the self and the other. Thus, infants from the start are assumed to be driven to achieve not only behavioral alignment with the other, but also actively seek to establish an internal experience of ‘shared intersubjective states’ with the caregiver’s mind. I cannot go into the detailed criticism of this position here, but I have provided such a critical appraisal elsewhere (Gergely, 2002, pp. 28–33).
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