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What We Learn about Babies from Engaging with their Emotions

Vasudevi Reddy and Colwyn Trevarthen

This issue of Zero to Three focuses on 'observing' babies, to learn from what they do. We have deliberately slanted the emphasis in our title to 'engaging with' babies, because we want to show evidence that engagement is how we gain psychological knowledge about others, including babies, and that this is as true for the psychologist as it is for other folk. If we want to know what a baby, an adult or, indeed, any animal feels or thinks, we have to engage with them, allowing ourselves to feel the sympathetic response that the other's actions and feelings invite.

This is a very different approach from the position of doubt and detachment in knowing other people's feelings and thoughts adopted by 20th century psychology. But, for a scientist studying the behaviour of any system, engaging and participating with it gives an insight into the meaning of the natural events and processes that more detached observation cannot give. For understanding social phenomena, it is essential. This was a lesson that anthropology learned half a century ago with Malinowski's celebrated method of 'participant-observation' for the study of human communities and customs in unfamiliar lands. It appears that Psychology is in a kind of denial about this key principle.

Why is engagement especially informative?

In 1993 the late Professor Elizabeth Bates, a pioneering researcher on early communication and language learning, was an invited speaker at a conference of the British Psychological Society in Birmingham, England. She was in the audience when another invited speaker, Prof. Giannis Kugiumutzakis of the University of Crete, presented his findings on the imitation of vocal sounds and facial gestures by babies less than an hour old. Neonatal imitation has been one of the most controversial of all twentieth century findings in infant development, violating the Piagetian model that assumes that all social skills, including imitation, are complex intellectual achievements involving much trial and error in an infant's early months. In a question to Prof Kugiumutzakis, Prof. Bates admitted that she had been one of the sceptics, disbelieving in the possibility of neonatal imitation - until she had tried it with a grandchild. Experiencing the response to her attempts she was convinced. Now her concern was only about what it meant, not about its existence.

This experience, that we sometimes disbelieve in things until we experience them ourselves, is a familiar one to all of us. We may not have believed, for instance, that bringing up a child can be quite so exhausting, or that losing a parent can be disorienting even to adults, or that kidney stones can be as painful as others say they are, until we feel them ourselves. But watching a baby do things is not quite the same as these experiences of exhaustion or despair or pain. The baby's actions are

observable to anyone: to the parent, to the paediatrician, to the scientist, to the audience when they are presented with the scientist's data in live form. Why should one need to engage with the infant's behaviour oneself in order to be convinced about what one is seeing?

There are several simple reasons for accepting that in order to "see" psychological phenomena, or understand the processes that move psychological subjects, we do in fact need to engage with them as whole psychological beings ourselves. First of all, the findings from Gestalt Psychology a century ago make it very clear that organisms perceive in meaningful wholes rather than in parts and clearly that which is perceived varies between species of organism in adaptive ways. It must take an organism with feelings and thoughts to perceive feelings and thoughts in another. Second, when we perceive things we also respond to them, and our response both legitimises that which we perceive and allows us to perceive it in one way rather than another, i.e., to perceive it through the medium of our response. If you observe a young infant smile you observe something very different than if a dog or a Martian were doing the observing, and you respond in a different way. Third, when somebody is saying or doing something directly to us, we have access to information that is often unavailable to somebody else observing from the sidelines. This is often a serious source of confusion when data on communication from experiments, which are inevitably selective, are presented by psychologists to their colleagues. When you greet a baby and receive a smile in return, your experience of that smile is different from that of someone else doing the observing; the warmth and the compliment to you in the smile must affect whether and how you see it, as must any knowledge you have of the history of the baby's previous interactions.

As Prof. Bates may have discovered, in trying to get one's newborn grandchild to imitate one's protruding tongue, one is enormously sensitive to detail in terms of the baby's gaze, mood and previous actions which statistical analyses can only attempt with difficulty. It is not surprising that she was more convinced by her own single experience than by years of data reporting statistical frequencies of responses to "stimuli".

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Emotions as the key to engagement

We suggest that emotions are the key to psychological engagement. Emotions do not exist to be locked away inside individuals. First they are part of an agent in her active, moving and assertive relationship with the world. Second, and most important of all, emotions are intensely shared, because it is in the nature and function of emotions to stir up sympathetic responses in others. We do not know how it happens, but we may not deny this sympathy. For all who deal with infants, emotional engagements with them provide the most informative as well as the most helpful route to understanding them. The two anecdotes described below, from the records following the birth of the eldest child of one of us (VR) illustrate the power which emotional engagements have on all involved, and the kinds of awareness they demand.

Story One: "Shamini was about 6 weeks old when her father and I tried the Still Face Experiment which we had heard so much about (but which I had neither quite believed nor really understood). In the middle of a good smiley 'chat', when she was lying on the bed and I was leaning over her, I stopped with my face pleasant but immobile and continued looking at her. She did the classic thing, tried to smile a bit, then looked away, then she looked back at me and tried to chat and looked away again. After maybe 30 seconds, I couldn't stand it any longer and, smiling, leaned forward and hugged her, saying, "Oh you poor thing!". At this she suddenly started crying. This reaction of hers was a turning point for me. I was shocked. And very moved. I didn't know she cared. Neither reading about the research, nor even subsequently watching videos of such experiments by Lynne Murray told me quite as much as this experience with its immediate impact in the knowledge of our relationship thus far".

Story Two: □ She was angry with me today. I was delaying giving her a feed because it was only two hours after the last one. But she □ d been awake all the time so she was hungry quickly and had been wanting it for some time. Eventually □ after being quiet for some time, then restless, and after a little fussing, she frowned as the culmination of the fussing, and she yelled □ a furious sounding shout □ louder volume than any other vocalisation heard before. And clearly filled with rage. Then there was no other sound, though the face was still angry. I was extremely taken aback. And almost guilty. □ (Diary at 5 weeks)

The history of engagements and the emotional responses of shock and guilt clearly gave me, her mother, meaning to Shamini's acts. Without such meaning laborious mechanical analyses could strive but still fail to apprehend the significance of the baby's reactions. Anyone, including a researcher, has to be emotionally involved in sympathy with the infant in order to fully understand why that emotion has come about, and what purpose or effect it may have in the child's experience of life. A lot can be learned from intimate and 'respectful' engagement with babies' actions and feelings, and we suggest that this way of observing alters not only the empirical picture of what a particular infant at a particular time is capable of doing and feeling, but also the whole theoretical story about how infants develop, what they are motivated to experience and to be changed by. It is a vital corrective to the incomplete picture one obtains by distant objective observation and by assuming that mental events cannot be observed directly.

Openness to emotional engagement in studies of infants: interpretation and misinterpretation

We take three examples of infant behaviour □ proto-conversation, coyness and teasing □ to make two points. First, that these phenomena would simply never have been studied had it not been for psychologists' openness to engaging with their infants' emotions. And second, that engagement allows a richer (and we would argue, more useful) interpretation of infant behaviour than does detached observation.

The phenomenon of 'proto-conversation' with two month-olds was first highlighted by the linguist and anthropologist Mary Catherine Bateson in 1971 reporting on a film of a mother with a 9-week-old from observations made in the linguistics laboratory at MIT.

The phenomenon of 'talking' with a baby a few weeks old is a familiar one to most parents: when babies look to us and start smiling then □ chat □ in extended bouts of mutual gaze, turn-taking, cooing, showing lip and tongue movements, waving of arms, turning wrists and extending fingers, they seem to experience our conversational acts as communication and must respond expressively. If you allow yourself to be engaged with a two-month-old infant like this, especially if it is an infant you know well, and who knows you, it is impossible to resist becoming involved and talkative. It is absurd then to doubt the communicative intent of the baby, or to argue that the baby's acts merely appear to be responses to yours, that they are merely some kind of biologically pre-programmed reflex behaviour without appropriate feelings, or that what the baby is doing is just appreciating and testing the 'mechanical' contingency of your behaviour in time, and having no appreciation of its affective or companionable content.

Impossible, that is, unless you refuse to engage in the chat and insist that the only accurate source of data is from detachment and an unemotional analysis, counting responses to a controlled regime of stimuli. Our point here is that emotional acts need emotional perception and one cannot do this easily without emotional engagement. Refusal to accept was precisely the response from a male-dominated experimental developmental psychology to the claim that infants not yet three months old can have □ conversations □ in which they take turns, show signs of pre-speech and respond to and invite others' expressions of emotion. The pre-fix □ pseudo □ was offered instead of □ proto □ to qualify these infant-mother engagements.

The challenges to the communication claim took many forms. that the turn taking in the

exchanges was apparent rather than real, led solely by the mother's attempts to frame each infant act by her own, making them appear as if they were real conversational acts; that the infant could not be sensitive to the emotion in the mother's acts, but was responding merely to the physical parameters of the expression, its intensity, volume, frequency; that the infant was unconcerned about the mother's responses as responses, but merely interested in eliciting and maintaining a predictable level of contingency in its interactions with the world. At the heart of all of these challenges was (and still is) a belief that infants may begin life perceiving the physical world and appreciating a naïve physics, but only very late in life become able to imagine or construct an understanding of the psychological world. For a number of reasons psychologists in the 1970s and since have found it hard to believe that psychological states and acts were apprehendable by the unsophisticated organisms infants must be.

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In the next two decades responses to these challenges were put forward using methods that gave more information on the natural phenomena, and that sensitively tested them while permitting the infant subjects to be intimately engaged with sympathetic partners. The reality of turn-taking was demonstrated by precise analysis of the infants' phases of attending, synchronising and predicting in relation to the adults' behaviours. The skill of the infant in anticipating the course of a lively conversational game became more evident in research with slightly older babies enjoying routines of baby songs and teasing games. A Double-Video setup was employed by Lynne Murray in Edinburgh, Scotland, that enabled a rigorous test of the infant's sensitivity to the appropriateness of the emotions and their timing in the adult's expressive behaviour. Murray's claims were challenged again in the 90s on a technical point that was conclusively resolved in her favour by a replication of her findings by Jacqueline Nadel in Paris. In fact, the claim that Murray's findings could not be replicated offers a perfect example of how an experimental failure to engage with the babies destroys the communication. Having failed to get communication at all, it became impossible for the experimenters to demonstrate the effect of replaying a video of the mother's expressions. This was misread as a failure to replicate. The motives and emotions of proto-conversations have recently received refined description by Stephen Malloch, who adapted extremely precise computer-assisted musical acoustic methods to show up the 'musicality' of the vocal patterns that are generated in mutual sensitivity by mother and child in an undisturbed and enjoyable chat. (The Communicative Musicality of vocal games with infants is reported in *Zero-to-Three*, September 2002, Volume 23, No. 1).

Another phenomenon recently identified and bound to be challenged both about its existence and its interpretation is that of self-conscious affective reactions in 2 month-olds -- expressions of coyness or shyness. It is not uncommon to hear parents remarking, even about two and three month-old babies, that they are being shy or coy. The behaviour itself involves a particular pattern: the infant smiles and as she smiles starts turning the head and or gaze away from the other person, and sometimes brings up her arms curving in front of her chest and lower face. When you see this behaviour in so young an infant, a variety of interpretations are possible: you could remark on the behaviour and see it as a kind of 'fixed action pattern' which may have been triggered by a specific stimulus □ e.g., a too-close approach by a stranger; or you could, as some of parents do, see it as an emotional response of some kind. How does one decide which interpretation is better?

Observational data on the occurrence of the behaviour helps. In one longitudinal study we found that the behaviour occurred in all of five infants studied, although with individual differences in the frequency of its occurrence; it occurred not only to strangers, but also to the parents and even to the self in front of a mirror. The likelihood of the behaviour occurring to strangers was greater at around four months when parents reported that it seemed to be inviting interaction and play.

We found that the behaviour was more likely to be seen early, in the first seconds after renewal of an interaction, rather than later on. What the baby does is strikingly similar to that in older children

and adults, whom one accepts are being shy, the smiling game aversion, the turning of the head (often with quick return of head and gaze) and the arm raising are all noted features of embarrassed smiles, which are exhibited in a more controlled fashion in older children. The pattern is interestingly (and predictably) similar to the stereotyped rituals of coquetry that many cultures encourage females to use: the fan in front of the face, the kimono sleeve in front of the mouth revealing smiling eyes, the face tipped down to show a sidelong glance, etc. The contexts in which the babies' behaviour occurred were similar to the context of unexpected onset of attention in which toddlers and adults show embarrassment and blushing, as Charles Darwin observed. Of course, there are other more sophisticated contexts that elicit embarrassment in older children and adults.

We chose to interpret early coy smiles as a kind of affective self-consciousness even in the young infant. When an infant looks at you and you say hello and she turns away with an intense smile and curving arms and then turns back to look at you, it feels like she is being coy. Our reaction as participants was a crucial reason for the very investigation of these reactions. And it was because we experienced them as affective self-consciousness that the analyses comparing them structurally and functionally to those in older children and adults were conducted. If it wasn't for the developmental psychologist's own emotional reactions to infant behaviour within engagement, most of the interesting things we know today about infants would not have even been recorded.

A similar phenomenon concerns infant teasing. In 1986 I, Vasu, accidentally video-taped an interaction with my nine month-old baby daughter in which she is offering her father a small object while he is trying to get her to talk for the camera. After some occasions of him accepting the object, saying "Ta" (meaning, "Thank you!") dramatically and giving it back, she offers it again with a half smile. He reaches out to accept it, innocently, and she pulls it back, with her smile broadening. He feels tricked and comments on it and reaches forward with a laughing "You! Give it to me!" A few seconds later she offers it again with a smaller movement of the hand, again with a half smile with her eyes on his face and just as he reaches, she withdraws it and turns as if to run away. The family around the table laugh and her grandmother comments that she does tease like that.

Not an uncommon behaviour or exchange. But what do we make of it? The father felt as if he had been tricked. I, across the room and behind the camera, chuckled when I saw the infant's offer with the watchful half smile, even before she withdrew it. The whole family laughed, especially after the infant repeated the offer and withdrawal the second time. The interpretation we offered was that the infant recognised the shared understanding that the holding out of an object meant that the object would then be released into the reaching hand (the infant had only recently started doing this and was evidently enjoying the whole routine) and was playfully and intentionally violating that understanding in order to elicit an emotional reaction from the other person.

The problem with this interpretation was that it assumed some things which current developmental theory was not comfortable with (although many developments around 9 months are now interpreted as a kind of 'revolution' in social understanding, especially of other persons' intentions). The most central assumption we made was that Shamini must know something about her father's expectation that the object is going to be released; otherwise the infant would not expect an emotional reaction to the non-performance of that act. This assumption was not compatible with the theoretical position that it is not until about 4 years of age that children even recognise the existence of other people's expectations. A simpler explanation was offered by mainstream theorists as an alternative to the one we offered. It was that the infant may have previously received positive feedback (like laughter and excited chasing) to an accidental offer and withdrawal of an object, and had subsequently learned that this act was a good way to elicit that sort of reaction. A plausible enough story.

The crucial point is, however, what each story assumes about the infant's understanding at 9 months of age, about other people's emotional attitudes. It is about what emotions an infant can sympathetically feel. The story we offered assumed that the father's emotionally charged intention or expectation, to receive the object, were known by the infant. And that it was this perceived

psychological state and the pleasure associated with it that the infant was playfully teasing. The alternative explanation assumes that the infant could not have been aware of the father's intentions or expectations and feelings, but by simply remembering previous responses that had occurred 'accidentally', was trying to elicit similar behaviour. For the psychologist these alternatives are academic - in the weakest sense of the term - they don't matter except as arguments which pay people's salaries. For anyone dealing with infants, however, the choice of explanation matters a great deal. If we assume that the infant is unaware of our expectations or intentions we act accordingly: we do not encourage the baby to cooperate with or play with our intentions and expectations, and we do not engage with infant's actions that may be attempts to engage our expectations and intentions. For a playful parent, who enjoys the shared emotions, this does not seem the right way to go.

SIDEBAR 3 ABOUT HERE

Engagement Creates as well as Reveals. It Both Learns and Teaches Meaning

Engaging with babies is crucial not only for obtaining a fuller empirical picture of infant development, but also for the infants' development itself; for well-being, learning and teaching. Our responses within engagement not only allow us to notice and to interpret specific behaviours of the infant but also to recognise and legitimise these behaviours. In being able to engage and respond to someone we are entering a shared reality, in which the behaviour of each can be shared by the other. Take for instance the following example: A twelve month old infant on his mother's lap is looking out of the window and sees a flock of birds fly up in a rush. He points to them excitedly, vocally exclaiming and with both arms extended, not turning around to look at his mother. His mother looks too, and says, in a lively, confirming way, "Oh yes! Isn't that exciting!". The infant leans back into his mother's body and continues to watch the birds. Her reaction - in her voice and the movement of her body - affirms (to use clinical psychological terminology) - the infant's excitement and legitimises his act of communication about the birds. It thereby celebrates their companionship in knowledge about the world and the emotions it can stir up. From this simple example, it is easy to see how an infant who never received any emotional reactions to his emotions may cease to express them or experience them in the same way.

This same point is made by observers of good (i.e., effective) practice in teaching and learning. Jerome Bruner talks of 'communities of learners' held together in mutual respect by the intersubjectivity of their work and discourse. Barbara Rogoff calls it 'collaborative learning', and recently she and her colleagues have pointed out the power, in all cultures, especially the least technically elaborated but including our own highly industrialised and commercialised one in learning outside school, of 'intent participation' learning -- children doing meaningful things in sympathetic collaboration with more skilled 'teachers', while making valuable and useful products. Fred Erickson describes the unconsciously regulated rhythmic 'musicality' of classroom discourse in primary school when the teaching and learning are going well in the children's 'zone of proximal development'..

Looking at the incidents we have described from the infant's point of view, one might ask what various adult behaviours and various things they attend to mean to the infant. What does someone else's gaze mean, for example, and what does someone's smiling mouth mean, and what does a frown mean. The answers to these questions are complex, ranging from neurological bases for sympathetic recognition of actions in terms of one's own action potentials to primordial meanings of particular expressive patterns. However, in addition to all such aspects of the activity of 'meaning', one thing is clear. The most powerful meaning of a smile or gaze or a frown emerges in the infant's engagement with these human events, not through an abstracted observation nor simply as a predetermined given. If we didn't engage with infants, they wouldn't learn very much at all about us, just as we wouldn't learn very much about them. We draw their knowledge into existence and they draw ours. That is how infants, and we too, 'learn how to mean' from each other.

There are two different ways of looking at learning. One, denying the agency of one of the partners and observing, as it were, from outside of engagement, focusses on the imparting of experience by instruction, assessing the gains. The second, observing and responding within engagement, necessitates the acknowledgement of the emotionally involved agency of both partners, teacher and learner, who can easily swap roles. This second perspective is necessary, we argue for anything other than a sterile and mechanistic understanding of human mental and emotional development and, indeed, for promoting the development itself. We must share and respond to the powerful emotions of our infant companions.

Sidebars

SIDEBAR 1: Why We Prefer 'Sympathy' to 'Empathy' for Understanding Engagement

'Empathy' is often used to designate 'comprehending' how other persons feel, and, by extension, 'kindness', 'helpfulness', or 'concern for others'. But, the word is derived from a Greek word *empathia*, meaning projecting feeling into something. In modern Greek it signifies the 'evil eye'! Sympathy, in contrast, is derived from Greek *sympathia* meaning 'feeling with, compassion, liking'. It is clearly more intersubjective and 'two-way' than 'empathy', which, paradoxically, is more self-centred.

The great 18th Century philosopher of the Scottish Enlightenment Adam Smith in his 'Theory of Moral Sentiments' (1759) took 'sympathy' to designate any kind of 'moving and feeling with', whether motivated positively or negatively, and including posturing and acting in the same expressive way as another's body. He said:-

"How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it."

"Sympathy ... may ... , without much impropriety, be made use of to denote our fellow-feeling with any passion whatever."

Part I -- Of the Propriety of Action; Section I -- Of the Sense of Propriety
Chapter I -- Of Sympathy

Of the words available to us, sympathy clearly conveys best the core sense of intersubjective awareness of agency and emotion that works reciprocally between persons.

The theologian and philosopher Martin Buber (1958) has urged us to acknowledge the fundamental difference between the sympathetic 'I-thou' engagement between persons, and one person's relationship to an inanimate 'it'.

SIDEBAR 2: Cognition and Emotions in Life Experience

Jaak Panksepp (2003), a leading expert on emotional systems in the brain and 'affective neuroscience' has this to say about the scientific problem of relating rational processes to feelings:-

"At times I do fear that cognitive-imperialism, the prevailing view in mind sciences, will continue to suffocate the need for focussed research on affective issues, and thereby, continue to delay a scientific analysis of such matters of foremost concern for understanding the existential inner qualities of human lives. That, I believe, is a hangover of Cartesian dualism along with the prevailing assumption that subjective brain-mind issues, since they cannot be directly measured, should not be deemed a topic of disciplined scientific discourse or inquiry."

SIDEBAR 3: Sympathy in the Brain

Functional imaging of activity in normal adult brains responding naturally to real emotive events, and/or expressing communication with emotion, is bringing exciting evidence for extensive systems that reflect states of mind between people. Decety and Chaminade (2003) say, of their findings:-

" Motor expression of emotion, regardless of the narrative content of the stories, resulted in a specific regional cerebral blood flow increase in the left inferior frontal gyrus. □ these results are consistent with a model of feeling sympathy that relies on both the shared representation and the affective networks."

Most remarkable of all, the same 'mirror' systems for matching expressive states between people are already active in the brain of a 2-month-old baby who is looking at a person's face, responding sympathetically to it and ready to communicate feelings (Tzourio-Mazoyer, et al., 2002).

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