RUNNING HEAD: MEETING INFANT AFFECT

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Abstract

Emotions remain something of a mystery for most of us even when we accept their centrality to development in general and to infancy in particular. I make two arguments in this paper. One: that the most crucial thing about emotions is that they allow mutuality of engagement with other emotional beings - not only evoking responses, but also provoking further emotions in others. Mutual engagements – sometimes called moments of meeting or encounters with other minds - can be transformational. They allow us to be 'seen', to be 'known' by others, and in achieving that, they allow us to *be* persons. Some key phenomena of emotional encounters in infancy are discussed to illustrate this point. Evidence of such meetings is abundant in our lives and needs a committed focus for study within developmental psychology. Two: that we need to open out the idea of emotions (as well as probe at a micro-level) and the terms affect or affectivity might help encompass a greater breadth. Daniel Stern's 'vitality affects' and Ben Anderson's 'affective atmospheres' both cross disciplinary boundaries in contemplating emotional phenomena. It seems crucial for developmental psychology to incorporate such different aspects – neurological, kinematic, situational and socio-political - into discussions of emotional development.

Keywords: infancy, affectivity, emotional engagement, moments of meeting, vitality affects, affective atmospheres.

Meeting Infant Affect

"The emotions may be endless", said E. M. Forster. "The more we express them, the more we may have to express" (Forster, 1936). This claim was made before the second world war, and about a world of unexpressive English gentry that many of us have little contact with. And yet it is, ultimately, a developmental claim: that expressing emotions is vital for developing them, and that *not* expressing them leaves them stunted or absent. Along with several of the papers in this volume, this claim is a theoretical earworm that refuses to leave, not only asking just *how* emotional expression enables emotional development but also inviting the opening up of a possibly strange idea of emotion. The papers in this special issue all embrace openness in some way, re-thinking emotions as unbounded, unconstrained, changing processes, driving, responding and inviting engagement with the world.

In this paper I make two arguments:

- That the most crucial thing about emotions is that they allow mutuality of engagement with other emotional beings - not only evoking responses, but also provoking further emotions in others. Mutual engagements – sometimes called moments of meeting or encounters with other minds - can be transformational. They allow us to be 'seen', to be 'known' by others, and in achieving that, they allow us to *be* persons.
- 2. That there is something about the idea of emotions that we still don't get and opening the idea out should help. Whether we adopt some sort of basic emotions view or whether we lean towards a more componential, constructivist or situational view, it is no longer sufficient to sit within our own disciplines and hug our own concepts. We need to cross disciplinary self-other boundaries to understand emotions.

Emotional expression and engagement

Forster's developmental venture misses a fundamental trick. His point was that emotions need to be expressed in order to exist and to develop; to that extent he 'embodies' emotions. One could see this as a sort of bodily or facial feedback process, in which expressing emotion not only gives you practice at the expression – a sort of 'knowing how' but also makes you *feel* the emotion to which it is physiologically or culturally linked. However, expression doesn't just foster emotion and experience with*in* the individual. Emotional expression works most powerfully because it fosters emotions in others; it affects and moves others, drawing response. Emotional connections of this kind can have different effects on development but at the simplest level they serve a profound function – they give each person the experience of being *known* by the other. And in doing this they 'confirm' the personhood of each. They would not be possible, of course, without the capacity on both sides to be open to the other, to *be moved* by, and to *want to move*, the other.

Hammond and Drummond's lovely paper in this volume picks on a neglected emotion – interest – and makes a strong argument for it being the basis of prosociality. The most intriguing implication of their paper, however, is how infant interest - in people's actions in this case – might *change* those people. Interest is evident not just in the second half of the first year, but from birth. Neonates gaze with concentration (knit brow expression; Oster, 2005) at faces and visual presentations, and follow sounds and moving targets of interest by turning their heads as much as 180 degrees (Johnson et al, 1991; Wertheimer, 1961), orient their bodies towards near objects with pre-reaching movements (von Hofsten, 1984) and increase arm movements to re-elicit contingent events (Van der Meer et al, 1995). When a neonate turns to focus gaze on you, it can be an irresistible invitation to engage, to respond, to explore. Responding to the flattery of these invitations can be the start of a developmental path of mutuality and connection. Prosocial feelings are a two-way business: infant interest cannot go anywhere on its own.

Buber (1958) spoke about a no-holds barred, momentary openness to the other – an I-Thou relation and about a capacity in each for mutually 'turning towards the other' (Cissna & Anderson, 2002). In transformational 'moments of meeting' (Lyons-Ruth, 1998) it is not just the matching or complementarity of an emotion that is the point: the power of such moments comes from 'being known' by another. Being known affirms us, allows us to develop and to 'be'. As adults we have all experienced such transformations: a chance conversation that liberates us, sharing a feeling with a friend that empowers us and lifts our spirits, recognition and understanding from someone that suddenly frees our voice. This may seem an old Hegelian argument – that self-consciousness exists in that it exists for (is recognised by) another (Hegel, 1967). But there is growing empirical evidence of this view in adults. When one has been seen – even if only by the eyes in a photograph - our judgements of our own emotional arousal are more accurate than when one is unseen (Baltazaar et al, 2014; Hietanen & Hietanen, 2017). Being addressed and directly smiled at, even by an 'avatar' on a monitor, leads to activation of neural reward centers while simply seeing such an expression that is not directed at you does not activate those same centers (Schilbach et al, 2006). The importance of 'second person engagement', that is, of being within direct and emotionally present engagement with another, is increasingly seen as important within philosophy as well as within psychology and neuroscience (Eilan, 2014; Gallagher, 2001; Reddy, 1996, 2008; Schilbach et al, 2013).

Infancy is full of many moments of meeting or mutual connection that act as 'touch points' (Brazelton, 1994) or springboards for development, all of which change the course of the relation in a small way. The meeting of infant acts with maternal smiles or of infant emotions with maternal mirroring seems to empower infants in their interpersonal bids (McQuaid, Bibok & Carpendale, 2009; Markova & Legerstee, 2006; Legerstee & Varghese, 2001), opening the door to further maternal emotions and responses. Two phenomena of emotional engagement in the first year of life capture this.

Shortly after they begin to smile and 'chat' in proto-conversation at around two months of age (Trevarthen, 1977), infants also start to show 'coy smiles' (Reddy, 2000). These are a positive form of shyness which, often in response to a direct face-to-face greeting, involve an intense smile with a brief averting of gaze or head still within the smile, and often a smiling return to the adult (Reddy, 2000, 2001; Colonnesi et al, 2012, 2014). The onset of positive attentional contact, which moves the infant, allows the infant to perceive that they are the object of another's attention; these smiles occur more at the onset of interactions, giving the infant a positive feeling strong enough to be briefly overwhelming (Reddy, 2003, 2011). And on the other side, the power of such coy smiles on the adult whose 'hello' has elicited them can also be enormous, acting as a compliment, evidence of having moved a baby to such intensity of pleasure. It can affect adult confidence in re-approaching the baby, leading to an intensification of efforts to engage and changing the immediate course of the relation.

Teasing is another such phenomenon of infant emotional engagement – although, developing as it does in the second half of the first year, it is more complex and less pindownable to such vivid expressions. "You can't tease another person unless you can correctly guess what is in their minds and make them suffer or laugh because of their knowing," said Stern (1985). Teasing seems to capture the essence of play, involving a risky act toward another – an invitation quickly withdrawn, a threat held in suspension, or a provocation – usually involving something that matters to the other. In play it serves to entice the other, inviting a reaction, pulling the other in to respond and engage. It seeks – and often succeeds – in upping the ante of the relationship, positive or negative (Nakano & Kanaya, 1993; Loudon, 1970). When the 9- or 10-month-old infant, newly able to give (and actually release) objects, offers you some object and then, as you reach out to take it with pleasure, pulls it away with a cheeky smile, it can (the first time it happens) be utterly surprising (Reddy, 1991, 2008). The realization that the infant is teasing you can – if you are open to it – shift your relationship to another level, perhaps sparking more risk-taking acts and opening up new types of interaction.

Engagements of these kinds are creative – the mutuality of recognition and response leads to change in both partners. In Buber's (1958) terms these mutualities act to 'confirm' each participant by the other; the appropriateness of each's response to the other showing that each has seen heard, understood, recognised. The generation of different cultural pathways for development emerging from different types of such confirmation and recognition is illustrated powerfully in the paper by Lavelli and colleagues (this volume) showing widely contrasting foci, affirmations and effects in mother-infant interaction among different cultural groups.

Opening up the concept of emotion

Forster urges a strangely modern consideration in some ways - emphasizing embodiment and enaction and assuming that the *doing* of emotion is psychologically inseparable from *feeling* it, implying some sort of *dynamic* and *open* system for emotional development. Adolphs and LoBue (this volume), arguing from a dynamic perspective, make a compelling case that many of the fears that humans assume are innate biological givens – such as fear of strangers, of heights and of snakes and spiders - are in fact not givens at all. The 'evolutionary just so stories', as they neatly put it, are not justified by closer looks at the empirical evidence. The fears when they do develop, are, in all three cases, subtler outcomes of different and more diffuse processes in experience. Their rejection of pre-determined categories of emotion is not only 'enactive' but very close to Cultural Psychology's rejection of the tenets of General Psychology (e.g., Shweder, 1999). While 'general psychology' portrays a basic human nature tweaked at the edges through, e.g., cultural display rules, cultural psychology sees the cultural process as the fundamental phenomenon, with no talk at all of a 'basic human nature'. By going against an approach to emotion that presumes a limited number of 'kinds' natural to 'human nature' a huge landscape of much less prescribed and less known phenomena opens up for studying emotion, as the similar challenge did for studying culture and 'human nature'. Emotion needs to be considered as 'the whole episode', not separable from the conditions that justify it, from the way our experiences are affected by it, or the actions it generates (Shweder, 2012). Hammond and Drummond (this volume) make a similar, strong case for a whole person approach to emotion: get rid of the traditional division between cognition, conation and affect, they argue. Interest is a perfect example of an emotion which *is* all three.

There are two approaches, not yet common in developmental psychology, which could be crucial for opening up the notion of emotion even further. One is Daniel Stern's notion of 'vitality affects' or 'vitality contours' (Stern, 1985, 2010). And the other is the notion of 'affective atmospheres,' developed within geography and the more social, social sciences (Anderson, 2007).

Daniel Stern's re-scoping of the emotional field is dramatic. Think of emotions not in terms of categories, Stern argues, but as changing patterns of energy, of tempo or vitality that give form to *every* action (Stern, 1985). 'Vitality affects' or 'vitality contours' have a ready explanatory place within music and dance, but less so in psychology. In a very Rylean sense (Ryle, 1949), they are the *way* in which actions are done, even the way in which any 'basic' emotions themselves are done. Take smiles for instance – a slow rising smile is something quite different from a bursting beam. And a slow lifting of the eyes to look at you can move

you in quite a different way from a rapid lift. These 'ways' of moving and the way they affect the other are well known in theatre and film and music. They unfold, are perceived, are responded to and affect us in our everyday life all the time. They cannot *not* be emotional. Movement *is* feeling, even when it is minimal. "Depression in its alignment to anxiety petrified is not without vitality affect. Nor is it without movement. It is as uncontainable as the spark of its opposite. But its quality is different... for its shape is always closing in on itself... the shape of enthusiasm is the tremulous field of expression itself, its exuberance, depression is the field's calcification at the limit where expressibility is closest to foundering..." (Manning, 2016, p. 179). The quality of movement can define emotional states.

Although it is only just beginning to be explored in psychology (DiCesare et al, 2014) – vitality contours and rhythms can explain a number of findings about infancy: within three months of birth infants prefer a contingent responsive style in strangers that is the same as that to which they became accustomed with their mothers (Bigelow & Rochat, 2006), infants adopt and participate in different sorts of rhythmic patterns while interacting with their mothers than with their fathers (Feldman, 2003), and even cardiac rhythms become coordinated between mothers and their infants during periods of affective synchrony (Feldman et al, 2011). The emotional relevance of these rhythms is clear. And the sharing of lively emotional expression – of emotional vitality (Robinson & Acevedo, 2001) - is important for development (Moreno & Robinson, 2005). In adults, the coordination and synchronisation of rhythms is hugely important in indexing warmth, empathy, attraction (Welkowitz & Kuc, 1973; Jaffe & Festein, 1970) and sensitivity (Hane, Felstein & Dernetz, 2003). We know that musical tempo affects mood in adults (used manipulatively in advertising), and that the tempo of touching affects infant mood (Brazelton, 1986). Rhythm also communicates clearer categorical emotional states – sadness for instance, is communicated by slow tempos, a narrow frequency range, slow rate of articulation and decreases in pitch (Scherer, 1995), and anger and fear by increased frequency and amplitude (Bresin & Friburg, 2011). It makes little sense to not consider tempo and rhythm as emotional phenomena. The use of the word affectivity rather than emotion may dispel many of the alarm bells such a broadening might engender (Colombetti & Krueger, 2015).

In his influential work on affective atmospheres, Ben Anderson (2007) cites Marx's famous reference to the imperceptibility of atmospheres of revolution. These are real, albeit fundamentally ambiguous, atmospheres, pressing on and enveloping society, and they are also really affective – affecting both the amplitude and the nature of actions (perhaps inciting those within the atmosphere to violence, to tears, to passion) and affecting the experiences, perceptions and judgements of those within it. Anderson talks of affect as the 'push' of life, and that it is in the tension between life's resistance to control and life's acceptance of techniques to become productive that a politics of affect resides.

What has this to do with infancy and developmental psychology? That affective atmospheres affect infants too we would not doubt, even if we have few ways of capturing those atmospheres. If, as the evidence of rhythms and an intuitive sense of the importance of atmospheres suggests, we are moved, touched, affected by the bigger involvements in our lives, by events, spaces, collectives, then we need to zoom out (as well as in) in order to understand our emotional lives. We need to remove the disciplinary constraints on the concept.

In conclusion we can say two things with confidence about affectivity in infancy. Affectivity generates the conditions for mutuality, for the meeting of emotion with emotion, in whatever valency and intensity, and that this meeting is what empowers, sustains or strangles development. Given the enormous interest and openness with which infants come to the world, the variety of possible affective encounters opens the door to very different pathways of development – pathways which we must acknowledge that we may not yet know. To understand affectivity, however, we need to break down our conceptual and disciplinary boundaries – opening the doors this time to broader and less restricted conceptions of emotion. This breaking of boundaries must involve not only a going finer – into kinematic and neurological manifestations of rhythm – but also a going broader – into the socio-political contexts in which emotions attain their meaning. The openness of infant affectivity needs to be met by the openness of our own approaches.

References

- Anderson, B. (2009). Affective Atmospheres. *Emotion, Space and Society, 2*, 77-81. <u>https://doi.org/10.1016/j.emospa.2009.08.005</u>
- Baltazar, M., Hazem, N., Viarem, E., Beaucousin, V., Picq, J., Conty, L. (2014). Eye contact elicits bodily self-awareness in human adults. *Cognition*, 133(1), 120-127.
 doi:10.1016/j.cognition.2014.06.009.
- Bigelow, A., & Rochat, P. (2006). Two-month-old infants' sensitivity to social contingency in mother-infant and stranger-infant interactions. *Infancy*, 9 (3), 313-325.
 http://dx.doi.org/10.1207/s15327078in0903_3
- Brazelton, B. (1986). The development of newborn behaviour. In F. Faulkner & J. M. Tanner (Eds.)*Human Growth a Comprehensive Treatise*. Volume 2 (pp. 519-540). New York: Springer.
- Brazelton, B. (1994). Touch-points: opportunities for preventing problems in the parent-child relationship. *Acta Paediatrica*, *83*, 35-39. doi/pdf/10.1111/j.1651-2227.1994.tb13212.x
- Bresin, R., & Friberg, A. (2000). Emotional colouring of computer-controlled music performances *Computer Music Journal, 24* (4), 44-63. <u>doi/abs/10.1162/014892600559515</u>
- Buber, M. (1958). I and Thou. New York: Scribner.
- Cissna, K.N., & Anderson, R. (2002). Moments of meeting: Buber, Rogers, and the potential for public dialogue. Albany, NY: State University of New York Press. https://doi.org/10.1002/jhbs.10096
- Colombetti, G., & Krueger, J. (2015). Scaffoldings of the affective mind. *Philosophical Psychology* 28(8), 1157-1176. http://dx.doi.org/10.1080/09515089.2014.

- Colonnesi, C., Boegels, S., de Vente, W., & Majdandžić, M. (2012). What coy smiles say about positive shyness in early infancy. *Infancy*, 18(2), 202-220. https://doi.org/10.1111/j.1532-7078.2012.00117.x
- Colonnesi, C., Napoleone, E., & Bögels, S. M. (2014). Positive and negative expressions of shyness in toddlers: Are they related to anxiety in the same way? *Journal of Personality and Social Psychology, 106,* 624-637. doi: 10.1037/a0035561
- DiCesare, G., Di Dio, C., Rochat, M., Sinigaglia, C., Bruschweiler-Stern, N., Ster, D., & Rizzolatti,
 G. (2014). The neural correlates of vitality form recognition: An fMRI study. *Social Cognitive and Affective Neuroscience*, 9(7), 951–960. doi: <u>10.1093/scan/nst068</u>
- Eilan, N. (2014). The You Turn. *Philosophical Explorations*, 17 (3), 265-278. DOI: 10.1080/13869795.2014
- Feldman, R. (2003). Infant-mother and infant-father synchrony: the coregulation of positive arousal. *Infant Mental Health Journal, 24* (1), 1-23. <u>https://doi.org/10.1002/imhj.10041</u>
- Feldman, R., Magori-Cohen, M., Galili, G., Singer, M., & Louloun, Y. (2011). Mother and infant coordinate heart rhythms through episodes of interaction synchrony. *Infant Behavior and Development, 43* (4), 569-577. doi: 10.1016/j.infbeh.2011.06.00
- Feldstein, S., & Welkowitz, J. (1987). A chronography of conversation: In defense of an objective approach. In A. W. Seigman & S. Feldstein (Eds.), *Nonverbal behavior and communication* (pp. 329-378). Hillsdale, NJ: Erlbaum.
- Forster, E. M. (1936/1953). Notes on the English Character. In *Abinger Harvest*. New York: Harcourt.
- Gallagher, S. (2001). The practice of mind: Theory, simulation or primary interaction? *Journal of Consciousness Studies, 8* (5-7), 83-108.

- Hane, A., Feldstein, S., & Dernetz, V. (2003). The relation between coordinated interpersonal timing and maternal sensitivity in four-month-old infants. *Journal of Psycholinguistic Research, 32* (5), 525-539. <u>http://dx.doi.org/10.1023/A:1025494200272</u>
- Hietanen, J.O., & Hietanen, J.K. (2017). Genuine eye contact elicits self-referential processing. Consciousness and Cognition, 51, 100-115. <u>http://dx.doi.org/10.1016/j.concog.2017.01.019</u>
- Harrison, A., & Beebe, B. (2018). Rhythms of dialogue in infant research and child analysis: Implicit and explicit forms of therapeutic action. *Psychoanalytic Psychology*, 35 (4), 367-381.
 http://dx.doi.org/10.1037/pap0000176

Hegel, G. (1967). The phenomenology of mind. New York: Harper and Row.

Hock, J. L. K. (2018). How music reduces anxiety and amount of sedatives used in patients during surgery. *Journal of Anaesthesia and Surgery*, *5* (1) 52-56. DOI: 10.15436/2377-1364.18.1873

Jaffe, J., & Feldstein, S. (1970). Rhythms of dialogue. New York: Academic Press.

- Johnson, M., Dziurawiec, S., Ellis, H., & Morton, J. (1991). Newborns' preferential tracking of facelike stimuli and its subsequent decline. *Cognition*, 40 (1-2), 1-19. doi.org/10.1016/0010-0277(91)90045-6
- Leavens, D. A., Sansone, J., Burfield, A., Lightfoot, S., O'Hara, S., & Todd, B. K. (2014). Putting the "Joy" in joint attention: Affective-gestural synchrony by parents who point for their babies. *Frontiers in Psychology*, 879, 1–11. doi: 10.3389/fpsyg.2014.00879
- Legerstee, M. & Varghese, J. (2001). The role of maternal affect mirroring on social expectancies in three-month-old infants, *Child Development*, 72 (5), 1301-1313. doi/abs/10.1111/1467-8624.00349

- Loudon, D. (1970). Teasing and socialisation on Tristan da Cunha (193-332). In P. Mayer (Ed.) *Socialization: The Approach from Social Anthropology* (pp. 293- 332). London: Tavistock.
- Lyons-Ruth, K. (1998). Implicit relational knowing: Its role in development and psychoanalytic treatment. *Infant Mental Health Journal, 19* (3), 282–289. <u>https://doi.org/10.1002/(SICI)1097-0355(199823)19:3<282::AID-IMHJ3>3.0.CO;2-O</u>
- Manning, E. (2016). *The minor gesture*. Durham, North Carolina, USA: Duke University Press. doi.org/10.1215/9780822374411
- Markova, G., & Legerstee, M. (2006). Contingency, imitation, and affect sharing: Foundations of infants' social awareness. *Developmental Psychology*, 42(1), 132–141. http://doi.org/10.1037/0012-1649.42.1.132
- McQuaid, N., Bibok, M., & Carpendale, J. (2009). Relation between maternal contingent responsiveness and infant social expectations. *Infancy*, 14, 390–401. <u>doi/abs/10.1080/15250000902839955</u>
- Moreno, A., & Robinson, J. (2005). Emotional vitality in infancy as a predictor of language and cognitive abilities in toddlerhood. *Infant and Child Development*, 14 (4), 383-402. <u>doi/abs/10.1002/icd.406</u>
- Mosaed, S., Vahidi, R., & Lin, K. (2018). Effect of music tempo on operating room preparation time. *Journal of Perioperative Practice*, 0 (0), 1-4. <u>doi/10.1177/1750458918808151</u>
- Nakano, S., & Kanaya, Y. (1993). The effects mothers' teasing: Do Japanese infants read their mothers' play intention in teasing? *Early Development of Parenting*, 2, 7-17.

- Oster, H. (2005). The repertoire of infant facial expressions. An ontogenetic perspective. In J. Nadel & D. Muir (eds.) *Emotional Development* (pp. 261-292). Oxford: Oxford University Press.
 DOI: 10.1093/acprof:oso/9780198528845.001.0001
- Reddy, V. (1991). Playing with others' expectations: Teasing and mucking about in infancy. In A.White (Ed.) *Natural Theories of Mind* (pp. 143-158). Cambridge, MA: Blackwell.
- Reddy, V. (1996). Omitting the second person in social understanding. *Behavioral and Brain Sciences, 19* (1), 140-141.
- Reddy, V. (2000). Coyness in early infancy. *Developmental Science*, 3 (2), 186-192.doi.org/10.1111/1467-7687.00112 ...
- Reddy, V. (2001). Positively shy! Developmental continuities in the expression of shyness, coyness and embarrassment. In W. R. Crozier & L.E. Alden (Eds.), *International Handbook of Social Anxiety: Concepts, Research and Interventions relating to the Self and Shyness* (pp. 77-99). Chichester, England: John Wiley & Sons Ltd.
- Reddy, V. (2003). On being the object of attention: Implications for self– other consciousness. *Trends in Cognitive Sciences*, 7(9), 397–402. doi.org/10.1016/S1364-6613(03)00191-8

Reddy, V. (2008). How infants know minds. Cambridge, MA: Harvard University Press.

doi/full/10.1080/13698030902742961

Reddy, V. (2011). A gaze at grips with me. In A. Seemann (Ed.), *Joint attention: New developments in psychology, philosophy of mind, and social neuroscience* (pp. 137–157). Cambridge, MA: MIT Press. doi.org/10.7551/mitpress/8841.003.0008

 Robinson, J. & Acevedo, M. (2001). Infant reactivity and reliance on mother during emotion challenges: Prediction of cognitive and language and skills in a low-income sample. *Child Development*, 72 (2), 402-415. doi.org/10.1111/1467-8624.00286

Ryle, G. (1949). The concept of mind. London: Hutchinson.

Scarantino, A. (2017). How to do things with emotional expressions: The theory of affective pragmatics. *Psychological Inquiry, 28* (2-3), 165-185.

doi/full/10.1080/1047840X.2017.1328951

- Scherer, K. (1995). Expression of emotion in voice and music. *Journal of Voice*, *9* (3), 235-248. doi.org/10.1016/S0892-1997(05)80231-0
- Schilbach, L., Wohlschlaeger. A., Kraemer, N., Newen, A., Shah, J., Fink, G., Vogeley, K. (2006).
 Being with virtual others: Neural correlates of social interaction. *Neuropsychologia*, 44, 718-730. DOI: 10.1016/j.neuropsychologia.2005.07.017
- Schilbach, L., Timmermans, B., Reddy, V., Costall, A., Bente, G., Schlicht, T., & Vogeley, K.
 (2013). Toward a second-person neuroscience. *Behavioral and Brain Sciences*, *36*, 393–414.
 doi.org/10.1017/S0140525X12000660
- Shweder, R. (1999). Why cultural psychology? *Ethos* 27(1), 62–73.
- Shweder, R. (2012). The cultural psychology of natural kinds and the deconstruction of emotion. A comment. *Emotion Review*, 4 (4) 382-384. DOI: 10.1177/1754073912445823
- Stern, D. (1985). The interpersonal world of the infant. New York: Basic Books, Inc. doi.org/10.1177/0533316495281001.
- Stern, D. (2010). Forms of vitality: Exploring dynamic experience in Psychology, the Arts and Development. Oxford, England: Oxford University Press. DOI:

10.1080/17432979.2012.674062

- Trevarthen, C. (1977). Descriptive analysis of infant communicative behavior. In. H. R. Schaffer (Ed.), *Studies in mother–infant interaction* (pp. 227–270). London: Academic Press.
- Van Der Meer, A., Van der Weel, F. R., & Lee, D. N. (1995). The functional significance of arm movements in neonates, *Science*, *267*, 693-5. **DOI**:10.1126/science.7839147.
- Von Hofsten, C. (1984). Developmental changes in the organization of prereaching movements. *Developmental Psychology, 20* (3), 378-388. **DOI**: 10.1037/0012-1649.20.3.378.
- Warner, R. (1998). Rhythm in social interactions. In J. E. McGrath (Ed.), *The social psychology of time: New perspectives* (pp.63-88). Beverly Hills, CA: Sage Publications.
- Welkowitz, J., & Kuc, M. (1973). Interrelationships among warmth, genuineness, empathy, and temporal speech patterns in interpersonal interaction. *Journal of Consulting and Clinical Psychology*, 41(3), 472-473. doi/10.1037/h0035328
- Wertheimer, M. (1961). Psychomotor coordination of auditory and visual space at birth. *Science*, *134*, 1692. **doi**.org/10.1126/science.134.3491.1692