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INTERSUBJECTIVITY AND INFANT-INFANT INTERACTION : IMITATION AS A WAY OF MAKING CONTACT

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Developmental psychology has traditionally assumed that young infants are born without a capacity for psychological interaction, showing only reflexes in response to the environment triggered by their internal bodily or self-regulatory needs. For example, as a result of Piaget's (1952, 1954, 1962) view of infants' developmental egocentrism, infants under one year were considered incapable of communicating with others of the same age. For many years, Piaget's ideas were prevalent and unchallenged in child developmental research.

Recently, however, these views have been questioned and some researchers have seen the infant's relationship with others as a manifestation of what is called **intersubjectivity** -- a psychological capacity for recognising and communicating with psychological states of other individuals.

This alternative view, in fact, is not new outside psychology. Actually, the concept of human intersubjectivity has long been the central interest in Philosophy, and in Religion.

For example, such a way of thinking was clearly articulated in Existentialism. Sartre (1970) considered that one's existence could only be 'justified' by the state of existence of the other. Without him or her, I would not exist :

Pour obtenir une vérité quelconque sur moi, il faut que je passe par l'autre. L'autre est indispensable à mon existence. Ainsi, découvrons-nous tout de suite un monde que nous appellerons l'intersubjectivité et c'est dans ce monde que l'homme décide ce qu'il est et ce que sont les autres.

(Sartre, 1970, p. 67)²

Buber (1947) considered the individual in relation to the other in a dialogue. For him, the relationship was "in-between" the one and the other, between two per-

¹ This paper is part of the author's Ph. D. thesis in Psychology at the University of Edinburgh.

² "In order to grasp some truth about myself, it is imperative that I pass by way of the other. The other is vital to my existence. Therewith, we quickly discover a world that we will call intersubjectivity, and it is within this world that man decides who he is and who others are".

sons :

There is a genuine dialogue—no matter whether spoken or silent—where each of the participants really has in mind the other or others in their present and particular being and turns to them with the intention of establishing a living mutual relation between himself and them.

(Buber, 1947, p. 19)

Although this conception of human relations is also present in the works of Bateson (1973), Bruner (1977, 1990), and Stern (1985), among others, this view of human inter-relationship has been stressed most strongly and defined through analysis of mother-infant interactions by Trevarthen (1974, 1984, 1987, 1990, 1993).

Primary intersubjectivity has been defined as the immediate experience of sharing subjective states (Trevarthen, 1979) and secondary intersubjectivity as the search for sharing of experiences about events and things (Trevarthen and Hubley, 1978)

According to Trevarthen (1993), intersubjective encounters become “ psychological interactions between selves ” (p. 126).

The concept of intersubjectivity is important for the comprehension of infant’s development because it helps us to see the new-born as a whole motivated being, not only as a chaotic one, or one made up of reflexes. We are now beginning to understand that the infant has a mental life, that they are particularly well-equipped for social life and so that the infant is eager to become part of it. The infant is born ready for intersubjective exchanges.

We know that empathy of emotions is needed for communication because, emotion is part of the meaning that the situation has for the individual and also part of the message for the others. Empathy in the relationship between mother and infant appears to be the foundation for modulation of relationships to others that will develop afterwards. The first relationship, usually with the mother, is remarkable for the intensity with which it is affectively toned. It surely has a specially emotive and self-regulating quality for the infant (Schore, 1994).

Timing of expressions is an element that serves as a foundation for sympathetic engagement between mothers and infants. Beebe (1982) who has applied the methods of ‘ conversational analysis ’ to mother-infant interactions shows that there is a temporal organisation, a “coaction” and turn-taking between mother and infant in their non-verbal communication. A synchrony develops between expressions of mother and child. And, surely, this synchrony is one expression of the affective bond between them. We could say that healthy communication first occurs through affection, that is, through expression of positive emotion. There is indeed a special rewarding quality, a valence, in the affection between infant and mother.

According to Trevarthen, emotions are “ intrinsically generated, central, regulatory states of the brain that unify awareness and co-ordinate activity of a coherent, mentally active subject ” (Trevarthen, 1993, p. 48), and “ emotions also communicate between subjects ”.

He believes that at 2 months, infants are involved in *protoconversations*, as a first

step towards communicative exchanges. Protolanguage, then, “requires that a child has a clear differentiation of an integrated *self* from the world of *others*” (Trevarthen, 1987, p.182). This view agrees with Stern’s point that “preverbal senses of self start to form at birth, if not before” (1985, p.5).

The study of imitation is a method of demonstrating infants’ ability to involve themselves in intersubjective interaction, because imitation is a direct indicator of sympathy between persons. It is now proven that imitation exists from birth and many researchers are exploring all ranges of mother–infant communication and infant’s imitation (Maratos, 1973, 1979; Meltzoff & Moore, 1989; Nadel & Fontaine, 1989; Nadel & Pez , 1993; Vinter, 1985; etc.).

Peer imitation is a new area for research that is proving the importance of a shift of interest to intersubjectivity (for example, Hanna & Meltzoff, 1993; Patrick & Richman, 1985). In this situation, infants are involved in relationships with strangers who are, moreover, no more developed, skilled or sophisticated than themselves.

As Hanna and Meltzoff (1993) suggest, “mutual imitation between two partners is a principal mechanism for interpersonal communication in infancy, before language. Toddlers use imitation as basic way to interact and develop social and communicative ties with one another” (p.701).

Other authors are studying playing and teasing as a means by which both infants and their parents negotiate affective relationships (Nakano, 1994, 1995; Reddy, 1991). Nakano considers benign teasing a way of creating mutual amusement between mother and infant. He says that teasing is a very good example of intersubjectivity and that it contributes to the development of communication.

All of the above studies have brought new insights into the field of human development and emotion.

We have chosen infant–infant interaction as a promising research topic for the study of first intersubjective encounters.

Very few researchers have concerned themselves with infant–infant interaction. The studies that we have reviewed do not mention the quality of the intersubjective exchanges. They were more interested in the quantitative measurement of the behaviour of each individual (which is very curious, if you think that what should be considered is the dyad, not the individual).

Although those studies were not primarily concerned with interaction, they did showed the presence of some degree of involvement between the infants. For example, it has been observed that new-borns can be distressed and cry when listening to other babies’ crying (Simner, 1971; Sagi & Hoffman, 1976; Martin & Clark, 1982). Others have analysed the relation between pairs of infants and toys (Vandell, Wilson & Buchanan, 1980); recorded the reaction to distress of peers (Hay; Nash & Pedersen, 1981); and compared the interaction between mothers and that between peers (Adamson & Bakeman, 1985; Fogel, 1979).

In our own research, with infants of five months and older, who were seated in their push–chairs facing each other, out of contact with their mothers and without toys,

we found many interesting interactions, that demonstrate the intersubjective characteristic of awareness present in human beings from early infancy.

The infants used imitation to interact, mainly imitating partial body actions (like kicking, for example), and it seems that this is a way to call, retain the other's attention and resume interactions. It is also very frequently the cause of synchrony between their behaviours. We prefer to call this mutual engagement attunement (Stern et al, 1985) as this term emphasises the intersubjective nature of their understanding. For example, both infants at 22 weeks are looking at each other and both simultaneously move their bodies to their right, then to their left, also lifting their legs. Looking at their movement, we can see they are timed to synchronise with each other; there is a precise attunement in their actions.

If we could summarise the uses of imitation in infant-infant communication (based in our research), the result would be:

1. Pairs of infants use imitation as a means of communicating.

They can *start a "conversation of movements"* through imitative behaviour, and, as the interaction progresses, they take turns and we can observe a "conversation" occurring in the form of attuned body movements.

Take, for example, two 8-month-old infants, a boy and a girl. They have never met before and are seated on their push-chairs, facing each other. Suddenly, the boy starts to kick and the girl imitates him immediately. He kicks back and she does the same, but vocalises, smiles, points at him, who is absolutely stunned by the presence of another infant in front of him and kicks back, vocalising to her.

2. They synchronise their behaviours. As stated above, we will call this sympathetic attunement. They make the same movements with their bodies at the same time. In the above example, in one minute there were 2 imitations and 5 attunements.

3. Imitation is also used to *keep the movement-conversation going*. Consider the case of two 9-month-old infants, a girl and a boy. He kicks and holds his leg up, and she imitates him, but not with the exactly matching body movements. First, because she is not so "athletic" as he is (he can put his legs in a higher position than she can do) and second, because as he kicks, he vocalises in a long and loud way ("Tarzan-like"), while she smiles. As his attention shifts to other things, such as investigating his push-chair screws, she tries to call his attention back, kicking and moving her legs up. She succeeds, because he imitates her and emits his "Tarzan-like" call again.

4. Imitation may serve to *express recognition and sympathy*. For example, two 9-month-old infants, a boy and a girl were interacting. He looks at her, vocalises an "a-haa" sound and waves his hand, jumping in his push-chair. She smiles at him and waves back, vocalising a "uu" sound. He laughs at her and waves back again.

5. Imitation may also be used to *tease* or provoke the other. A 9-month-old boy keeps shaking a toy, holding it in front of a girl at the same age. She imitates his hand movements, and vocalises "uu", pointing as well. As she tries to reach it, he jumps and shakes the toy again, evidently finding pleasure in provoking her efforts. She also seems to be pleased, because she keeps smiling and vocalising, showing no distress that she cannot get the toy.

Imitation, then, has many different functions when infants of the same age are

interacting.

Interactions between infants were found in our study at 5 months.

In general, babies would gaze at each other, showing interest, then smile, kick, vocalise or move parts of the body. This was called an invitation for interaction, and it may or may not excite an answer -- the other infant gazes back, moves the body, smiles, kicks, or vocalises, in response. For instance, a five-month-old girl gazes at a same age boy, smiles, moves her legs up and down and vocalises. The boy gazes back very attentively, and laughs, spitting. Of course, in many cases, the invitation was not followed by an interaction. The other infant would only gaze back. An explanation for the amount of invitation behaviours that were not followed by an interaction is offered below.

We observe that, at one level there is no difference between infant-adult communication and infant-infant communication, although infants with infants interact less than infants with adults. It seems that the interactions follow certain of the same patterns. There is comparable mutual attunement, synchronised timing of behaviours, turn-taking and empathy of feelings. However, adults are certainly more efficient in creating and maintaining topics³ (Nakano, 1995). Adults will persistently call the infant's attention, inviting with smiles and vocalisations and trying to keep his or her gaze, adopting new strategies if the infant turns away. In fact, infants under 6 months of age keep their attention on one object for a very little time. This is also true in their interactions with other infants. When confronted by adults, infants are encouraged to keep their attention to the adult by the adult's efforts. Otherwise, the infant can easily lose interest and shift attention to other things.

This belief in adults' more developed ability to create topics in communication with infants does not mean that infants are not able to interact. Infants do interact with other infants and, although their attention shifts very frequently, they can show intense interest in another infant from moment to moment.

Concluding, then, we observe imitation to be a very important means of initiating and maintaining interactions between young infants.

Interaction occurs in short (less than 5 seconds) episodes, probably because infant's attention is intrinsically unstable. Sometimes, as a result, an invitation for interaction may not be answered, but the interaction can be resumed when one of them calls back the other's attention.

Intersubjectivity, the sharing of personal expressive states, permeates all these interactive situations, setting the scene for the participants to share and learn meanings. Intersubjective engagement, allows the infants to perceive one another as human beings who try to make contact and share experiences.

Even infants under one year of age have primary experiences to share. They do this by showing body movements, laughing, making funny faces and teasing. This is a fundamental part of being human.

³ Topic, here, is used in the sense of an object or action of shared interest. For example, the mother can call the infant's attention by showing him or her a toy and shaking it in front of his or her eyes, smiling and vocalising.

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