The relation between intersubjectivity, imitation, mirror neurons, empathy and Pre-Therapy

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In this chapter I will show that there seems to be a link between intersubjectivity, imitation (as a special kind of intersubjectivity), mirror neurons and Pre-Therapy. Regarding mirror neurons I will focus on the work of Gallese (including his articles from 2000, 2001 and 2003a, b) and Iacoboni (2009), because they explicitly describe the relationship between mirror neurons and empathy. Moreover, mirror neurons can be seen as the neurological basis of Pre-Therapy.

The first part of the chapter describes the importance of imitation by parents for the development of the child and concludes that imitation is not as previously thought, a one way process, but a question of *mutual* influence. As imitation, an innate capacity, takes place in an intersubjective context, the second part of the chapter will outline the concept of intersubjectivity. The capacity for mutual contact is the more important when we realize that the success of pre-therapeutic reflections might be partly due to a connection with this innate capacity for imitation.

The third part of the chapter is dedicated to the question: What might be the neurological basis for the development of intersubjectivity and, as a consequence, the working of Pre-Therapy? The discussion of this question will be elaborated by the presumed working of mirror neurons.

The chapter is ended by linking the aforementioned three issues to Pre-Therapy.

The importance of imitation for child development

Stern and his co-workers

From a psychoanalytic orientation Stern has made a significant contribution to the research on imitation in connection with the early development of intersubjectivity. In his research the notions of attunement (tuning in a broad sense) and affective attunement (a selective form of attunement) played a central role. As I have stated elsewhere, in Stern's view 'Parents … do not just imitate the behaviours of the child; there must be an empathic attunement … so that parents will react in a congruent way to the behaviours of the child' (Peters, 2005, p. 69). Reacting in a congruent way means that it is not a matter of strict

imitation, as Vliegen and Cluckers (2001) stated. Imitation in the sense of intersubjective communication means that the primary caregiver has to pick up the feelings from the child's behaviour, has to imitate that behaviour in a way that enables the child to understand that the response of the caregiver is about the child's original, emotional experience and message, not about the caregiver. What is striking is that the relation between mother and child is mainly described as being essentially from the mother to the child, which gives the impression of a one-way communication process. The paragraph 'Intersubjective Relatedness' in Stern's book, *The Interpersonal World of the Infant* (1985/2000) described almost exclusively the way the mother reacted to the baby's behaviour, but not the baby's reaction to the mother. In the later work of the Boston Change Process Study Group, especially the study by Tronick (1998), the reciprocity of the relationship received a much stronger and more realistic emphasis. The study group acknowledged that empathy plays an important role within the domain of psychoanalysis, but Tronick also applied more objective research as, for instance, is seen in his work with regard to emotional connectedness and intersubjectivity and the damaging effect on the mental health of the child if there is a failure to achieve this connectedness. In his view the emotional state of the child is implicitly regulated in a dyadic way.

Vliegen & Cluckers

With the help of a concrete observation Vliegen & Cluckers (2001), also from a psychoanalytic orientation, explain how a mother and her baby come to a reciprocal attunement which gives them both rest.

During the first nine months parents mainly respond by imitating the behaviour of the baby, thereby communicating to the baby that they understand what he is experiencing. They make clear to the child that they understand what is going on inside the child. The particular affective attunement (as opposed to attunement in the broadest sense) follows this first phase. At first the mother imitates the facial expressions, the gestures, and the vocalisations of the child. The mother imitates what the child is doing, but at the same time this is more than a mere imitation, because an exact imitation is not sufficient to come to interpersonal or intersubjective contact. According to the authors a strict imitation deals with 'overt behaviour' only, which does not refer to what is going on inside the child. With interpersonal communication three processes must take place:

1. the parent has to be able to read the child's emotion from his behaviour, which means he must be able to receive the affective message of the baby,

2. the parent has to emit behaviour which is not a strict imitation but which nevertheless corresponds with the child's expressed behaviour. In other words the parent has to express the same emotional quality,
3. the child must be able to understand that the parent's response is connected to the child's own original emotional experiences and messages.

Only in this way can the child experience that in a significant relationship emotions can be shared and understood in a non-verbal or pre-verbal way (Vliegen & Cluckers, 2001, p. 28). Vliegen & Cluckers point out that several authors identify how the mother responds to the behaviour of the child in the same modality as the emitted behaviours of the child. For, when the child vocalises, the mother does the same, and when the child makes a facial expression, you see the same reaction from the mother, but these reactions are never exactly the same and thus never stereotypical, reiterative sequences.

For client-centred therapists, especially for those who are working with pre-therapeutic reflections, this is very interesting. The three processes mentioned above are also basic processes in the application of pre-therapy, although the third process is severely disturbed in most clients who are indicated for pre-therapy. In such situations the therapist attempts to connect with the client's remaining contact possibilities. (This will be returned to in the final part of the chapter.)

Gergely & Watson

Gergely & Watson (1996, 2004), originally working form a psychoanalytical frame of reference and strongly influenced by learning theory, outline the development of emotional self-awareness and self-control in children. Gergely & Watson find that mutual influence plays an even greater part than previous authors emphasise.. The child learns to perceive the affective-emotional expression mirrored by the parent and makes connections with past experiences and anticipated events. However, as the parent usually expresses multiple behaviours simultaneously or nearly simultaneously, the child will develop a detection system that allows him to choose from these different behaviours and, if necessary, link them to what is advantageous to him, what they term the *contingency detection system.* This involves the detection of previously related experiences: "…the baby has shown that only the parent will tend to mirror empathically when the baby is actively expressing a certain negative emotion. For example, the child remembers that anxiously crying always led to empathic reflections on the part of the parents" (Peters, 2003a, p. 90). This remembering must not so much be seen as a conscious act, but more akin to what Damasio describes as the *somatic marker hypothesis*, namely "... the ability to reason and make decisions in which the

(intuitive) feeling is involved" (Peters, 2009, p. 13). The somatic marker draws your attention to possible positive or negative effects of an action. It is primarily an automatic, unconscious, or at most subconscious alarm signal. It is a system of automatic qualification of predictions, with intuition as a prime example.

In addition, the child looks ahead and is able to see what happens with the mirroring by the parent as he expresses a certain emotional state. Here Gergely & Watson (1996/2004) believe that children by externalizing their internal, emotional states and by experiencing the subsequent reaction of the parents in due course become able to successfully regulate their emotions, even those that might be perceived as more negative.

But how do the inner, originally unconscious, emotional states in children become conscious? Or, in the words of the authors: '…in what way would the presentation of an external emotional display that is contingent upon the baby's internal affect-state lead to the sensation to and recognition of the internal state that was not consciously accessible before?' (p. 1190). One of these processes is what is called the *biofeedback trainings procedures*. The originally internal emotional states of the child are exhibited by the child and are subsequently mirrored by the parent. The repeated mirroring by the parent of the same categorical emotional state of the child will lead to the child recognizing his or her own feelings '…and in certain cases subsequent *control over* the internal state' (ibid. 1190). Gergely & Watson's proposal is '…that parental affect mirroring provides a kind of *natural social feedback training*…that plays a crucial role in emotional development' (ibid. 1190). In summary we can distill the scheme below from Gergely & Watson's text:

The reviewed findings indicate that during their first year of life infants:
a. show an innate tendency to express their emotion-states automatically;
b. are sensitive to the contingency structure of face-to-face affective communications;
c. can discriminate discrete facial patterns of emotion expression;
d. are, to a large extent, dependent on their parent's affective-regulative interactions as a means of emotional self-regulation and
e. the quality of their emerging self-regulative reactions are strongly influenced by the characteristics of their parent's affective communicative behaviour.

(Cited in Peters, 2003a, p. 90)

The detection system, the ability to anticipate and the natural social feedback training can be seen as the basis of the child's ability to manipulate his or her environment , which within certain limits is positive for his development. By learning that he may have influence on his environment, the infant learns to distinguish himself from others. Suppressing the manipulative behaviour in early childhood may be unhelpful as it does not stimulate the child's development. In case the manipulative behaviour is too strong and detrimental to the child and/or his environment, trying to regulate it may only be necessary as a last resort.

Both Vliegen & Cluckers and Gergely & Watson describe a developmental model which can serve as a framework for understanding why pre-therapy is important. Client-centred therapists might do well to be aware of this developmental model and psychoanalytic therapists might also benefit from understanding the value of Pre-Therapy in the treatment of severely contact-disturbed people. There is a considerable amount of literature on this subject, for instance by Peters, (1999 & 2001); Prouty, (1994, 2008); Prouty, Van Werde & Pörtner, (2002).

From a research point of view

The ideas described so far are mainly written in a one-way direction: the parent imitates the child. However there are many studies (e.g. by Bråten , 1988a,b, 1998a,b; Heimann, 1997, 1998; Kugiumutzakis, 1998, Trevarthen, 1998) showing that even at two hours old children consciously and unconsciously imitate movements, sounds and the behaviours of parents. Kugiumutzakis describes experimental studies investigating the possibility that imitation could be observed with neonates less than 45 minutes old. The results show that imitative responses, although present in spontaneous neonatal behaviour, occur significantly more often in the presence of the corresponding model than in its absence. This is the case regardless of whether they were born naturally or by caesarian section and whether they were full-term or pre-term. From this research children are seen to use two strategies of attention:

1. The majority of the neonates try - with a real observable effort - to direct their attention to the moving part of the experimenter's face. The attention intensifies from a relatively fixed gaze to selective visual exploration. The baby inspects the moving part of the experimenter's face with clear interest while frowning.
2. In the case of facial models, the infant looks at the movement hastily as if it observes only the first presentation, whereupon it immediately starts reproducing the model.

From research, Bråten suggested as early as 1988 that the basic organization of the mind is both dialogical and intersubjective and that the infant has an innate capacity to take part in an immediate dialogic 'dance' with the other:

> The mother and the infant are seen as one unit of dialogic closure that is organized in a dyadic form already from birth (...) which makes it possible to observe proto-conversation already during the first month of life. The infant has the ability to act in a complementary way and the participants step into each other's dialogic circle (cited in Heimann, 1998, p. 91 et seq.).

This is important for pre-therapy because bringing a dialogical contact into being with severely contact disturbed clients is the intention of pre-therapy.

In line with the research by Bråten, Trevarthen, and others, Heimann conducted research into two questions:

1. is neonatal imitation in any way directly related to imitation observed during the first year of life and
2. could we expect children with autism to show an ability to imitate at birth?

The basic assumptions for his research are

a. that newborn infants are able to imitate facial gestures and that this capacity probably is based on the infant's sensitivity to facial configurations (Johnson & Morton, 1991),
b. the existence of innate social motives (Trevarthen, 1993, 1998) and
c. an innate dialogical organization of the infant's mind (Bråten,1988a, 1998)

The data of observations from Heimann's research suggests that there are good grounds for accepting neonatal imitation as one example of the infant's innate socio-emotional competence . The data analysis shows that imitation at birth is related to the child's imitative tendency three months later. "However, we cannot with any certainty state that neonatal imitation has any bearing on the child's psychological development beyond the infancy period" (Heimann, 1998, p. 92). He agrees with Holmlund (1995) who "...submits that imitation is congenital and should be considered as an important part of the early social and communicative interactions taking place between the child and his/her parents" (Heimann, 1998, p. 91). In addition research shows that neonatal imitation is not a reflexive response, because it is not emitted in the same way in different investigations.

With regard to the second question, Heimann suggests the possibility of two models:

1. the model presented by Bråten "...indicates that the child is born with a dialogical mind which enables him or her to display neonatal imitation, to engage in an immediate dialogical 'dance' and to show primary intersubjectivity" (Heimann, 1998, p. 100). It is not possible to distinguish a child who will later develop autism, from a typically developing child during the first weeks or months of life. However, owing to a faulty development of the nervous system some paths of normal brain development are arrested and a deviant route is taken. According to this scenario a child who develops autism "...will probably not start to display deviant imitation until he or she is close to reach the level of secondary intersubjectivity (somewhere around 7 to 9 months)" (p. 101).
2. Heimann's second possible path to autism is that the child is born with a central nervous system that is already different. The child is not able to enter into reciprocal interactions or to display neonatal imitation. In this case a lack of imitative responsiveness at birth is a

possible marker of autism. (Below we will see that Gallese and Iacoboni see a possible disorder of mirror neurons being responsible for this).

Whiten & Brown (1998) conducted research on imitative behaviour in autistic children compared with normal children and children with mild learning disabilities. They used the Do-as-I-do-test, developed by Custance, Whiten & Bard (1994). The first thing that emerges is that a general deficit in imitation in autism is not supported. On the contrary: autistic children and adults performed well. Only the young autistic children (under 3 years of age) performed poorly, but nevertheless about half of their answers produced an attempt to imitate and some of the answers got the highest score '...some imitative competence appears largely intact in all except the young autistic sample' (Whiten & Brown, 1998, p. 270).

Trevarthen built on research from 1969 - 1972 by Bateson in relation to *proto-conversation.* Bateson discovered spontaneous face-to-face interaction between an infant of 2 to 3 months and the mother, by means of patterned vocal, facial and gestural expressions. So, it is a way to communicate before there has been some use of words. In line with earlier studies by Wolff (1963) and Papousek (1967), Trevarthen describes research from which we learn that the infant was not producing single reflex responses, nor was smiling or looking triggered by any identifiable simple sign stimulus:

> Peter Wolff (1963) showed that smiling and 'non-nutritive sucking' were reciprocal communicative behaviours from birth. Papousek (1967) recorded that when infants were working in an operant procedure, they made emotional expressions that communicated their cognitive effort and feelings about results 'in a human way' (Trevarthen, 1998, p.26).

In 1979 Trevarthen described a 'specifically human system for person-to-person communication' appearing long before the infant can speak, but with 'rudiments of speech activity' as well. *Prespeech* - i.e. lip and tongue movements resembling adult articulation movements and coupled with expressive head and eye movements and hand gestures - was illustrated with pictures of a girl 7 weeks old. Trevarthen called the expression of individual consciousness and intentionality *subjectivity* and he concluded that "In order to communicate, infants must also be able to adapt or fit this subjective control to the subjectivity of others: they must also demonstrate *intersubjectivity*" (Trevarthen, 1979, p. 27). According to Trevarthen, Bateson interpreted the infant's behaviour as an innate emotive foundation for language and learning of culture, and for the making of emotionally-regulated, and emotional health-regulating, social bonds.

Iacoboni cites an important study by Eckerman (1996), which shows strong ties between imitation and verbal communication in children. When toddlers who do not know how to speak interact, they tend to play imitation games. 'The more a toddler plays imitation games, the more the same child will be a fluent speaker a year or two later. Imitation seems like the prelude and the facilitator of verbal communication among young children' (Iacoboni, 2009, p. 50).

Intersubjectivity

The *Boston process of change study group,* among them Lyons-Ruth and Tronick, gave an ample definition of intersubjectivity. According to Tronick '…the reader may actually choose their favourite term because there is a vast vagueness associated with many terms - connectedness, intersubjectivity, social contact, attunement, emotional synchrony, reciprocity, attachment - that for the moment need to be dealt with" (Tronick, 1998, p. 292).

In my opinion the meanings of intersubjectivity are most clearly explained in an article by Gómez (1998). Working from a developmental psychological framework he defined subjectivity in two different ways:

One-way versus two-way intersubjectivity[1]

Gómez(1998) defined intersubjectivity as the way we perceive, think about, and feel about the world. Someone becomes intersubjective when their subjectivity is capable of taking the subjectivity of others as its object, that is "when my mind thinks about the minds of other subjects, or when I feel about the minds or the feelings of others" (Gómez, 1998, p. 245). In this case, it is a question of one-way intersubjectivity. As already acknowledged Stern's work mainly presents this one-way intersubjectivity. A second expression of intersubjectivity appears when two people are reciprocally aware of each other's awareness — when they are in dialogue — the so-called two-way or second-person intersubjectivity. In other words "… not all interactions between social agents necessarily entail intersubjectivity" (Meltzoff & Moore, 1998). They give the following example: If a baby climbs on the shoulder of its mother, using her simply as a footstool, one can not speak of intersubjectivity because it is not the other's mind that has been taken into account. Much of the purposeful contact of autistic people is, in consequence, not intersubjective. As far as I know, Gómez is the first to explicitly make this distinction between one-way and two-way intersubjectivity. Properly speaking, every therapeutic relationship has to develop into two-way intersubjectivity for it to be called a full-fledged relationship.

[1] The next two paragraphs have been published earlier in *Pre-Therapy from a developmental perspective* (Peters. 2005, 2006).

Cognitive versus affective intersubjectivity

Gómez describes two other aspects of intersubjectivity. First, there is the *theory of mind* (TOM) notion: according to this, some authors think that any appraisal of another's subjectivity must be based on some sort of theoretical knowledge of the other person's mind — as opposed to direct perception or primary representation — whereas others share the idea that knowledge of other minds must be based on some kind of abstract representations, usually referred to as *meta-representations* (Gómez, 1998, pp. 246–247). Both cases deal with theoretical constructs that are not directly observable. This approach of intersubjectivity focuses on the thinking side of people, as perceived by the observer. This is, at least partly, in accordance with Stern's original 1985 notion of intersubjectivity "… beginning around nine months of age with the advent of interattentionality (e.g., pointing), interintentionality (e.g., expecting motives to be read) and interaffectivity (e.g., affect attunement and social referencing)" (Stern,1985/2000, p. xxii).

The second aspect of intersubjectivity deals with different approaches that focus on *the perception and feeling of emotions*, rather than on the construction of a theory of mind, which according to Gómez (1998) was the original notion of intersubjectivity. This second notion of intersubjectivity is especially observable in children at a very early stage:

> The subjectivity of others is *felt* by infants, who are capable of attuning themselves to it, in the same way as they display their own subjectivity by means of emotional behaviours to which adults adjust themselves. In Trevarthen's view (…) an emotional intersubjectivity precedes and is inseparable from the 'intellectual' intersubjectivity studied by authors working the label of 'theory of mind'. This emotional intersubjectivity is usually displayed in dialogical situations …. (p. 247)

This overlaps with Stern's later notion of intersubjectivity which stated that new evidence on other-centred participation, as well as the new findings on mirror neurons and adaptive oscillators, convinced him "… that early forms of intersubjectivity exist from almost the beginning of life" (Stern, 1985/2000, p. xxii). This primary intersubjectivity as Stern, in imitation of Trevarthen, called it "… starts from the beginning, as does the sense of an emergent self, as does the sense of a core self …" (ibid.).

Gómez explicitly distinguishes between emotional and intellectual intersubjectivity and also connects them as being inseparable from each other.

For TOM (theory of mind) theorists, the earliest manifestation of intersubjectivity "is usually taken to occur at around 9–12 months, when infants start pointing out things to

people and engaging in a number of behaviours that are identified under the label of "joint attention'" (Gómez, 1998, p. 248). These theorists underlined the cognitive side of intersubjectivity. Advocates of the emotional approaches of intersubjectivity (the *primary* intersubjectivity, already extant before three or four months) emphasize the expressive and affective components, that is they not only speak in terms of reaching, pointing, or looking to the face "but also in terms of complying with instructions, accepting assistance, acquiescing, resisting, or making facial expressions" (ibid., p. 249). In this view, one can certainly speak of awareness and of symbolization, which could, of course, be preverbal. Below we will see that it is also the start of empathy.

Intersubjectivity and mirror neurons

The previous section outlines views partly confirmed by research as well as others which presently remain still largely hypotheses. Rizzolatti, Gallese and Iacoboni have all made large neurological contributions regarding intersubjectivity working in the field of *mirror neurons* Imitative learning, seen as a form of intersubjectivity, "…requires learning a novel movement for your motor repertoire by watching somebody else performing the movement" according to Iacoboni (2009, p. 39). According to Ferrari, Gallese, Rizzolatti & Fogassi (2003) mirror neurons appear to play a crucial role.

A possible neurological basis for intersubjectivity

In 1998 Heimann wrote that the neurological foundation of imitation is "… a direct process at a subcortical level where visual, auditory and somatosensory information share the same neural maps or even the same multimodel neurons" (p. 103). Heimann's statement seems to fit with the discovery of *mirror neurons* by an Italian research group under the direction of Vittorio Gallese. In the early 1990s Gallese et al. investigating hand movements in monkeys discovered by chance that neurons in the brains of a monkey were active even if the monkey did not move. It turned out that the monkey had observed one of the co-workers and that neural activities were executed *as if* the monkey himself executed the observed movements of the person. Further investigation revealed that such processes also took place in the human brain. In other words, when we observe a person's activities then, on a neural level, we mirror the observed actions exhibited by the other.

> …that agency plays an important role in establishing meaningful bonds among individuals, by enabling them with a direct, automatic, non-predicative, and non-inferential simulation mechanism, by means of which the observer can recognize and understand the behaviours of others, so Gallese (2000, p. 12).

Originally it was thought that this process happens only if the observed action is goal-related behaviour. For instance observing grasping a cup to get it has to be seen as a goal-oriented action, otherwise such neural process will not take place in the observer: "…these neurons do not respond to static presentations of hand or objects, but require, in order to be triggered, the observation of meaningful, goal-related hand–object interactions" (Gallese, 2000, p. 2). This was confirmed when such behaviour was executed by a mechanical agent or a tool: In these cases mirror neurons were not activated. According to Gallese, this means it is the goal-oriented motor activity, not the visual perception of the object, which is decisive for activating these mirror neurons. In other words, if the goal-orientation of the motor activity is not subconsciously recognized by the observer no mirror neurons will be activated:"…the observed action cannot be matched on the observer's motor repertoire, and therefore the intended goal cannot be detected and/or attributed to the mechanical agent" (2000a, p. 3). The latter is partly refuted by Gilbert amongst others. He demonstrated that the use of tools gave the same results *when the observer can perceive the goal-oriented nature of the action*. "This is facilitated by incorporation of the tool in the body scheme. Body scheme is the way in which the neural control (the brain) configures the body" according to Gilbert (2004, p. 63). Ferrari, Gallese, Rizollatti and Fogassi (2003) also discovered that about 20% of the mirror neurons do also respond when the actions are executed by a tool. However extensive experiments by Bekkering and his colleagues (Bekkering, Wohlschläger & Gattis, 2000; Wohlschläger & Bekkering, 2002; Koski, Wohlschläger & Bekkering, 2002) and Iacoboni (2009) demonstrate that goal oriented processes prevail.

Gallese pointed out, following Perret, Harries, Bevan, Thomas, Benson, Mistlin et al. (1989), that the part of the brain that has long been considered exclusively for motor action, also appears to have detection capabilities through mirror neurons. In addition, Broca's area is not only involved in language mastery, but also in analyzing people's pre-linguistic behaviour. Research by both Meltzoff (1995) and Gallese, shows that this capacity already exists in 18-month-old children.

Further investigation by Gallese also revealed that such imitation processes seem not limited to grasping, but that many other physical and mental states involved in our relating to others , such as emotions, body schema, the experience of pain and other somatic sensations, are shared (or might be shared, H.P.) situations. Gallese's thesis is that the many aspects through which we can identify our self with others have one common root, namely *empathy*.

Thus, fundamental functional qualities of most neurons in certain areas of the brain do not discharge in direct relation to primary feelings, but rather to the observation of goal-oriented behaviours. This implicit process of pre-reflexive, simulated action is of great interest for the development of behaviour from birth onwards (for instance with regard to imitation), for the recognition of behaviour of one's own species (social identity) and for the development of one's own identity. In short, for the development of intersubjectivity this implicit process is a very important one. Gallese pointed out that research findings revealed that not only are motor neurons involved, but also that audiovisual mirror neurons act in the same way. They laid the neurobiological foundation to identify oneself with the other while maintaining one's own identity (= empathy).

Empathy and mirror neurons

As early as 1903, Lipps wrote that empathy was characterized by an inner imitation of movements observed in others. Gallese indicates that this is not restricted to motor acts and that the neural mirror system not only holds for motor acts, but that "...sensations and emotions displayed by others can also be 'empathized' with, and therefore *implicitly* understood through a mirror matching mechanism" (Gallese, 2003a, p. 176). This mechanism, which he sees as a driving force in the cognitive and psychological development of more sophisticated forms of intersubjective relationships that lead to social identity, led him to extend the concept of empathy "…in order to accommodate and account for *all* different aspects of expressive behaviour enabling us to establish a meaningful link between others and ourselves" (p. 176 et seq.). In other words, our reactions to experiences that we obtain in dealing with others and that are affecting our own thinking, feeling, acting and reacting to others, are prepared on a neural level, even before we are aware of them.

Whether this so-called 'extension of the concept of empathy' is really an enlargement of the notion of empathy or whether the view that Gallese stands for has always been implicitly captured in this concept is debatable. Either way, neither in Rogers' first descriptions of empathy or in any subsequent description by other authors is the origin of empathy explained. De Waal described empathy as an evolutionary developed ability coming into being far before man in his current capacity arose or "Empathy is part of our evolution (...) an age-old innate ability. Relying on an automatic sensitivity to faces, bodies and voices, people have known empathy from the very beginning" (De Waal, 2010, p. 227). To experience empathy, it is necessary for the other to manifest themselves in some way, however subtle, in behaviours or emotional expressions, before we will be able to empathize with him/her. The basis for this is, according to Iacoboni, the intimacy of imitation: "The

intimacy of self and other that imitation and mirror neurons facilitate may be the first step toward empathy" (2009, p. 70). Iacoboni also states that the study of early human development "… shows how powerfully imitation is connected with the development of important social skills. (…) If imitation is so critical to develop these social skills, mirror neurons that enable imitation must be too", according to Iacoboni (ibid). During the neural activity of mirror neurons signals are sent to the emotional areas in the limbic system which enable us to feel and recognize emotions, i.e. the perception of a smile is associated with happiness, and a frown with sadness. "Only *after* we feel these emotions internally are we able to explicitly recognize them" (Iacoboni, 2009, p. 112. my italics).

Gallese and Iacoboni describe how inside , on a neural level, a process takes place that matches with the activities and experiences of the person observed by us, in such a way that we are able to understand the other as if we are him/her. De Waal even speaks of identification as a porch for empathy: Does identification with others open the door to empathy, the absence of identification throws that door shut" (2010, p. 95). Those imitated interactions and the identification with the other do not in any way imply merging with each other. Iacoboni sees the role that mirror neurons play in providing the possibility of intersubjectivity as interdependence. This is, at least partly, in line with Heyes' idea and research on the development of mirror neurons, namely that the mirror neuron system is a product, as well as a process, of social interaction, known as the *associative hypothesis*, (Heyes, 2009).

It is important to be aware that it remains unclear exactly how this works. Gradually more publications are emerging from researchers who, despite their proven sympathy to the theory of mirror neurons, make critical investigations into *how* they work. This group includes, among others, Berthouze, L., Borenstein & Ruppin, 2005 (evolutionary link between mirror neurons and imitation); the aforementioned Gilbert, 2004 (the cognitive dimension of consciousness and mirror neural effects) and Heyes, 2009 (see above).

Shared manifold hypothesis of intersubjectivity

From the above mentioned ideas Gallese developed his *Shared manifold hypothesis of intersubjectivity*, SMH (Gallese, 2000, 2001, 2003a,b). In short, this means that when we enter in a mutual relationship, we share a multiplicity of states which Gallese defines as 'implicit certainties'. "We share emotions, our body schema, our being subject to somatic sensations such as pain. … It is just because of this shared manifold that intersubjective communication, social imitation and ascription of intentionality become possible" (Gallese, 2003a, p. 177). This implies, as we saw previously, that the operation of the neural

mechanisms involved in the interaction with others, not only play a role in motor activities, but also in the audiovisual field and other sensory sensations. One of the levels that the shared manifold can be operationalized on is the phenomenological or empathic level: “Actions, emotions and sensations experienced by others become implicitly meaningful to us because we can share them with others” (ibid.). This is in line with the view that the functioning of the neural mechanisms that play a role in the interaction with others is not only based on motor, but also on audiovisual and tactile areas (see, among others, Gazzola, Aziz-Zadeh & Keyzers, 2006). Iacoboni (2009) speaks of *stimulus enhancement*: the content of what is displayed is independent of the ways in which the content emerges; in other words, the plurality of modes of expression. He gives the example of mirror neurons that not only fire if the animal sees the breaking of a peanut, but also when they only hear the breaking sound. This means a significant extension of the neural level of mutual understanding and experiencing or, as Gallese states, “sameness of content is shared with different organisms (…) mirror neurons instantiate a multimodel representation of organism-organism relations” (2003a. p. 175). This takes place in a common intersubjective space, that he refers to as *we-centric*. Although developmental psychology has shown that the agreement between the self and the other (the self-other analogy) is heavily reliant on action and imitation of action, it is not restricted to the domain of action. Global physical sensations and a multitude of affects described as “…broad range of ‘implicit certainties’ we entertain about other individuals, all contributing to compose our global shared experiential dimension with others” (ibid). Gallese calls this multidimensional aspect of self-other relationships *the shared manifold of intersubjectivity* and quotes Depraz who states that “... the self-other identity at the level of the body enables an intersubjective transfer of meaning to occur. From the very onset of life, subjectivity is intersubjectivity” (Gallese, 2003a, p.175).

Psychopathological implications

Researchers have been interested in whether there are any implications for the aetiology of different presentations. For example, whether the person who presents as sociopathic is displaying little or no empathy for the environment, has a different brain structure, a dysfunction of the neural system or whether this representation is entirely determined by the environment. It is known from the work of Damasio (2004a,b) amongst others that damage to certain brain areas can lead to severe emotional disturbances and the absence of empathic feeling. In particular disorders in the amygdala can lead to a lack of empathic ability.

Iacoboni reports how the neurophysiological properties of mirror neurons in monkeys observed by a Scottish group of experts, the observed imitation shortages in autistic children and the brain imaging experiments on imitation lead them to hypothesise "... an early developmental failure of the mirror neuron system that would subsequently result in a cascade of developmental impairments leading to autism" (2009, p. 173). People on the autism spectrum are also unable to make a translation to the perspective of the other, nor do they tend to look to their caretakers or link their own movements with the movements of people that imitate them. As reported earlier, Whiten & Brown (1998) showed that children with an autism spectrum disorder are in principle able to imitate and Iacoboni (2009) considers certain forms of treatment based on imitation effective.

Gallese identifies a clear lack of experienced 'unity in diversity' of self and the other in people diagnosed with schizophrenia (Gallese 2003a, 177) and like Stanghellini (2000,) views schizophrenia as involving problems with *attunement*:

> … the incapacity to engage oneself in meaningful relations with others, the impossibility to establish precognitive, noninferential, 'intuitive' interpersonal bonds. (…) by emphasizing the *relational character* of the psychopathology of schizophrenia, this approach has the merit to disclose the possibility to establish a more insightful therapeutic bond with psychotic patients (Gallese, 2003a, 178; italics by G.).

A possible cause is a disruption of the multilevel simulation processes that characterize the shared manifold. "If the mechanisms enabling to constitute the implicit certainties we normally entertain about the world do not function properly, we are left in need to *purposively* attribute a sense to a world that looks totally strange" (ibid).

Client-centred therapy and in particular Pre-Therapy can make a meaningful contribution to responding to these issues (see for instance, Peters, 2001, 2003b, 2008; Pörtner & Van Werde, 1998; Prouty, 1994, 2008).

The innate capacity for intersubjective imitation in relation to Pre-Therapy

Introduction

Pre-Therapy, as a form of client-centred/experiential psychotherapy, is applied to clients with severe innate or acquired contact disturbances, for whom the more conventional forms of therapy such as talking therapy and behaviour therapy are not (yet) applicable. The almost complete absence of contact (Prouty, 1994, called this *existential autism*) makes the

application of these kinds of treatment impossible. So the therapist, at first, has to establish or restore the client's very basic contact functions, what can be described as the *primary application* of Pre-Therapy (Peters, 1999). Because some form of contact is a pre-condition (therefore the use of the prefix 'pre' in Pre-Therapy) for the more conventional forms of therapy, the question is how to bring this contact into being with clients who are severely disturbed, have hallucinatory psychoses or who have learning disabilities with contact disturbances, and so on. Such contact is the goal of pre-therapeutic work. This is done by the application of pre-therapeutic reflections, the so-called *contact reflections* (for an extended description of the contact reflections see, among others, Peters, 1999, 2008 and Prouty 1994, 2008). From his or her own congruence, the therapist mirrors the minimal behavioural utterances of the client, expressions he or she also bodily 'radiates' but which are not bodily experienced. If a certain level of contact is possible, especially word-for-word and facial reflections can play an important role in the current, individual verbal therapies, eg in clients with short consciousness decreases, the so called secondary application of Pre-Therapy.

Intersubjectivity, imitation, and Pre-Therapy

So Pre-Therapy is a kind of client-centred/experiential psychotherapy aiming at restoring or bringing about primary or secondary contact in an intersubjective context. The relation between intersubjectivity and Pre-Therapy is well illustrated by this quote from Prouty:

> Pre-Therapy … can be understood in the following way:
>
> > Pre-Therapy is a form of attunement on very young levels of development
> >
> > Pre-Therapy is a form of intersubjective contact,
> >
> > Pre-Therapy is an intersubjective relationship
>
> Mirror neurons are the empathic basis for Pre-Therapy (Prouty, 2008, p. 86).

Pre-therapy is mainly applicable to people with (severe) contact disturbances — that is a nearly total lack of contact with themselves and with the surrounding world. A large part of the target group consists of people with learning disabilities and/or people with an autistic contact disturbance. This means that the therapist often takes the initiative to have contact with the client, which is a kind of one-way intersubjectivity, hoping that this will lead to two-way intersubjectivity. With people suffering from a severe contact crisis, especially with people who are mentally handicapped, the cognitive disturbance is predominantly present. This means that the second form of intersubjectivity, which focuses on the perception and feeling of emotions, is the central topic in this kind of treatment rather than the cognitive form of intersubjectivity. This second form of intersubjectivity already exists in the neonate.

We have seen that both imitation, and the development of intersubjectivity belong to people's neonatal capacities , including those with learning disabilities and/or autism. This means that the therapist, in applying pre-therapeutic contact reflections, can both join with the remaining behaviours the client exhibits, and appeal to the innate skills that people have at their disposal: imitation and intersubjectivity are archaic potentialities that humans possess. These capacities develop relatively spontaneously in the neonate, whereas in a person with severe contact disturbances these capacities are blocked and have to be evoked. Imitation of the limited utterances of the neonate by the mother (which supports the development of mutual intersubjectivity) corresponds with the application of pre-therapeutic reflections by the therapist. Both an attuned caregiver and pre-therapist link into behaviours that are close to the person and that might elicit a response. This can be seen as the foundation of the success of pre-therapeutic interventions.

An obvious question is whether pre-therapeutic reflections rest too much on a mechanical imitation of the client's behaviour. One can ask the same question concerning the imitative behaviour of the mother. We already saw that the imitation by the mother is not a strict imitation of the child's behaviour, but her imitation is coloured by her empathic feeling and by her congruent way of responding. This is analogous to the application of pre-therapeutic reflections. The therapist approaches the client in an empathic and accepting way, joins with the basal rest behaviours the client exhibits; however, at the same time, the therapist approaches the client from his or her own congruence so that therapist and client do not coincide. It is what Rogers (1962) and Kohut (1977) called *mirroring*.

With reference to infants, Gergely and Watson (1996) thought that there is evidence that infants are extremely sensitive to the difference between their own affective–expressive utterances and those of the parents. As we have seen, this is in line with Vliegen & Cluckers's view. At a very early stage, the child seems able to see the responses of the mother as corresponding with his or her own feelings and behaviours, but also as differing from them. This has a direct parallel with the application of pre-therapeutic reflections. The therapist links up with the behaviours of the client but in doing so also acts in empathic orientation to the client and from his or her own congruence. This gives the client the best opportunity to recognize the behaviours of the therapist as part of the client, him or herself, which will facilitate client responsiveness. On the other hand, the client also has to distinguish his or her affective-emotional utterances from those of the therapist. This is essential because the client has to learn that the reality contact is his or her reality within the context of his or her existence and not the therapist's.

Summarizing conclusions

My tentative conclusions are the following:

- As seen in the aforementioned work of authors such as Bråten, Trevarthen, Kugiumutzakis, Heimann, Meltzoff & Moore, and others there is sufficient proof that imitation and intersubjectivity are innate human capacities.
- These capacities are accessible from the very first hours of life.
- These basic capacities also exist in people who are autistic and/or those having learning disabilities. (the strong tendency by children with Down's syndrome to imitate is especially well known).
- with these clients, as well as with the clients who are severely contact disturbed, the emotional view of intersubjectivity is far more important than the intellectual one. In other words, approaches where the perception and feeling of emotions are central (which is, according to Gómez 1998, the original conception of intersubjectivity) is situated on an earlier developmental level in which pre-speech and proto-conversation play a relatively important role.
- The neonate has the capacity to distinguish the caregiver's responses as differing from as well as corresponding to their own behaviours.
- Research has shown that imitation can be seen as a mutually influencing and dialogical process, and this connects well with the concept of Pre-Therapy. The intention of pre-therapy being to bring about a contact dialogue, after which the more regular forms of psychotherapy might be applicable.
- Pre-therapeutic reflections are therefore in line with the very basic imitative and intersubjective capacities which exist in human beings from birth.
- The caregiver's imitation of a child's vocalizing is attuned and not a pure mechanical repetition of these behaviours. Similarly, in Pre-Therapy too, the therapist reflects the often minimal behaviours of the client from an empathic stance and in their own congruent Way. ‥ Further research into the way mirror neurons work would make an important contribution to the understanding of the functioning of imitation and the success of Pre-Therapy.

So, Pre-Therapy can be seen from a developmental frame of reference in which the success of the application of pre-therapeutic reflections, even with adults, proceeds because they are attuned to the basic potentialities we have since birth.

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