

***Being Human Together:
Empathy Revisited***

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Abstract

There is a long and rich history in psychoanalytic thought recognizing the valuable role empathy plays in the therapeutic process, a history that is not without its detractors however. With the discovery of mirror neuron and related systems in the human brain, there is renewed interest in empathy in a broad array of academic disciplines as well as the “Relational” schools within psychoanalytic thought. The ensuing discussion deconstructs empathy in an effort to provide a deeper understanding of its value in “being human together” in the clinical setting as well as providing a rationale for its training.

Keywords: empathy, social neuroscience, mirror neuron system, being human, empathy in analytic training, empathy in therapeutic process.

Introduction

Early in the psychoanalytic tradition, Freud (1926) recognized empathy's value as the only way of knowing the existence of the psychic life of another. This began the rich history in psychoanalytic thought examining empathy's role in the therapeutic process (Ferenczi, 1928; Winnicott, 1965; Kohut, 1959, 1982, 1984). This interest was not unique to psychoanalysis, however, as other modalities have deemed empathy as essential to therapeutic efficacy (Rogers, 1959, 1975, 1980). However, as Teicholz (2001) points out, certain precincts within psychoanalysis have, at times, severely questioned empathy's therapeutic value, concerned that, if lacking authenticity and genuineness, it could easily become a hackneyed therapeutic technique.

Major discoveries in neuroscience, including the discovery of the mirror neuron and related systems in the human brain, has inspired renewed interest in empathy and all aspects of intersubjectivity in a diverse spectrum of academic disciplines (Decety and Ickes, 2009; Gazzaniga, 2008; Cozolino, 2006; Ramachandran, 2011). This parallels renewed interest in empathy within psychoanalysis accompanied by interest in Dynamic Systems Theory, (Reis, 2009; Gallese & Sinigaglia, 2011; Gallese, 2009; Emde, 2009; Vivona, 2009; BCPSG, 2010; Shore, 2000), in attempting to redefine what it means to be human, "together." The spirit of this renewed interest is contained in Emde's provocative question echoed by Gallese; to what extent and under what circumstances does therapeutic change depend upon implicit and nonconscious interactive empathy exchanges between patient and psychoanalyst? This paper addresses this question by deconstructing empathy, suggesting that the term is too limited to fully describe this essential aspect of human development and therapeutic efficacy. I will also look at empathy as an emergent property of mind in an effort to demonstrate a rationale for its training as a social skill.

Empathy's Neurobiology

The mirror neuron was discovered in in the mid-1990s, at University of Parma, Parma, Italy during neuron brain mapping research with macaque monkeys (Gallese et al. 1996; Rizzolatti, 2005; Rizzolatti et al. 1996). Quite by accident while mapping the pre-motor cortex, researchers discovered a special set of neurons that would fire while the test animal was simply observing another monkey's goal directed action. What was totally unexpected was that these were the same neurons that would fire if the observing monkey were performing the action it was observing! In effect, a portion of the observing monkey's brain was mirroring what was happening in the other monkey's brain, thus the label, mirror neuron.

Subsequent research established the presence of mirror neurons and related systems in the human brain constituting a robust mirroring capability extending beyond mirroring goal-directed actions to include bodily sensations and emotions. From this research, Gallese, also a member of the original Parma research team, developed a theory of "embodied simulation," (Gallese, 2001, 2003a, 2003b, 2005a, 2005b) positing that human mirroring capability constitutes a fundamental "mirroring mechanism," functioning to map the action, emotion or sensation of another as the observer's own motor, viscera-motor, or somatosensory representation of that action, emotion, or sensation. This mapping enables the observer to perceive the action, emotion, or sensation of another *as if* it were the observer's own action, emotion or sensation, thus providing an "action understanding" of the other. This form of embodied understanding is made possible by the non-cognitively mediated "reusing" of the observer's own motor representations of the action being observed (Gallese, 2010; Gallese & Sinigaglia, 2011).

It is reasoned that automatically achieving a motor representation of another's goal-directed action gives the observer the advantage of quickly "understanding" the flow of the other's actions thus aiding in predicting the other's intentions and next action (Fogassi et al, 2005). This conclusion, which is consistent with cognitive psychology and evolutionary psychology, understands that the mind/brain's basic function is prediction/anticipation (Heylighen, 2006). Especially in a hunter-gather mode, the better one understands the other's actions/emotions, the more effective one will be in anticipating that person's next action and thus of choosing an appropriate response. And, if the response is sufficiently co-

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operative/synergistic, it could produce survival/reproductive advantage for the responder as well as for that individual's group/tribe (Heylighen, 2007c).

Embodied Simulation Theory (EST), posits that an embodied understanding of the other's experience is primary to forms of cognitive understanding, therefore playing a fundamental role in informing all aspects of intersubjectivity (Gallese, 2010; Gallese & Sinigaglia, 2011). Mirroring mechanisms do not, however, preclude the existence of the more cognitively driven brain processes involved in analyzing and understanding the intentional acts of others. Rather, by providing kinesthetic information, they make these processes more effective. But, given the instantaneous and non-cognitively mediated nature of the mirroring phenomenon, it is reasonable to say that this embodied form of knowing the other could be considered a priori; that is, presupposed by experience and fully functioning without intrapsychic examination or analysis.

There is strong evidence that mirroring capabilities and embodied simulation are hardwired. Evidence comes from infant research involving infant distress crying responses and infant facial expression mimicking (Gazzaniga, 2008). In the former, infants are observed responding out of a calm state and begin crying when exposed to another infant's distress crying. Here, the mirror neuron hypothesis suggests that this phenomenon occurs because the observing (previously calm) infant experiences/feels (via embodied simulation) the upset infant's distress as a form of emotional contagion. Given the infant's limited cognitive ability, this is a reasonable assumption because new borns lack the cognitive ability to distinguish between self and other (Hatfield, et al., 2009). Similarly, facial mimicry studies with infants report that infants will mimic the facial expression of (m)other as early as 42 hours old, long before significant cognitive development occurs. This phenomenon is also consistent with EST which posits that the (m)other's facial movement automatically produces a motor representation of these movements in the infant's pre motor cortex, thus supplying the infant with the sufficient blueprint for action, (Meltzoff & Moore, 1998). Similarly, Shamay-Tsoory, et al.,(2009) conclude, that "... (emotional contagion) is the lowest common denominator of all empathic responses."

We see this innate imitative ability in the complex interplay of embodied communication between infant and (m)other which provides mutual "confirmative mirroring" between them.

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That is, the (m)other's reactions/responses act as a mirror, providing the infant with external validation of the existence of its affect and internal sensations. This, Lichtenberg, Lachman & Fosshage (2002) see as the first elements of the infant's developing consciousness. The early mutual engagement of the infant's and (m)other's mirror mechanisms and embodied simulation provides the fundamental link between their minds providing action recognition, intentionality sensing, and emotion sharing. This manifests as an intersubjective dance consisting of mutual mirroring and affect regulation within the dyad as the partners create the fundamental relatedness unique to their dyad (Beebe et al., 2005).

This raises the question however; are we born with fully functioning mirror neurons or do they develop? Gallese (2010) hypothesizes that the baby comes equipped with rudimentary mirror neuron functioning that can be flexibly modulated by motor experience and gradually enriched by visuomotor learning. He cites (Lepage & Theoret, 2007) studies that propose at least part of early development involves learning to mediate the otherwise automatic mirroring function in order to refrain from unconsciously acting out the automatic mapping mechanism. And, when mapping is mediated, automatic re-enactment is transformed to become embodied simulation and thus available to inform higher cognitive processes.

As important as mirror neurons and embodied simulation are to intersubjectivity and relatedness, they also are developmentally problematic. With the paucity of cognitive mediation at this fundamental level of experience, there is natural confusion as to the origin of feelings (Whose feeling is this, yours, mine, or ours?). Remember the infant distress crying studies? At the early stages of cognitive development, an infant can't differentiate between self and other. None the less, it has an emotional reaction and response to the other (distressed) infant. This illustrates how, absent cognitive input, emotion sharing occurs but with confusion as to the origin of feelings and some resulting ambiguity as to the ownership of the need/want associated with feelings. This confusion and ambiguity makes the task of establishing and maintaining a psychological boundary between self and other a highly complex process (Iacoboni, 2009; Decety & Lamm, 2006).

In Summary, mirror neuron and embodied simulation underpin emotional contagion, mimicry, and emotion sharing which inform all aspects of intersubjectivity and relatedness. These should be considered the constituents of "emotional empathy," the basic form of empathy

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both phylogenetically and in terms of individual developmental (Shamay-Tsoory, et al., 2009; Gallese et al., 2011). But, “emotional empathy”, is not fully constitutive of the concept of empathy. To fully understand the concept of empathy we must also consider its cognitive constituents, Perspective Taking and Theory of Mind (ToM). From this discussion we will see that the term “empathic attunement” better describes the full measure of the “empathic” experience, including its emotional and cognitive elements.

Empathy's Cognitive Processes:

As mentioned earlier, the human mind/brain's primary function is prediction and anticipation. The mind/brain has countless ways of organizing and making sense of the world of physical objects in order to quickly infer and predict what unfolds in this realm. However, predicting human behavior/intentions is a much more complex task, requiring more than emotional contagion, it requires psychological attunement. On a cognitive level, we accomplish this attunement in two major ways; first by employing what cognitive science refers to as Theory of Mind (ToM) (Gazzaniga, 2008; Decety & Lamm, 2006). Sometimes referred to as intuitive psychology, ToM operates as an unconscious projection wherein we assume that the other person has a mind that operates very much like ours, including invisible mental states like ours. These assumptions make it easier to conceive of others as "selves" like us, and to access and understand their thoughts and feelings. Gallese (2010) refers to this implicit process as "intentional attunement," an important element in creating the "intersubjective manifold."

The second major cognitive process that helps us understand the other is "perspective taking." Interestingly, this complex cognitive process, of putting yourself in the other person's shoes, takes place in two separate but overlapping brain areas. For example, certain brain cortices are most active when one is thinking/focused on one's self (i.e. I need to do "x"; I want "y"; my tooth hurts etc.), while different cortices are most active when one is thinking/focused on the other (Ruby & Decety, 2001; Decety & Lamm, 2006; Shamay-Tsoory et al., 2009). However, because of the functional overlap of these various cortices, when thinking about the other, the brain area that provides the personal (I, me) perspective may also be engaged; and when thinking about one's self, the brain area that allows one to entertain the other's perspective may also be engaged. Thus, these brain areas constitute a "self-other" system in which perspective taking is not an all-or-nothing, either-or proposition. And, the extent to which we entertain one perspective more than another depends on a myriad of subtle environmental factors including; 1) social context, 2) level of emotional distress involved, 3) nature of the relationship (cooperative vs. competitive), 4) perceived similarity between self and other (Decety & Lamm, 2006; Shamay-Tsoory et al., 2009) thus making perspective taking a highly complex process.

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The preceding discussion has deconstructed empathy in order to elucidate the full complexity of the dynamic interplay of its cognitive and affective constituents. It is because of this complexity that I depart from using the term empathy, preferring the term empathic attunement. This term better suggests the dynamic blending of the emotional (mirror neurons, and embodied simulation) and the cognitive (ToM, Perspective Taking) all of which are necessary to attain full resonance and understanding of the other. To better understand this “blending,” we will use Dynamic Systems Theory (DST) and look at empathic attunement as an emergent property of mind.

Empathic Attunement as an Emergent Property:

By looking at empathic attunement through the lens of Dynamic Systems Theory (DST), I suggest that empathic attunement can be seen and understood as an emergent property of mind (Fogel, 2006; Lewis, 2000; Lewis & Granic, 2000; Thelen & Smith, 1994). This view can provide a better understanding of empathic attunement's value in the clinical setting as well as provide insight with regard to the question of training empathic attunement as a way of enhancing it as social skill. I undertake this discussion fully acknowledging that this is only a modest beginning in examining this complex area.

But first, what is an emergent property? In the non-biological realm, water is an example of an emergent property. When hydrogen and oxygen combine under the right circumstances, they form a completely new physical thing (water) which bears no resemblance to its pre-generators. That is, the new substance has completely different and unique properties that stand on their own in terms of analysis and cannot be understood simply as the superposition of the individual contributors. Thus water is an emergent property of hydrogen and oxygen.

At the opposite extreme, in the biological realm, mind can be seen as the emergent property of brain. The 100 billion neurons, the degree of myelination around these neurons and the 100 trillion synaptic connections and the firing patterns of these neurons are the basic physical constituents of brain. From the unique operation of these constituents, mind emerges from a "self-organizing" process, forming a new non-physical entity, in this case, an entirely new "dynamic system," the primary function of which is the anticipation/prediction of happenings in the physical and psychological surround (BCPSG, 2010; Heylighen, 2006). In this view, mind, like all systems, develops through the functions and interactions internal to its underlying constituents, all acting without prespecification or internal or external rules of determination (Fogel, 2006; Lewis, 2000; Lewis & Granic, 2000). Heylighen (2011, in press) offers the following description, "Self-organization is the spontaneous process through which systems emerge and evolve, becoming ever more complex more adaptive and more synergistic (emerging from) . . . the mutual adaptation and co-evolution of the system's initially autonomous components." This is not traditional Darwinian evolution, however; rather this describes

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intrapyschic evolution, a process of development within an individual mind producing a new system in response to a specific need(s) in the physical or social surround.

As a complex system, empathic attunement's emergence is consistent with the general pattern of hierarchical development of self-organizing systems; that is, new and more complex systems emerge when existing systems are not effective in solving problems in the environment. If the newly emergent system proves effective, it then resides at the top of a hierarchy of its constituent elements/sub-systems, all of which remain in place and fully functional. We can trace this process to see how empathic attunement emerges. In our evolutionary history, as the social milieu became more complex, existing systems of non-mirroring neurons were not effective predictors and anticipators of other's motivations and behaviors. This gave rise to the emergence of more complex systems, consisting of mirror neurons, complex mirroring mechanisms, and embodied simulation which were better predictors and anticipators. And, as the social milieu became even more complex, these systems proved less effective, thus creating the need and opportunity for a new more complex system to emerge in the form of empathic attunement. This new and very complex system emerges through the process of function blending that brings diverse constituents together (i.e. mirroring mechanism(s) and embodies simulation with higher cognitive processes, (ToM and Perspective Taking). When this blending is complete, it constitutes a new social skill, empathic attunement, designed to enhance individual relational fitness and efficacy in the social milieu.

Now, two key questions: 1) what drives this self-organization process and 2) is this aspect of human development automatic? Eons of human evolutionary history of evolving in social groups places a premium on synergy and co-operation within the group. I posit that as a result of this evolutionary history, humans have an implicit need/drive to maximize personal relational fitness and efficacy in the social milieu. It is this implicit need that provides the impetus for empathic attunement to develop as a social skill via the self-organizing process. I further posit that notwithstanding the innate/hard wired aspect of some of empathic attunement's constituents, its development beyond rudimentary levels in the individual mind is not automatic and the degree to which it develops is variable and trainable.

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Given that the development of empathic attunement as a social skill is not automatic, how does it develop? Here, the child's early experience as the target/recipient (or not) of empathic attunement is crucial. This is because, in the experience of being empathized with, some representational elements of this experience are retained in the child's psyche for reuse in bootstrapping the developmental process essential for the development of this social skill. This is analogous to Meltzoff & Moore's (1998) explanation of how the infant is able to imitate facial expressions: the (m)other's facial movement automatically produces a motor representation of these movements in the infant's pre-motor cortex which is then available for reuse. Similarly, when child experiences empathic attunement from (m)other, this produces relational representations that are retained in the child's psyche that are then available for reuse in the subsequent empathic attunement self-organizing process. Thus, development of this ability depends greatly on the vicissitudes of the child's early relationships! The child must have the experience of receiving empathic attunement that is, it is necessary for the child to have had sufficient dyadic experiences of emotional safety and feeling understood for this new system and social skill to organically develop.

Emotional safety exists when there is little or no chance of being used, humiliated, shamed, or unfairly criticized. Absent adequate emotional safety, maladaptive brain/mind systems will readily develop around affective themes such as shame, envy, victim hood depression, etc. (Harkness & Tucker, 2000; Izard, et al. 2000). When this is the case, the child unconsciously presents a guarded self to the world, exhibiting a restricted "relational posture" as a way of protecting against a possible psychological injury. Manifesting unconsciously, this relational posture reflects the child's "implicit relational knowing," that is, its "knowing about how to be with another"(BCPSG, 2010) based on its early experiences with (m)other.

In addition to emotional safety, the experience of "feeling understood" is essential to developing the ability to be empathically attuned to another. Simply stated, this is the experience of the other person "getting" you, that is, when they understand the full range of your inner experience including your needs, wants, vulnerabilities, aspirations, and especially the origins and meanings of those inner experiences. In short, when present in a dyad, empathic attunement to the other can transform the intersubjective space within the dyad to, what I term, the "WE Space." When two people, regardless of the relational context, create a sense of emotional safety

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and mutual understanding within their unique intersubjective dance, they will have co-created the “WE Space.” Entering into the “WE Space” is what I believe the BCPSG (2010) folks describe as “moments of meeting,” wherein a “... new dyadic possibility crystalizes when the two partners achieve the dual goals of complementarity, fitted actions, and joint intersubjective recognition in a new form” (p. 64). And, how will you know if you are operating in the “WE Space?” You will know because there is a “qualitative shift” that is conjointly felt, that is we feel this together. And, most importantly, regardless of the relational context, operating in the “WE Space” is a powerfully liberating experience allowing greater creativity, cooperation, productivity in the dyad. Again, the motivation to develop the ability to be empathically attuned is implicit in the individual’s need to maximize personal relational fitness and efficacy in the social milieu, in short to have happy, healthy, and productive relationships.

Now to Emde’s question to Gallese: to what extent and under what circumstances does therapeutic change depend upon implicit and nonconscious interactive empathy exchanges between patient and psychoanalyst? While this paper can be only a modest beginning in addressing this question, my goal for this discussion has been to provide a better understanding of empathic attunement, including why and how it develops within an individual mind as well as how the lack of this development detracts from an individual’s relational fitness and efficacy in the social milieu. And, to the extent that the enhancement of the patient’s relational fitness and efficacy is a therapeutic goal, the clinical setting (group or individual treatment) is a natural arena for the development of empathic attunement to occur. In the clinical setting, when the patient-therapist intersubjective dance results in the co-creation of the “WE Space,” the patient naturally forms new mental (relational) representations of that experience. These representations are necessary in bootstrapping the developmental process that will allow this social skill to unfold. As the new (empathic attunement) system begins to take hold, both partners will sense the shift to the “WE Space” as their intersubjective dance produces frequent, “moments of meeting.” With continued and consistent creation of the “WE Space”, within the therapeutic process, the newly developing system crowds out the less adaptive existing systems. These older systems represent unproductive aspects of the individual’s “implicit relational knowing,” which, unfortunately do not disappear but remain fully operational as they drift into the intrapsychic background. The therapeutic goal is for the patient to eventually use this new more adaptive system beyond the therapeutic setting. This is not, however, a corrective emotional experience,

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but rather a transformative process fundamentally made possible by the “relational quality” of the dyad as determined by therapist’s empathically attuned (or lack thereof) reactions/responses to the patient (Orange, 1995; BCPSG, 2010). And, while the BCPSG folks rarely use the term empathy or empathic attunement, I believe we are talking about the same interpersonal phenomenon, a complex process of fitting together and creating a “WE Space” that allows us to be fully human together.

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References

- Beebe, B., Knoblauch, S., Rustin, J., Sorter, D. (2005). *Forms of intersubjectivity in infant research and adult treatment*. New York: Other Press.
- Boston Change Process Study Group (2010). *Change in psychotherapy: A unifying paradigm*. New York: W.W. Norton & Co.
- Cozolino, L. (2006). *The neuroscience of human relationships: Attachment and the developing social brain*. New York: W.W. Norton & Company.
- Decety, J., & Ickes, W. (2009). *The social neuroscience of empathy*. Cambridge, MA: MIT Press.
- Decety, J., & Lamm, C. (2006). Human empathy through the lens of social neuroscience. *The Scientific World Journal*, 6, 1146-1163.
- Emde, R. N. (2009). From ego to “we-go”: Neurobiology and the questions for psychoanalysis. *Psychoanalytic Dialogues*, 19, 553-564.
- Ferenczi, S. (1928). The elasticity of psychoanalytic technique. In M. Balint (Ed.), *Final contributions to the theory and technique of psycho-analysis* (pp. 87-101). New York: Bruner/Mazel.
- Fogassi, L., Ferrari, P.F., Gesierich, B., Chersi, F., & Rizzolatti, G. (2005). Parietal lobe: From action organization to intention understanding. *Science*, 302, 662-667.
- Fogel, A. (2006). Dynamic systems research on interindividual communications: The transformation of meaning making. *Journal of Developmental Processes*, 1, 7-30.
- Gallese, V. (2001). “Shared manifold” hypothesis: From mirror neuron to empathy. *Journal of Consciousness Studies*, 8(5-7), 33-50.
- Gallese, V. (2003a). The manifold nature of interpersonal relations: The quest for a common mechanism. *Philosophical Transactions of the Royal Society*, 358, 517-528.
- Gallese, V. (2003b). The roots of empathy: the shared manifold hypothesis and the neural basis of intersubjectivity. *Psychopathology*, 36(4), 171-180.
- Gallese, V. (2005a). “Being like me”: Self-other identity, mirror neuron and empathy. In S. Hurley & N. Chater (Eds.), *Perspectives on imitation: From cognitive neuroscience to social science* (Vol.1, pp. 101-118). Cambridge, MA: MIT Press.
- Gallese, V. (2005b). Embodied simulation: from neurons to phenomenal experience. *Phenomenology and the Cognitive Sciences*, 4, 23-48.
- Gallese, V. (2006). Intentional attunement: A neurophysiological perspective on social cognition and its disruption in autism. *Brain Research Cognitive Brain Research*, 1079(1), 15-24.

- Scott, C.A. (2013). Being human together: Empathy revisited. *MindCosiliums*, 13(9), 1-18.
- Gallese, V. (2007). Before and below theory of mind: Embodied simulation and the neural correlates of social cognition. *Proceedings of the Royal Society of Biological Sciences*, 362, 659-669.
- Gallese, V. (2009). Mirror neurons, embodied simulation, and the neural basis of social identification. *Psychoanalytic Dialogues*, 19, 519-536.
- Gallese, V. (2010). Embodied simulation and its role in intersubjectivity. In T. Fuchs, H.C. Sattel, & P. Henningsen (Eds.), *The embodied self: dimensions, coherence, and disorders*. Stuttgart: Schattauer.
- Gallese, V., Fadiga, L., Fogassi, L., & Rizzolatti, G. (1996). Action recognition in the premotor cortex. *Brain*, 119, 593-609.
- Gallese, V., Eagle, M.N., & Migone, P. (2007). Intentional attunement: Mirror neurons and the neural underpinnings of interpersonal relations. *Journal of the American Psychoanalytic Association* 55, 131-176.
- Gallese, V., Rochat, M., Cossu, G., & Sinigaglia, C. (2009). Motor cognition and its role in the phylogeny and ontogeny of intentional understanding. *Developmental Psychology*, 45, 103-113.
- Gallese, V., & Sinigaglia, C. (2011, in press). What is so special about embodied simulation? *Trends in Cognitive Science*, xx, 1-8.
- Gallese, V., Gernsbacher, M.A., Heyes, C., Hickok, & G., Iacoboni, M. (2011). Mirror neuron forum. *Perspectives on Psychological Science*, 2011, 6, 369-404.
- Gazzaniga, M. S. (2008). *Human: The science behind what makes us unique*. New York, NY: Harper Collins.
- Harkness, K.L., & Tucker, D.M. (2000). Motivation of neural plasticity: Neural mechanisms in self-organization of depression. . In M. Lewis & I. Granic (Eds.), *Emotion, development and self-organization: Dynamic systems approaches to emotional development* (pp. 186-208). Cambridge: Cambridge University Press.
- Hatfield, E., Rapson, R., & Yen-Chi, L. (2009). Emotional contagion and empathy. In W. Ickes & J. Decety (Eds.), *The social neuroscience of empathy*. Cambridge, MA: MIT Press.
- Heylighen, F. (2011). Self-organization of complex, intelligent systems: An action ontology for transdisciplinary integration. (In press)
- Heylighen, F. (2011). Evolution, complexity and cognition group. In A. Michaels (Ed.), *Encyclopedia of Quality of Life Research*. Berlin: Springer.
- Heylighen, F. (2007c). Accelerating social-technological evolution: From ephemeralization and stigmergy to the global brain. In G. Modelski, T. Devezas, & W. Thompson (Eds.), *Globalization as an evolutionary process: Modeling global change* (pp. 283-335). London: Routledge.

- Scott, C.A. (2013). Being human together: Empathy revisited. *MindCosiliums*, 13(9), 1-18.
- Heylighen, F. (2006). Toward and anticipation control theory of mind: an evolutionary-cybernetic perspective on cognition, consciousness, and the brain. Working paper: Evolution, Complexity, and Cognition Group. Vrije Universiteit: Brussels.
- Iacoboni, M. (2009). *Mirroring people: The science of empathy and how we connect with others*. New York: Picador, Farrar, Straus and Giroux.
- Kaplan, J.T., & Iacoboni, I. (2006). Getting a grip on other minds: Mirror neurons, intention understanding, and cognitive empathy. *Social Neuroscience*, 1(2), 175-183.
- Kohut, H. (1984). *How does analysis cure?* Chicago: University of Chicago Press.
- Kohut, H. (1982). Introspection, empathy, and the semi-circle of mental health. *International Journal of Psychoanalysis*, 63, 395-407.
- Kohut, H. (1959). Introspection, empathy, and psychoanalysis. *Journal of American Psychoanalytic Association*, 7, 459-483.
- Lepage, J.F., & Theoret, H. (2007). The mirror neuron system: grasping other's actions from birth? *Developmental Science*, 10 (5), 5013-529.
- Lewis, M. (2000). The promise of dynamic systems approaches for an integrated account of human development. *Child Development*, 71(1), 36-43.
- Lewis, M., & Granic, I. (2000). *Emotion, development and self-organization: Dynamic systems approaches to emotional development*. Cambridge: Cambridge University Press.
- Lichtenberg, J.D., Lachman, F.M., & Fosshage, J.L. (2002). *A spirit of inquiry: Communication in psychoanalysis*. Hillsdale, N.J.: The Analytic Press.
- Meltzoff, A., & Moore, M. (1998). Infant intersubjectivity: broadening the dialogue to include imitation, identity, and intention. In S. Braten (Ed), *Intersubjective Communication and Emotion in Early Ontogeny*. Cambridge UK: Cambridge University Press.
- Orange, D.M. (1995). *Emotional understanding: Studies in psychoanalytic epistemology*. New York: The Guilford Press.
- Ramachandran, V.S. (2011). *The tell-tale brain: A neuroscientist's quest for what makes us human*. New York: W.W. Norton and Company.
- Reis, B. (2009). We: Commentary on papers by Trevarthen, Ammaniti & Trentini, and Gallese. *Psychoanalytic Dialogues*, 19, 565-579.
- Rizzolatti, G. (2005). The mirror neuron system and imitation. In S. Hurley & N. Chater, *Perspectives on imitation: From neuroscience to social science: Vol. 1. Mechanisms of intuition in animals* (pp. 55-76). Cambridge, MA: MIT Press.
- Rizzolatti, G., Fadiga, L., Gallese, V., & Fogassi, L. (1996). Premotor cortex and the recognition of motor actions. *Cognitive Brain Research* 3, 131-141.

- Scott, C.A. (2013). Being human together: Empathy revisited. *MindCosiliums*, 13(9), 1-18.
- Rogers, C. (1959). A theory of therapy, personality, and interpersonal relations, as developed in the client-centered framework. In S. Koch (Ed.), *Psychology: A study of a science*, Vol. 3 (pp. 184-256). New York: McGraw Hill.
- Rogers, C. (1975). Empathic: An unappreciated way of being. *The Counseling Psychologist*, 5, 2-10.
- Rogers, C. (1980). *A way of being*. Boston, MA: Houghton Mifflin.
- Ruby, P., & Decety, J. (2001). Effect of subjective perspective taking during simulation of action: a PET investigation of agency. *Nature, Neuroscience*, 4(5), 546-550.
- Shamay-Tsoory, S.G., Aharon-Peretz, J., & Perry, D. (2009). Two systems for empathy: a double dissociation between emotional and cognitive empathy in inferior frontal gyrus versus ventromedial prefrontal lesions. *Brain, a Journal of Neurology*, 132, 617-627.
- Shore, A. (2000). The self-organization of the right brain and the neurobiology of emotional development. In M. Lewis & I. Granic (Eds.), *Emotion, Development and Self-Organization; Dynamic Systems Approaches to Emotional Development* (pp. 155-185). Cambridge: Cambridge University Press.
- Teicholz, J.G. (2001). *Kohut, Loewald and the postmoderns*. Hillsdale, NJ: The Analytic Press.
- Thelen, E., & Smith, L.B. (1994). *A dynamic systems approach to the development of cognition and action*. Cambridge, MA: The MIT Press.
- Vivona, J.M., (2009). Leaping from brain to mind: A critique of mirror neuron explanation of countertransference. *Journal of American Psychoanalytic Association*, 5, 525-550.
- Winnicott, D. (1965). *The maturational process and the facilitating environment: Studies in the theory of emotional development*. New York: International Universities Press.

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