

this thesis is correct. The developmental consequences of such a deficit would be far-reaching. Existing accounts suggest the potential cascade that may follow such a deficit. Some emphasise the role of affective identification (Hobson 1993), others the role of physical identification (Meltzoff & Gopnik 1993), and others still the combined role of physical and affective processes in the development of intersubjectivity (Rogers & Pennington 1991; Stern 1985).

One limitation of the study of imitation in autism to date has been reliance on paradigms that do not allow us to clearly separate the role of motor-perceptual influences from affective-intentional influences. Such a “fine cuts” approach has been pursued more diligently in the comparative literature. In the normative developmental literature such approaches are now being adopted, and these may allow us to disentangle the perceptual and representational contributions to the imitation of affect, gestures, and actions on objects (Charman & Huang 2002; Heyes 2001; Want & Harris 2002). In time, further evidence will emerge that may allow a more precise application of the P&deW model to autism. An impairment very close to the proximal level of PAM might underlie the impoverished empathic response of individuals with autism to distress displays. Alternatively, an impairment further towards the ultimate level, consequent upon impairments in cognitive and representational abilities and experience, may emerge from such studies.

### A complete theory of empathy must consider stage changes

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**Abstract:** A sequential, hierarchical stage model of empathy can account for a comprehensive range of empathic behaviors. We provide an illustrative table, “Stages of Empathy,” to demonstrate how increasingly complex empathic behaviors emerge at each stage, beginning with the infant’s “automatic empathy” and ending with the advanced adult’s “coconstruction of empathetic reality.”

The Perception-Action Model (PAM), even with “additional cognitive capacities” to explain empathic behaviors, cannot account for stages of empathy. The model is useful and necessary but not sufficient. Although aspects of empathy follow an “automatic” process, we assert there is a long development of stage-like changes in empathic action in humans, and perhaps to some extent in great apes. This development results in the adult’s very complex empathic stages of action. We argue that the Model of Hierarchical Complexity (MHC) (Commons et al. 1998) provides a coherent account of these developmental changes (see Dawson 2002 for a discussion of its validity and reliability). The increases in the hierarchical complexity of empathic actions are due to a dialectical process of transition from one stage to the next (Commons & Richards 2002; Wolfson 2002).

We have constructed a table of stages of empathy to underscore the hierarchically sequential stage changes (also see Fischer 1980). The table shows that at each stage there is a new, more abstract “layer” of actions added that organizes the previous component actions. Such ordered changes can be described by using the MHC because of this model’s universality. It posits mathematical definitions of “ideal” actions that define stages and a dialectical process of actions that define transitions between stages (Commons & Richards 2002). The model has been applied to a variety of domains in psychology including attachment (Commons 1991), social perspective-taking (Commons & Rodriguez 1990; 1993), and evaluative reasoning (Dawson 1998).

### Stages of empathy

Stages	Empathetic Affect and Action
<b>Sensory and motor actions</b> (Simple reflexes and conditioning)	Reflex reactions occur including comfort to distress and comforting stimuli, elicited smiles (Field 1989). Reflexive imitative tongue protrusion; mouth opening (Meltzoff & Moore 1977). Shows emotional contagion: Cries and keeps crying when hears other infants’ cries (Hoffman 1978b).
<b>Circular sensori-motor actions</b> (Instrumental and social referencing)	Coordinates perceiving the parent’s emotion cues and its own behavior. Behavior is adjusted in situations (e.g., watch for adults’ facial expressions when meeting a stranger [Boccia & Campos 1989]). Turns away (avoidance), suppresses an ongoing activity, or gets more involved with an alternative activity from others’ aversive emotions.
<b>Sensory-motor</b> (Physical consoling)	Couples motor action with emotional action, matching intensity of expressions when imitating. Recognizes disparities in across persons. Displays consoling type (or empathic) responses when someone else is upset. These responses involve only the infant’s own body. Pats another person, hugs them, or looks concerned. Infants compare emotional responses to caretaker; defer to caretaker’s response to determine their response to stranger.
<b>Nominal</b> (Multireferential or Deferred)	Names and associates feelings (e.g., happy, sad) with familiar entities, events, or representations (e.g., pictures). Infant responds with a distressed look to an adult who looks sad, then offers the adult infant’s beloved doll; child runs to fetch his own mother to comfort a crying friend (Hoffman 1978b). Emotionally reacts to the distress and anger of other family members (Zahn-Waxler et al. 1979).
<b>Sentential</b> (Egocentric helping)	Simple sequences of empathic interactions limited to egocentric helping (e.g., console crying infant). Talks about cause and effect, reflects on cause, actor, action and outcome, hiding, reparation. Guilt is assuaged by reparations or is evaded (Kuczynski et al. 1987; Zahn-Waxler & Kochanska 1988). There is play-acting or pretense (e.g., acting hurt).
<b>Pre-operational</b> (Storied empathy)	Empathize with a character in a story. Confuses real and imaginary. May act on mistaken beliefs. Acculturation determines whether the context requires empathy (e.g., it is all right to kill fish, but not dogs). Narrative form integrates situations and context, and less salient cues, to infer whether an emotion indicates suffering or something else.

**Primary**  
(Personal empathy) Matches feelings towards the sufferer to sufferer's reality. Feelings belong more to oneself than to the other person's feelings aroused in a situation. Also can empathize with another's situation. But cannot coordinate the two. Projects self into other's situation if familiar or perceptible but not into other's perspective if it is not familiar. Empathy consists of "Me too-isms."

**Concrete**  
(Interpersonal inclusion) Describes feelings as inferred directly from expressions and linked to a situation. Feelings include understanding the other's motives in terms of one's own motives in a similar situation. They include statements of preferences of others as well as stated values of things and acts. One not only understands how the other person feels, but relates those feelings to the ones oneself has had during similar experiences. There is coordination between how they feel now and how they have felt in the same concrete situation and what did help them feel better.

**Abstract**  
(Normative personal sympathy) Identifies degrees of feelings and suffering along a continuum as states or moods inside the person and expressions on the outside. Feelings and expressions may conflict (Selman 1980). Generalizes feelings and situations but does not logically link generalizations. Sees feelings as normative. "This is how people feel in a situation like this." Nonsystematically tries various things to help.

**Formal**  
(Ideal sympathy) Links suffering, moods, expressions, and situational variables. Asks about how people feel in a given situation. Aware that feeling states influence immediate perspectives or perceptions. Imagines self in other's position and situation, when these are unfamiliar or abstract. May sympathize with abstract persons and situations (e.g., idealistically sympathizes with individual foreign enemies).

**Systematic**  
(Interpersonal reflection) Organizes feelings and expressions into systems in each person. Sees self as impartial, though caring, reflector of other's states and perspective. Empathic responses moderated by standing in the hierarchy of the sufferer.

**Metasystematic**  
(Universal principles) Coordinates and subordinates congruently expressed emotions, taking into account that some systems of emotions conflict with other systems (e.g., social and individual caring emotions; personal survival emotions; justice emotions). Recognizes they could be anyone else and in their universal situations. Acts on universal principles of caring and suffering.

**Paradigmatic**  
(Collaborative co-construction and transformation of reality) Sees that caring, justice, and survival systems cannot be integrated entirely. Sees failure to find universal principles for empathy. Knowledge about

others as regards preference and feelings needs direct representation by the person.

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**Deconstructing empathy**

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**Abstract:** Under Preston & de Waal's proposed model, empathy might be regarded as everything that determines the quality of a social relationship. Although the authors provide a useful heuristic for understanding relationships, clinical research efforts with a somewhat narrower focus have provided some additional insights into this topic, which might lead to testable hypotheses regarding the neurobiology of empathy.

In Preston & de Waal's (P&deW's) model, empathy is viewed as a hierarchy of capacities that originally evolved from the need for social animals to respond accurately and quickly to complex stimuli. The emergence of perception-action organization – believed to be a distinguishing characteristic of social animals – was subsequently superimposed (evolutionarily) by modulatory mechanisms that incorporated internal representations of prior experience (which enhanced the computational efficiency of the system), as well as higher order cognitive processes. At the core of the authors' hypotheses, the seemingly divergent entities of empathy (in which the subject feels the state of the object) and projection (in which the subject assumes that his or her own state is that of the object) are actually seen as complementary epiphenomena of the mediation of perception-activation processes by internal representations of prior experience. In elaborating their model, the term empathy encompasses phenomena as disparate as the reaction to a gory movie and the reaction to a tragic one, incorporates a range of emotional responses from "contagion" to altruism, involves unconscious processes, cognition and "meaning" (in an existential sense), is influenced by genetic and environmental factors, and includes both automatic responses and imaginative processes "that allow individuals to evoke empathic processes in the absence of the object" (target article, sect. 4.2).

This broad range speaks to the comprehensiveness of their approach, but also threatens to make empathy so unwieldy a construct that it is difficult to test. Under the proposed model, empathy might be regarded as everything that determines the quality of a social relationship. Although the authors provide a useful heuristic for understanding relationships, clinical research efforts that have had a somewhat narrower focus have provided some additional insights into this topic which might lead to testable hypotheses regarding the neurobiology of empathy.

The authors' own examples of autism and antisocial personality disorder (ASPD) illustrate distinct naturalistic deficits in the apparatus for empathy, but there are obvious differences in the *quality* of empathic deficiency between these two conditions which are not entirely explained by the model. Fully autistic children appear to lack the neuro-developmental capacity for joint attention, yet may be exquisitely sensitive to seemingly trivial socio-environmental cues, to which they stereotypically respond. Sociopathic individuals exhibit low levels of arousal and are unmotivated by interpersonal contingencies, but may become incensed by perceived insults from others. These observations suggest that awareness of social cues, the capacity to appropriately interpret those cues, the ability to respond competently, and the inherent motivation to respond may represent distinct variables in whatever sys-