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Review Article

From Passive to Active Empathy - A New Paradigm for Studying Empathy

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Abstract

Empathy, the ability to understand and share the feelings of others, and experience the world as you think someone else does, is a fundamental aspect of social connection, caring and belonging [1-5]. One's ability to empathize develops gradually during childhood and is presumably influenced by children's social environment [6-11]. If empathy is a malleable skill rather than a fixed trait [12,13], can it be nurtured and enhanced through development? What would be the experiences and interventions that would support children's empathy development? Although empathy has been vastly studied it remained a challenging phenomenon to unlock, let alone translate into evidence- based educational practices. Here I propose a multidisciplinary approach to empathy and present a new frame work to empirically study the development of empathy.

Introduction

Scientific literature in multiple disciplines has long distinguished two core components of empathy -- (cognitive/affective). Affective empathy involves sharing another person's emotional experience (*I feel your pain*), through automatic simulation and mirroring of the other person's physiology and emotional signals, creating an emotional resonance [14-16]. In contrast, *cognitive empathy* involves recognizing and understanding another person's feelings and thoughts (*I see and understand your pain),* through mentalizing, perspective-taking, and theory of mind (TOM) [17-20]. But what makes some children engage and act compassionately in difficult social-emotional situations and others to ignore or avoid them? Are these two components (affective and cognitive) sufficient to predict empathic behavior? What are the dynamics and interconnections between these components? A model of higher granularity is necessary to unravel the developmental pathways of empathy, and to differentiate empathy from other pro-social behaviors, which may be linked but not interchangeable (e.g., complying with social norms and self-interest-driven collaboration).

Though the experience of empathy is salient and undeniable (both in the giving and receiving of it), defining, controlling and measuring it is a very different story. The definition of empathy (what it is and what it is not), and measuring it empirically, have been the two major challenges in studying empathy. Unlike some basic emotions (e.g., anger, fear, joy) which have been captured and differentiated through various physiological measurements (e.g., facial muscles activity, skin conductance, respiratory and heart rate measurements), empathy is a relational, multilayered emotion which is difficult to elicit on demand and capture its distilled essence [21]. Most empathy studies rely on adult self-report measures, which shed light on subjective interpretations of empathy-related experiences in retrospect. What builds these experiences over time, and what leads to pro-social action remains unclear. While behavioral neuroscience offers objective, physiological measurements, it is constrained to artificial laboratory settings which compromise the scope and intensity of the experience. Social development research, on the other hand, focuses on children in their natural environment where authentic empathy sprout in real-time, but lacks objective, high-resolution assessments of empathy.

Currently, different interpretations and speculations around empathy fill the vacuum created by the empathy research limitations. One example is the ongoing debate on the links between affective empathy and pro-social behavior. Some suggest that affective empathy is essential in drawing our attention to others in need [22-25], while others argue that affective empathy distracts from making a moral decision and acting compassionately (especially when it comes to helping an outgroup member) [12]. As long as the empathy research is fragmented and not integrated, each discipline is able to see and describe only part of the picture. In order to understand empathy at its core, this vague concept should be broken down to the most basic, measurable, building blocks that can then be measured over time. I propose a Triadic Empathy Model (see Figure 1) as a framework for studying empathy and its

development. The Triadic Empathy Model is based on evidence-based knowledge from neuroscience and social-emotional learning (SEL) and invites a multidisciplinary integration between the different facets of empathy (e.g., cognitive analysis, emotional experience, action tendencies), through different measurements (subjective reports, physiology and behavior).

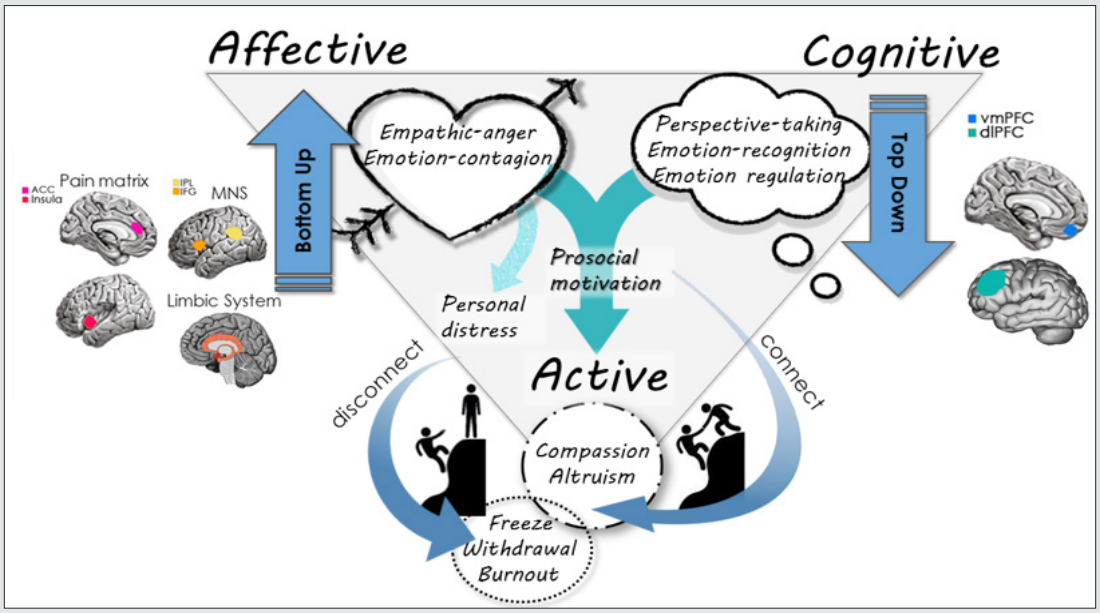

Figure 1: The Triadic Empathy Model. Affective empathy: emotional and physiological resonance with the other person, through simulating and mirroring the other person physiology and emotional signals. This system is the earliest to develop, operates quick and spontaneously, in a bottom-up manned, activating primordial brain systems- the limbic system, pain matrix and mirror neurons. Cognitive empathy: understanding the others' thoughts emotions and perspectives through Theory of Mind (TOM) and mentalizing. This system develops and function slower through an intentional top-down processing, and rely on the PFC (late) maturation. The author hypothesis is that a balanced and regulated social-emotional system, and a secure sense of self, leads to a healthy, restorative prosocial motivation, increase connection and active empathy and decrees social related distress.

A neurodevelopmental perspective of empathy

Empathy is a multifaceted skill that develops gradually and hierarchically over time, through the incorporation and leverage of several neuronal systems. Although we are not born empathetic, empathy starts at birth. At the beginning, emotional sensing and processing is spontaneous and automatic. Human babies are extremely dependent; thus, connection and belonging are pivotal for their survival. The newborn brain is evolutionarily "programed" for seeking and benefiting from social stimuli and interaction, a process known as 'experience-expectant' brain development [26]. Human brain development is, therefore, highly dependent on the interpersonal context and quality of early caregiver-infant interactions which lay the neuronal foundation for empathy development [27-30].

Notably, neurodevelopmental studies suggest that humans are sensitive to others (social signals) even before establishing a strong sense of self. Infants demonstrate attention bias to salient social stimuli such as faces [5,11,22,14,16] and especially negatively charged (angry and fearful) facial expressions [31,32]. The baby's perception of another person's emotional state automatically activates their own brain representation of this state, which primes physiological responses accordingly. This process of *emotion contagion,* the spontaneous emotional, bodily reaction to the situation is a primal, low level facet of affective empathy [33-35]. It Involves the limbic system, which is central in emotion processing and memory, mirror neurons, selective to both action execution and action observation (inferior frontal gyrus - IFG), and the pain network, a shared matrix for experiencing and witnessing (others in) pain (anterior insula – AI, and the dorsal anterior/anterior medial cingulate cortex - dACC/aMCC) [36]. Neuroimaging studies point to a developmental mechanism rooted in pain aversion and rewarding prosocial motivations. Sensitivity to others' emotions, interpersonal harm aversion, and preference for prosocial characters are early social inclinations that guide babies toward protection, affiliation, and cooperation in their social world [7].

Over time, brain activity streams more to the prefrontal cortex (PFC), indexing a higher level of emotional processing, and a shift from the initial visceral response, to a more conscious, evaluative emotional response [7]. If the primal, low-level-affective-empathy is an autonomic emotional response to another person's emotional expression (e.g., emotion contagion), high-level-affective-empathy is a feeling; an emotional experience based on bodily sensation and the cognitive attributions one associates with the situation of another person. The progression from low-level to high-level affective empathy is a shift from feeling with to feeling for someone. This shift requires concepts of self and other, social awareness, and

emotional regulation, which rely on the PFC and therefore takes time to develop. One example of high-level affective empathy is empathic anger in reaction to another person's unjust suffering and victimization [30]. In their study, Vitaglione and Barnett found no correlation between their empathic anger scale and any of the three other anger scales that were tested. This finding suggests that, unlike basic anger, which is a protective emotion over self, empathic anger is a protective emotion over another person (feeling angry for someone else), which makes it a social and moral feeling. More recently, in a younger sample, empathic anger was found to mediated the impact of both perspective taking and empathic concern on how students responded when they saw others being bullied [21]. Thus, empathic anger may be particularly relevant to active empathic behavior.

The development of executive functions and the ventromedial prefrontal cortex (vmPFC), enable the emerging of *emotion recognition,* the awareness and ability to identify specific emotions, a key facet of cognitive empathy. Next, throughout childhood and adolescence, further development of the dorsolateral prefrontal cortex (dlPFC) supports more cognitive flexibility, and with it the ability to expand one's perspective [7]. *Perspective taking,* the deliberate and effortful process of understanding other points of view, is another facet of cognitive empathy and one that mediates emotion regulation skills [5,14,19]. The development of these socio-cognitive facets of empathy enables emotion regulation and other-oriented focus that prompts more effective and accurate pro-social responses. Furthermore, pro-social behavior is reinforced through a positive feedback loop. For example, altruistic behavior has been associated with activations in the reward system (ventral tegmental area - VTA, caudate and subgenual ACC) which, in turn, has been found to predict subsequent helping behavior [25]. In summary, with age and brain maturation, empathy joins bottom-up limbic activation (amygdala, posterior insula), and top-down (vmPFC and dlPFC) activation processes, resulting in a multi-level, regulated and integrated socio-emotional-cognitive experience and a key precursor for pro-social behavior With this premise that empathy is a three-dimensional construct involving cognitive, affective, and behavioral components, I am proposing the triadic empathy model.

From passive to active empathy; the triadic model of empathy

The Triadic Empathy Model (see Figure 1) is a framework to conceptualize and study empathy in a multifaceted way. In addition to the well-known *Affective and Cognitive* components of empathy, *Active Empathy* is a third component referring to action tendencies and behaviors propelled by the empathic experience. Including the active part of empathy in the model enables studying the motivational features of empathy, the direct connections that exist among the different facets of empathy, and the dynamics of the empathic cascade, from experience to action. From a developmental perspective, the approach/withdrawal motivation framework suggests that living organisms tend to approach positive and safe stimuli and avoid negative and overwhelming stimuli, as an adaptive, basic survival mechanism [17]. Furthermore, some emotions are more strongly associated with approach action tendencies (e.g., anger) and others with withdrawal (e.g., fear and sadness) [17]. Understanding the underlying mechanisms of empathy can shed light on children's' different reactions to intense social-emotional situations, specifically, why some children demonstrate active pro-social behavior while others stay passive or withdraw from these situations.

The triadic model of empathy is dynamic and can be expended to include further subdivisions of the three main components of empathy. For example, perspective taking and emotion labeling, both reflect cognitive analysis of emotional experiences, would be examples of cognitive empathy. This high-resolution definition of empathy is not semantics but a practical expansion of research possibilities. Importantly, the subdivision of affective empathy into low-level and high-level affective empathy enables access to new research questions about the role of emotion regulation and compassion fatigue in the empathic experience. For example, among children that avoid active empathy, some do not understand the situation, some understand but do not care, and some care but do not act. Could the third option be due to a lack of transformation between low level to high-level affective empathy (the transition from feeling with to feeling for someone)? Could those individuals withdraw and score low on active empathy, not because they do not feel it, but because they feel it too much? This frame work allows both hypothesis and empirical design to study them. My hypothesis (as shown in Figure 1. by the turquoise arrows), is that a cognitively regulated social-emotional system, and a secure sense of self, leads to a healthy, restorative prosocial motivation, increase connection and active empathy and decrees social related distress. This hypothesis is yet to be tested, and the triadic model offers an empirical design to study this hypothesis as well as others. In addition, breaking down the big components to the most basic building blocks opens the door to specific objective measurements. For example, active empathy could be associated with children's social decision making and behavior in real situations; cognitive empathy could be associated with children's understanding and analysis of social situations, and affective empathy could be measured through physiological and hormonal changes (e.g., oxytocin and cortisol) during social-emotional situations.

Conclusion

A multi-level assessment scale, based on self-reports with additional behavioral and physiological measurements, under one comprehansive framework would be valuable in finding further hierarchical-developmental relations between the different components of empathy, and furthermore to explain how the development of empathic experience might be translates into action.

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simulation debate. Mind and Language 16(4): 368-392.

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