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Empathy, Altruism, and Prosocial Behavior in Humans and Primates

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Empathy, Altruism, and Prosocial Behavior in Humans and Primates

by

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ABSTRACT

Empathy is defined as the observation of another's emotional state, and consequent neurological mirroring of that emotion, concurrent with the awareness that that emotion belongs to the other (Decety & Jackson, 2006; Southard, 1918). Presented here is the familiarity thesis, a mechanism for empathy that relies on an individual's desire to gain knowledge for another, based upon their affection for that other. The familiarity thesis is superior to the analogical inference thesis, which cannot account for observations of humans empathizing with inanimate objects (Higashinaka, 2008). Furthermore, an explanation of empathy involving analogical inference would not allow for in-group biases, such as those observed at a high level in primates, to be evidence of empathic ability. While primates exhibit empathy that is restricted to their in-groups, humans have extended empathic capabilities, the potential evolutionary development of which is the basis for the familiarity thesis. Strong neurological characteristics in humans regarding in-group biases contradicts this, and lends itself to adopting the familiarity thesis as the primary mechanism for empathy. This mechanism will be presented, as well as the neurological and cognitive components of the empathetic response in humans and its relationship to the evolution of empathic ability in primates.

CHAPTER 1. Basic Concepts Used in the Thesis

"Theory of mind" is a set of theories that attempt to explain how an individual might be capable of accessing the mental states of others. That such a mechanism exists may be assumed from the ability of an individual to predict the actions or emotions of another. Empathy is thought to be the mechanism through which we are able to access others' minds, effectively a solution to other mind theories (Stueber, 2013). In consoling someone, or offering to help, some mental mechanism is active which causes an individual to see that other as undergoing some particular mental process. That individual considers himself or herself to be privy to this process, and their perception accurate enough to be acted upon with confidence.

The problem of other minds concerns the prevalent assumption that others have minds like our own. This is tackled with various explanations, including that we conceive of other minds by analogy: since other humans appear and behave like myself, they must be like myself internally as well. Theories concerning problem of other minds mainly concern human-to-human interactions. Interestingly enough, humans are observed time and time again to show empathy to non-humans, such as pets, machines, or other objects like cars and toys, which do not have the ability to experience anything by their very nature (Higashinaka, 2008; Melson, 2003; Decety & Jackson, 2004). These phenomena could not be explained by analogical inference, especially in the cases involving inanimate objects, and the accuracy in the case of animals is questionable. Mirror neurons, which copy all the neurological aspects of an observed action with the exception of the actual performance of the action, have been shown to aid in the perception of expressed emotions has been demonstrated (Decetey & Jackson, 2006), but the variance in acting upon empathic response and not the empathic response itself is dependent on other conscious cognitive processes. Empathy for non-humans and particularly inanimate objects can only be

viewed as being due to the cognitive portion of the empathic process, as no mirror neuron could possibly have evolved such that would allow for that level of empathy, not to mention that the evolutionary pressures would not be in place. The mind has innate cognitive mechanisms by which it can distinguish between the other and the self, but what motivates the self to act upon these distinctions, or to be perceptive more than the norm, and to consciously extend the neurological responses of empathy to objects?

1.1 Familiarity Thesis

One way that these seemingly misguided empathetic tendencies towards inanimate beings can be explained in humans, other than by some kind of fantastic mirror neuron malfunction, is by proposing that humans use acquired knowledge in their ability to empathize and access the minds of others. As opposed to a generalized mechanism, which allows for an individual to access the mind of another on the same level in any instance, this alternative explanation would grant variance in the accessibility to the minds of others based upon experience with that other. With a high level of experience, a high level of access would be possible, and consequentially a high level of empathy possible, due to the sensitized state of the individual to the other's personality and mental state in general. This does not require any concept of similarity; rather two individuals could be as non-similar as imaginable, but access would be possible with familiarization.

Although not directly addressed in the literature, there is indirect support for such a type of thesis alternative to analogical inference. Due to some kind of essential error in self-other perception, Hobart and Fahlberg (1965) found that perception of similarity in empathy studies actually results in decreased mental access of the other's mind. Individuals who were perceived

as most un-similar to the participants were in fact most similar, as predetermined using Myers Briggs Type Indicator tests. This implies that a mechanism which relied solely upon analogical inference would actually lead humans to err. This supports the idea that something else must be behind this ability, as the increase in prosocial ability allows for evolutionary advantages that reasonably would have allowed for selection in empathic accuracy. Empathic accuracy requires an awareness of qualities beyond mere physical appearances. It is the level of awareness of cognitive and differential life experiences that dictate empathic ability in an individual— for two people to act the same way in their necessarily different life situations is highly unlikely, and an understanding of the various influences upon the mental states of others is needed for empathy to go beyond physical expressions and reach any level of accuracy. There is no biological mechanism for the perception of the motivations behind behavior, and this is not possible merely with belief of similarity – it occurs with individual experience and knowledge of another. The error experienced by individuals who attempt to rely solely on analogical inference suggests that empathic abilities derive their utility and accuracy from another mechanism, if empathic ability is to be regarded as evolutionary advantageous, whether by increasing genetic fitness or by enabling individuals to have increased prosocial skills.

Without familiarization and experiential knowledge of the other, only a basic level of mental access would be possible. For example, upon observing another in pain, the individual might think that they do not know anything about this other, but that they are displaying the signs of pain, and therefore are most likely in pain. This is contrasted to a more in-depth knowledge of the other, which would allow the individual to empathize on a deeper, more abstract level, such as expressions of artificial versus real pain, various levels of pain, and perhaps even the cause. The understanding that particular actions evoke pain is a learned skill, with parents training their

children from very young to associate particular verbalizations with corresponding physical states. Thus, even what seems on the surface to be empathy enabled by analogical inference might be due to knowledge. The recognition of pain as experienced by another individual and the resultant empathic response is the instance where analogical inference shines most brightly; however, that the recognition of pain is indeed analogical inference and not a learned ability is not obvious, nor can the recognition of pain be explained only by the individual comparing another's expressions of pain to their own. Indeed, if one takes into consideration levels of pain tolerance, where a single event that might cause one individual to scream in pain causes another to express nothing at all, the case of analogical inference seems even less obvious. Somehow individuals are still capable of understanding concepts like stoicism and differential pain tolerances, and adapting their empathic responses to that knowledge. An individual's experience of pain is not dismissed merely because they are not expressing pain like the observer would.

This mechanism of familiarization for empathic accuracy involves not only knowledge to inform the empathic response on proper course of action, but also affection as motivation for that knowledge (Prinz, 2011). Mere knowledge of personality is not enough to access mental states (Monson, Hesley & Chernick, 1982). Knowledge of personal motivation, the normal state of mind of an individual, and the environment all play significant roles in the accurate perception of an individual's state of mind. Most of these require intimate knowledge of an individual. With increased familiarization and consequently affection, the inclination to act upon the empathetic response would be heightened due to an increase in understanding and emotional entanglement, resulting in what might seem to be a nepotistic or in-group tendency. However such a phenomenon can be explained as a fuller knowledge of the mental state of the other, and a simultaneous increase in confidence in the correctness of the mental state accessed by the

individual. There might also be a personal tendency to seek the continuance of something which an individual has deep, personal knowledge of. According to the familiarity thesis, an increase in familiarity with a thing results in an increase in emotional attachment to it; this in turn results in the empathic response being specially applied to the thing, and increased willingness to act upon the empathic response in regards to the thing.

The need for another explanation rather than analogical inference is best supported by human empathy for inanimate objects. A humans perceiving a non-human as having a personality type that merits more than just shallow experience with would be one example of empirical support for the familiarity thesis, as well as a correlation between degree of emotion experienced with regard to the other, whether positive or negative, and the degree of interaction with the other. Inanimate objects, such as computers, would cause humans who feel empathy for them to project personalities onto them (Higashinaka, 2008). A projected personality would enable the illusion of intimacy and individuality that might be present in a relationship. In observations of humans working with computers, it was found that expressions of empathy by humans for the computers indicated affection for the computer based on participant satisfaction with computer performance. Additionally, computer expressions of empathy caused the humans to feel even more empathy for the computers (Higashinaka, 2008).

This type of mechanism makes sense for human interactions, in that emotional bonding works in an exponential way, inspiring increased emotion and consequently empathy in each individual in turn. Since there is no way that a human could perceive a computer to be anatomically similar to itself or to express its emotions in a physically comparable way, as would be necessary under analogical inference, some other mechanism must be causing humans to feel empathy for machines that are clearly unlike themselves. Since this quality does not imply some

kind of cognitive malfunction, such that individuals who feel this way are not neurologically troubled, then the cause of this phenomenon must be in the generalized mechanism of empathy. Empathy, as a prosociality increasing mechanism, would seem to be best served by being a generalized rather than a specific mechanism, evolutionarily speaking. Considering the evidence that the empathic response is applied not only to humans but also to pets and inanimate objects, the generalized mechanism of familiarity is indirectly supported.

1.2 Prosociality

Prosocial behaviors might be explained by an increase of knowledge and affection between individuals within small close-knit groups within a society. Within a small family group a high degree of knowledge and affection for the other would be present, extending out to the further members of the group. The most significant evidence we have in regard to the cultivation and evolution of emotional bonds is cooperative breeding: that it begins with the infant and mother, and then spreads to others over time (Hrdy, 2001). The mechanisms by which an infant becomes attached to the mother can be assumed to be strongly correlated with the time spent together during the formative years; in absence of a mother, as found in experiments of highly questionable ethics, non-human primate infants developed similar emotional bonds with towels placed by the experimenters to stand in the place of their mother (Harlow & Zimmerman, 1958). This also applies to the cases wherein the infant is cared for by individuals that are not their biological mother (Hrdy, 2001). Standing in for the mother, spending time and increasing the emotional bond results in increased empathic ability. This indirectly supports the familiarity

thesis, in that the increase in the emotional bond over time correlates with the development of the empathic response.

This ability, gained primarily with close family and friends over time, explains in-group biases of all kinds, including the acceptance of the authority of certain individuals in the group. Although a father and a child might be completely different in almost every way, the child would have knowledge of their father's personality fairly well, and this knowledge combined with the empathetic response might compel them to perform behaviors that otherwise they would not, such as upholding authority and avoiding conflicts. By extension the child might easily uphold the value system of those they hold dear, with motivation resting solely on empathizing with the others' position and understanding the pain that abnormality causes some individuals who possess that personality trait. No type of force is needed to uphold social norms, but such a phenomena can be explained by conscious decision (Tomasello, 2009). The concept that authority requires force to be upheld is not necessary under the familiarity thesis, as emotional connections would allow for an individual to act in deference to the authority figure for the benefit of the self, the authority figure, and the entire group. Despite researchers considering in-group preferences in apes' behaviors, remarkable in that they are dissimilar to humans', an ape's preferential treatment toward their own clan and those in authority over them is in no way exceptional in comparison to the human species, although the concept of in-group might differ significantly between a human and an ape. While an ape's in-group is limited to their clan unit, a human possesses the capacity to choose for itself an in-group. At present empathy research does not attempt to show the linkage, if any, between affection/emotion and empathic response.

1.3 Altruism And Egoism

Empathy is the automatic response by the neurons which mirror behavior to observing the other experience an emotion, along with the cognitive recognition that the emotion belongs to the other (Decety & Jackson, 2006). The resulting behavior is explained by one of two opposing camps: egoism and altruism. Egoists theoretically act with only their own benefit in mind, while altruists act with the benefit of the other in mind.

It seems quite clear that an in-depth knowledge of those in one's immediate vicinity would be tremendously advantageous, particularly in consideration that avoiding others' anger and causing them pleasure to gain personal ends is a large part of the egoism hypothesis. Even when looking at the arguments of the egoist proponents, a pluralism of egoist motivations are listed as explanations for human behavior. For example, one study considers both donating money, privately and publicly, and not donating money to be self serving (Bénabou & Tirole, 2006). The act of donating or not donating can be explained as egoist based on differential social perceptions and pressures – if donating money might make someone think you're full of yourself, for example, the egoist would avoid the act. Similarly if the act of donation caused someone to respect the donator, the egoist would be motivated by this. The key is what sort of society an individual is in, what sort of individuals are observing that individual; the perceptions of others are what drive egoist actions in an individual. This is far from being a simple self-serving action; it seems that a good deal of personal knowledge of surrounding individuals would be required to be truly egoist, as well as a good bit of forethought. It would seem that it would be far more beneficial to rely on knowledge and not analogical inference to increase fitness or respectability or other egoistic motive. The familiarity thesis is optimal for both selfless and selfish motivations.

Motivated by the complexity of the arguments on either side, such as the at times self-contradicting egoist explanation of monetary donations mentioned above, Elliott (1991) proposes that in lieu of the altruist – egoist dichotomy, the motives to act upon the empathic response should be considered more of a scale of partial altruist and partial egoist motivations. Evolutionarily speaking, while a pure egoist would seem to gain the most advantage by being able to manipulate the non egoists, the environment does not allow for egoists to propagate on a large scale due to the simple fact that if egoism were to be selected for in a population, at some point in time the entire population would be egoist, which would nullify the advantage (Bshary & Grutter, 2002). Egoism, or selfishness, is therefore a self-checking phenomenon on an evolutionary scale. To attempt to explain all actions by selfishness is to contend that any benefit from being selfish is nonexistent. With prosocial behaviors as well as other “cheating” behaviors that give some fitness advantage, a range of behaviors is selected for in individuals on a group scale. A similar argument applies to altruism, as egoists are needed to allow altruists to act selflessly. The idea of a non-dichotomy is supported both conceptually and when looking at the data for other cheating behaviors observed in animal populations. Looking at this from the perspective of the familiarity thesis, altruistic acts would be applicable in situations with high emotional connection, and egoist acts when an individual has no emotional connection to the other. This would explain “true egoism”: an individual would act nearly solely egoistically if they lacked the ability to form emotional connections, or only formed negative emotional connections.

The tendency for variation in a population of any given trait leads one to the natural conclusion that any trait will have variation within a population. As an example of such a variation, some individuals have difficulty with the self-other distinction on a neurological level

(Decety & Jackson, 2006), which is an essential component for the empathic response. This causes them to perceive other people's states of mind as their own neurologically, such that they do not know why they are feeling emotions that are inappropriate to their situations, because they lack the architecture necessary to recognize the emotion belongs to the other. In circumstances like this, it is difficult to see how acting upon the empathic response for these individuals is either egoist or altruist, since they themselves may not be aware of why they feel what they feel, which would make deliberate conscious decision difficult if not impossible. This would explain what appears to be “true altruism” – those who lack the ability to choose to act either for themselves or for others, due to a neurological inability to distinguish self from other in the empathetic response, which would cause undue anxiety and stress (Decety & Jackson, 2006). Seeing someone else suffer would feel like their self was suffering, and they would act to relieve this suffering every time, if they weren't completely prevented from acting by the overwhelming emotions.

1.4 Other Problems

A further issue with the analogical inference is it would require a definite concept of self such that they could compare others' selves to themselves, which seems excessive to assume that the majority of the population has. Data show that those who cannot feel empathy are a minority, and this is not due to any apparent lack of concept of self. A lack of empathic ability, such as is the case with sociopaths, here used to refer to those who lack all empathic ability, could be explained cognitively by a simple lack of affection for individuals that a sociopath is presented with in life, or a lack of desire to understand another beyond the most basic components.

In regards to the connection between empathy-altruism theory and morality, Stueber (2013) notes that an individual empathizing with another will most likely cause them to ignore common moral code in preference for that individual. One example Stueber gives is if medical treatment is in question, an individual would prefer that someone they empathize with be treated, and not necessarily make that decision based on morals or necessity. This combined with the evidence for an incompatibility of emotional and empathetic neurological processing and that of logical processing in the human mind points to a correlation between emotion and the strength of the empathic response (Jack, Dawsom, Begany, Leckie, Barry, Ciccio & Snyder, 2013). This also supports the idea that emotions like affection would lead an individual to an increase in empathic ability. This is illustrated quite well in the case of the Singaporean blogger 'Xiaxue', who proclaimed to the world that she would rather have a son who is a rapist, taking advantage of others, than a daughter who was taken advantage of (Xiaxue). Her empathic response for her child was so strong due to the high level of emotional attachment that any morality or social acceptability was foregone.

CHAPTER 2. Humans

The importance of empathy is found in its central role - increasing prosocial behavior in a species. Empathy is generally agreed upon to be the act of experiencing another's emotion (Decety & Jackson, 2006). The debate lies in whether individuals, acting on their experience of empathy, do so egoistically or altruistically; this might be explained by what evolutionary pressure selected for the capacity to feel empathy. If empathy is selected for ultimately, then the evolution of empathy is constrained to beneficial situations that would result in an increased level of fitness for the individuals involved. On the other hand, if empathy is selected for proximately, then sociality becomes paramount, as both egoist and altruist positions require comprehension and consideration of social norm and pressure. A concept of empathy need not necessarily be constrained to a particular human neurological structure, but the consequences of social evolution can be considered as the cause for access to the abstract ideas involved in the empathetic response. Given the error associated with analogical inference, it does not seem to be the best explanation for either increase in fitness, or increased prosociality. Familiarity, since it is based upon knowledge of the other, which minimizes errors occurring with analogical inference, would account for both fitness increases or prosocial abilities resultant from empathic ability.

2.1 Prosociality and Empathy

Prosociality, defined here as cooperation within a species, can be measured and correlated with traits on an individual basis. Among the traits contributing positively to prosociality is the empathic ability of individuals (Capara, Alessandri, & Eisenberg, 2012; Davis, 1983). Empathy has been shown to correlate with social functioning (Davis, 1983; Capara, Alessandri, &

Eisenberg, 2012) and the costs associated with empathy are lessened with increasing social support systems (Schieman & Turner, 2001). There are multiple levels of evolutionary explanations for prosocial behaviors. The ultimate explanation for prosocial behavior is that of evolutionary fitness benefit to the individuals or to the groups involved, depending on the level of selection in consideration. The proximate explanations discuss immediate motivation for action at the level of the individual. In the case of the former, prosocial behavior would occur because of the fitness benefit, and in the case of the latter, fitness benefit would occur because of prosociality. Traditionally proximate motivations for acting on empathy are either egoism or altruism. Proximate motivations are the only motivations that can be empirically examined with reliability, and are the only motivations that can be rejected with any certainty (De Waal, Leimgruber, & Greenberg, 2008). Akçay, Van Cleve, Feldman, and Roughgarden (2009) questioned the traditional ultimate explanation of the evolution of prosocial behavior, or prosociality as an adaptation to increase fitness on a group or individual level, such as kin selection. They show that the evolution of motivation to help others can evolve with cooperation between behavior and social objectives. They show that the various benefits from prosocial behaviors are themselves enough to increase fitness and effect evolution positively, without the need for negative evolutionary explanations, such as kin selection. These benefits, by increasing fitness, result in an association between genetics and prosociality, which in turn explains the evolution of cooperation (Akçay et al, 2009). Most phenomena can be explained by both proximate and ultimate evolutionary causation. Ultimate evolutionary pressures require that there be some fitness effects, whereas proximate requires that there be physiological repercussions from the behaviors. Since the empathic response involves both, it would be difficult to empirically disprove one or the other.

2.2 The Self and The Other

For the practical purpose of experimentation, altruists are required to have high empathy when they have the easy option to avoid helping, but not if the avoidance is difficult (Hoffman, 1991). This is to control for possible complications from personal distress, which may cause an individual to egotistically act to help the other, in an effort to ease their own distress. Furthermore, altruists should not care to see if the subject in question benefits from their actions (Elliott, 1991). Exactly why such cases are always altruistic is not clearly explained by experimenters. Because of these problems, the ideas of pure altruism and pure egoism have been put into question, both theoretically and experimentally. Although many experiments cling to a more traditional dichotomous high-low empathy measurement, alternatives have been proposed. Motivations for action due to empathy have been measured on a more varied scale, going from pure egoist to moderate egoist, moderate altruist, and pure altruist (Elliott, 1991). This is to reflect a pluralism of motives in the actors, while still maintaining a high-low egoist-altruist preference. When participants in an experiment are allowed to go beyond the dichotomy, their motives are more clearly understood, and the results are not as convoluted.

There are two explanations for the cognitive processing involved in empathy: bottom-up or top-down (Decety & Jackson, 2006). Top-down processing is the cognitive thought experiment of the observer taking the observee's situation and imagining the emotions he is feeling which triggers the neurological experience of the same emotions in the observer. Bottom-up processing is the awareness of the emotional state of the other due to the awareness of one's own differential emotional state. Ultimately, the difference between these two is small, as there is a neurological component to differentiation between the self and the other, such that the

human mind can be observed to be cognitively making the distinction (Ruby & Decety, 2004). Due to its cognitive nature, empathy has been proposed as the practical application of theory of mind, allowing individuals to mentally place themselves in another's position, and from there infer the behavioral and emotional states that might ensue (Goldman, 1992). Empathy as theory of mind would have empathy be primarily a top-down process, regulated by conscious cognitive processes, as opposed to shared emotions triggered by observation (Southard, 1918).

The neurological response of mimicking what an observer perceives to be another's emotion contributes highly to empathic ability (Decety & Jackson, 2006). With increasing physiological similarity the observer becomes more accurate in his estimation of the other's emotional state. Observing an emotion and expressing that emotion cause the same areas of the brain to become active. The high degree of neurological similarity between an individual's expressing an emotion and observing an emotion has been well documented (Decety & Jackson, 2006). Since these distinct experiences share such a similar mechanism, the self-other differentiation is necessary for function.

While observing painful images, and imagining either the self or the other in that situation, the imagination involving the self activated areas of the brain involved in the experience of pain (Jackson, Brunet, Meltzoff, & Decety, 2006). Without the self-other distinction, observation of another's emotional state would cause emotional overload, due to experiencing the emotions of two people (Decety & Jackson, 2006). The self-other differentiation aids in decreasing the cost of empathy, namely personal distress, by regulating the several emotions to their proper origins.

2.3 Evidence in Humans

The ability to recognize emotions in others is due to neurological architectures that automatically reproduce that emotion within the self. Mirror neurons create in the observing individuals mind the same emotion that the observee is feeling, allowing awareness of the emotional state of the other due to the awareness of one's own differential emotional state (Decety & Jackson, 2006). Mirror neurons are thought to be evolved for the purpose of increased accuracy in imitating actions (Heyes, 2009). The number and accuracy of mirror neurons is due to the level of imitation in any individual. For example, a pianist has more mirror neuron activation than a non-pianist, due to their high level of imitation caused by learning piano. This also applies to dance students; and seems to be directly related to the idea of familiarity. High familiarity with a sport or instrument, by instruction of another, leads to an increased number of mirror neurons and consequently an increased level of activation and accuracy with continued observation of that sport or instrument, as compared with those who have no familiarity or less familiarity with that action set. Similarly, familiarity with an individual would allow for an increased level of activation of neurological imitation of that individual's physical states. This also lends more credence to the proximate level of causation of empathy, due to the importance of mirror neurons in the empathetic response. The level of accuracy of this imitation of the physical indicators of emotion in the other is directly correlated to physiological similarities, with some further variation due to individual neurological differences (Drubach, 2008; Decety & Jackson, 2006).

The amygdala is heavily utilized in the processing of emotions. The neural activity of a group of rats was observed after each rat in the group was reunited with a corresponding rat who had received shocks. The non-shock rat was observed to carefully inspect the shocked rat. Its amygdala was then observed to be at the same level of activity as the shocked rat, and in some

areas with even higher activation levels (Knapska et al, 2006). The between-rat communication of a negative experience evoked a neurological experience in the other rat, such that it was as or more emotionally aroused than the communicator. Even though humans are largely unaware of rat methods of communication, whatever level of communication they possess allowed the experience of a strong empathetic response. Interestingly, this experiment was done with rats which belonged to the same in-group, a control that is largely lacking in human studies.

In humans a somewhat similar study was done, wherein brain activity was monitored whilst a subject was given a shock, and then observed a loved one receiving a shock (Singer, Seymour, O'Doherty, Kaube, Dolan & Firth, 2004). The data showed that of the areas monitored, the area responsible for the self-other differentiation was activated, but not those responsible for feeling physical pain. Thus the empathetic response in this instance was seen to be abstract, with the emotional aspect of the experience of pain as well as the self-other mechanism being active. This is significant, as normally when an individual thinks of an action occurring, such as holding a hammer, the areas of the brain involved in hammer holding, as well as abstract information about 'hammer', are activated (Desai, Binder, Conant, & Seidenberg, 2010). While feeling empathy, however, these areas remain unactivated due to the self-other differentiation mechanism (Singer et al, 2004). In this study two relatives were chosen for each pair, a control which exists in neurological empathy studies but not the psychological studies with humans that have been cited previously. Although the authors do not specify their reasons for using relatives, the presence of such an unspoken control seems interesting in regard to the familiarity thesis. The neurological accuracy between two relatives may be contrasted with the inaccuracy of nonrelatives relying solely on analogical inference; although without direct testing

of each condition it is impossible to show that the familiarity mechanism is more accurate than analogical inference.

One of the methods of measuring empathy is an experimental technique that relates two subjects' responses to a hypothetical situation against each other (Hobart & Fahlberg, 1965). The measure of the empathy between the two subjects is obtained by the number of correct predictions of the other's responses. The baseline is calculated by computing the number of similar and dissimilar responses between the two subjects, without the prediction condition. Issues with this technique include subjects imagining similarities or dissimilarities between themselves and the other, which make for much lower correct predictions of the other's response. This study illustrates the issues with analogical inference, as when subjects are forced to rely upon analogical inference, they have empathetic error.

One of the problems with the classic experimental definition of 'high empathy' is shown in the Batson experiment (Hoffman, 1991). While high empathy subjects are expected to have high rates of helping behavior when presented with the option of taking the other's place to take electric shocks, or having to watch them take the shocks, but escaping unscathed. The data actually showed that 'low empathy' experimental subjects chose to take the place of the other at a high rate, even higher than that of those judged to have high empathy (Hoffman, 1991). The fact that this behavior was then classified as 'egoistic' shows that some bias may be present in the measurement and judgment of empathy levels. Since these 'egoists' are acting with a view of relieving another's pain in a direct manner, the consequential effect of any personal distress of their own being relieved should not be viewed as a completely self serving motivation for action (Ibid.). This study illustrates the issues with personal concepts of egoism and altruism, and the personal bias which exists in this dichotomy, leading to experimental error and especially

convoluted explanations of what “egoist” and “altruist” really mean, such that egoists sometimes act altruistically.

The dichotomy of egoist - altruist often affects experiments negatively by creating an experimenter desire to see a dichotomy where one may or may not exist. Kenrick (1991) notes that data on empathic abilities of individuals may be skewed by studies asking subjects to feel empathy for unrelated individuals in a short amount of time within the context of scenarios lacking emotion. The broad assumption that prosocial and empathetic behaviors are egoistically motivated has caused researchers to neglect other possible explanations for these phenomena. An experiment designed to test the social benefits of what is seemingly altruism, and the effects of these social benefits (Bénabou & Tirole, 2006), uses as its test monetary contribution, which is not a measure of empathy by any definition. In an attempt to resolve some of the issues encountered with initial perceptions of empathic motivations, a gradual empathic scale was proposed (Elliott, 1991). This begins to move away from the dichotomy, as well as allowing for simpler answers to somewhat paradoxical objections put forth by competing egoist and altruist schools of thought (Hoffman, 1991).

2.4 Empathy as Motivation

One implication of empathy’s correlation with prosocial behavior is the application of self-perception theory (Capara, Alessandri, & Eisenberg, 2012). Self –perception theory is the idea that behavior patterns stem partially from self-observation and the consequent cognitive conception of oneself due to this observation. Individuals with prosocial tendencies might have these tendencies grounded in self-observation of their own prosocial behavior, contributing further to empathy as theory of mind: when presented with a hypothetical situation, individuals

high in empathy may imagine their past selves and, seeing their prosociality, infer that their future selves will act in a similar fashion. Opposed to the egoist, who will evaluate each situation for its costs and benefits, individuals high in empathy assume a baseline of prosocial behaviors, without evaluation of the situation itself. This is supported by a multitude of evidence in favor of prosocial individuals showing higher empathetic baselines (Capara, Alessandri, & Eisenberg, 2012).

The path from the empathetic response to helping behavior, or lack thereof, is rife with potential selfish motivations for action (Archer, 1991; Bénabou & Tirole, 2006), including a desire to decrease personal distress upon seeing another experiencing negative emotions, due to the neurological components automatically reproducing the emotion in the observer; attain a more desirable social status and avoid censure, due to others' observation of an individual's personal helping behaviors, which may involve doing a deed in public or in private, depending upon the social norms, and gain a good feeling from having done a good deed. Yet another attempt to simplify the difference between altruistic and egoist helping behaviors is the definition of their respective motives for action. The altruistic motive for action is strictly the welfare of others, while the egoist motive is the welfare of the self (Batson & Shaw, 1991). Much in line with the critiques made of the study of empathy, these concepts were motivated by the idea that an altruistic act should be detrimental to the actor in some way (Batson & Shaw, 1991). In experiments, with the dichotomy of high-low empathy, a subject is then given the choice between an extremely high cost altruistic action or zero cost egoist action. This type of presentation skews data in favor of egoism, as it not only makes altruism very costly to the actor, but requires that the actor benefit in no way whatsoever. Even having satisfaction is forbidden as an egoist motivation (Batson & Shaw, 1991; Bénabou & Tirole, 2006). Not only are experiments

assuming analogical inference as mechanism for empathy, but they often commit an additional error of a strict dichotomy of altruism and egoism. These assumptions cause various inconsistencies in the data, such as predetermined “egoists” performing more altruistically than “altruists”, or individuals misdiagnosing similarity and dissimilarity (Hoffman, 1991; Hobart & Fahlberg, 1965).

2.5 Conclusion

While no research has been done to directly test any link between familiarity between two individuals, levels of empathy and accuracy, some data mentioned in this chapter is relevant to that question. Singer et al (2004) performed their experiments on the neurological components of the self-other distinction in the empathetic response between two individuals who had a familial relationship. Hobart and Fahlberg’s experiment (1965) measured empathy between two strangers by the number of accurate readings of another’s state of mind by the experimental individuals. They noted that false senses of similarity and dissimilarity were the cause for many wrong answers on the part of the experimental individuals. This implies that previous knowledge of the other would negate such errors and give way to increased empathetic accuracy and access to their state of mind. Kenrick (1991) more directly addresses this question by noting that many empathy experiments ask the individual to feel empathy for unrelated individuals, in unemotional contexts, implying that relatedness and emotion both increase empathetic response.

Considering that the idea of a non dichotomous motivation for action is fairly new in empathy research, and that empathy research in general is considered a waste of time due to cultural perceptions of the concept of empathy, it isn’t surprising that rigorous study hasn’t been done concerning the effects of empathy as related to knowledge and affection.

CHAPTER 3. Primates

When considering whether a quality present in humans is also present in animals, the danger of anthropomorphism arises. Anthropomorphism places human cognition and existential experience as the reference point for all other existences (Zięba, web). Epistemological anthropocentrism sets knowledge of the human self as the prerequisite for understanding the external world. Ontological anthropomorphism focuses on man as the object of philosophical knowledge. To answer the question of empathy in primates, non-human primates require the ability to differentiate between the self and the other. In the search for the answer to whether or not non-human primates possess this ability, anthropomorphism must be avoided.

3.1 Theory of Mind and Anthropomorphism

The complex social structure of primates attracts researchers to study primatology (Rees, 2001). This, along with morphic similarity to humans, lends itself to anthropomorphic interpretations of primate behaviors. Although it is popularly assumed that primate and human similarities are homologous, or similarities passed along the genetic line, they may in fact be analogous, separately evolved for their functionality. In regards to empathy specifically, for social animals to refrain from displays of empathy would most likely result in extinction, as the ability of an individual to imagine himself in the place of another individual is imperative for social function (Dare, Rowe, Olson & Murdy, 1975; Roberts & Strayer, 1996). The evolutionary requirement for the development of empathetic skills is complex sociality, whether it be in an analogous or homologous manner to humans.

In discussing animal consciousness, there are two popular concerns: similarity and dissimilarity in relation to humans (Allen, web). The former focuses on the similarities between

humans and non-humans, and gives these as reasons to assume consciousness. This is somewhat related to the theory of mind, in that self-awareness is assumed due to perceived similarities. Dissimilarity is an argument against animal consciousness that focuses on the differences between humans and animals, such as humans' singular possession of a complex linguistic system (Rees, 2001; Pennisi, 1999). Both of these arguments echo the analogy/homology arguments of evolutionary biology. The idea that complex behavior doesn't require complex thought is also brought up as an objection, but what is complex in humans may be simple in primates, and vice versa (Pennisi, 1999). The overwhelming issue here is the tendency to try to relate non-human minds back to humans, and judge them according to human measurements (Rees, 2001). Apes are constantly judged for their poor ability to learn human language, when consideration should be given to the fact that language has evolved in humans for some time, and a separate, complex communication system has evolved in apes (Zuberbuhler, 2005).

The idea that a human system might exist in non-human populations is considered a biased, anthropomorphic notion. The resulting fear of marking a behavior as having purpose like an equivalent human behavior is perhaps the cause of more error than the assumption that anthropocentrism does not occur. Considering that traditionally humans were considered to be absolutely separate from non-humans, sticking to the idea that perceiving any human behaviors in non-humans is anthropomorphism is the continuation of that anthropomorphic mentality. The theory of evolution requires common biological needs and mechanisms that come together to result in the increased or decreased fitness of an individual. To assume that seeing any similarity between humans and non-humans is some kind of essential error is thinking which existed before the acceptance of the theory of evolution, which did not take into account similarities between organisms which had high levels of phylogenetic relatedness. Although each species has

particular methods of increasing survivability, these methods are different ways of meeting what is agreed to be the common biological needs of all organisms. Empathy seems to be important in increasing prosociality in populations of humans, and so it might be reasonable to expect such a prosocial mechanism to show itself in other social populations.

One of the arguments for the maintenance of a strict division between humans and non-human primates is the evidence for consciousness in other primates. Self-awareness is one important aspect of consciousness. This was initially tested in primates as individuals, mimicking what would be human tests of the same nature. When exposing primates to a mirror, it appeared that the primate could understand that it was a reflection of itself (de Waal, Dindo, Freeman & Hall, 2005). The researchers went so far as to say that the primate was able to understand that it was both other and self concurrently. Even so, it was recognized that examining the individual primate in relation to its social structure was the best way to avoid anthropomorphism, as social function would be the primate's evolutionary 'purpose', and the environment with which it had the most experience. Primates show a definite sense of social consciousness, which some may argue to be even more complex a concept than that of individual consciousness (Rees, 2001).

Empathy is another ability of conscious beings: the ability to imagine the cognitive state of another, whether that be their physical experiences or mental thoughts. When put into a situation wherein a primate has to imagine the mental state of a human, it is incapable of doing so; however, in a similar situation with another primate, it succeeds (Pennisi, 1999). In the human condition, primates were unable to understand that a human was blindfolded or whether or not he could see a piece of food; with the primate condition, primates were able to take the other's point of view. This set of experiments shows that the human fear of anthropomorphic thought hindered the proper design of an experiment to discover a traditionally exclusively

human trait in non-humans. It also implies that the ability of one species to accurately access the mental state of another species may not be evolutionarily selected for, either in humans or in non-human primates. However it has been demonstrated that dogs imitate human behavior at a rate higher than chance, which may be caused by mirror neurons capable of mimicking human behavior (Harr, Gilbert & Phillips, 2009). Considering the history of humans and the breeding of domesticated dogs, this capability might be reasonably selected for in dog populations. Despite humans' phylogenetic closeness to apes, the ability to access primate mental states and vice versa would rarely be required, particularly when geographic distribution of both species is considered.

3.2 Evolution of Empathy

The assumption that primates are stunted versions of us, or indeed assuming anything, undoubtedly limits the extent to which their behavior and motivations are understood (Povinelli, 2004). A better way to think of animal consciousness, or lack thereof, is to question what sort of concepts or mental abilities might be available to a species, based on their evolutionary usefulness. Empathy presents a large benefit to social animals, and the ability to empathize would make a social animal superior evolutionarily speaking to another member of its species that could not. Empathy requires a cognitive self-other distinction to be made. If a species is capable of empathy, then they are also capable of the concept of the thoughts of another.

Some grant that primates have significant mental capabilities, but question their ability to have anything like a human consciousness. However, the fact that we evolved not that long ago from primates implies that the secret to human consciousness lies somewhere in the primate mind, whether they do or do not have it. Many contend that the secret to consciousness lies in language, as complex language is something only humans appear to possess. The idea that

animals act on “instinct” alone, and are unable to vary their responses due to lack of consciousness is referred to as perseverance (Pennisi, 1999). Two year olds are of approximately the same level of ‘instinct’ that primates are, despite the fact that their acquisition of language is superior to a primate. Studies have also shown that the ability to vary behavioral responses in primates is superior to human infants, which further implies that the secret to consciousness does not lie in language acquisition (Pennisi, 1999). Complex language on the level of our own does not seem to be obviously necessary for reasonable thought. Evidence suggests that primates have some basic cognitive capabilities without the complex language structures that humans have (Zuberbühler, 2005).

The evolution of prosocial behaviors and brain size occurred concurrently (Dunbar & Shultz, 2007; Barrett & Henzi, 2005). With increasing sociality comes increasing competition, both for food and for reproduction. This leads to a ‘cognitive arms race’, with members of a society feeling the need to deceive, the need to comfort others and ease tensions. Primate cognition was driven by social competition, including humans (Moll & Tomasello, 2007). With sociality becoming increasingly complex alongside of cognitive abilities, it can be assumed that empathetic abilities also improved over time, as a cognitive function to increase prosocial abilities.

Mirror neurons are considered to be responsible for the ability to understand the actions of others (Ferrari, Bonnini & Fogassi, 2009; Gallese, 2003). There are two explanations for the mechanism of action of mirror neurons: direct and indirect. The direct pathway would directly influence motor outputs, essentially making imitation of an observed action automatic in the observer. The indirect pathway would allow for the imitation of more complex behaviors, allowing for ‘true imitation’ (Ferrari, Bonnini & Fogassi, 2009). The lowest cognition

explanation for the ability of primates to experience the empathetic response would be the direct pathway, with the indirect pathway requiring cognitive awareness. However, it is far more likely that both pathways exist concurrently, with simple imitations being controlled by the direct pathway, complex imitation by the indirect pathway, and interactions between the two (Ibid.) Both non-human primates and humans have complex mirror neuron systems, whose function is to aid in accurate imitation of observed actions, and consequently empathy.

Evolution does not create perfect beings, but rather beings best suited to their environment. How to experimentally determine non-human consciousness is made difficult by the possibility of anthropocentric qualities being present in any experimental condition, due to the difficulty of a human to think of what sort of conceptual problems might occur to a non-human, and in what forms they might be best suited to solve these problems. The solutions and methods could very well differ greatly from a human's, without requiring a brain considered underdeveloped in relation to humans.

3.3 Empathy in Non-Human Primates

In-group biases are very strong in primate social interactions (Silk, 2009). Prosocial experiments with chimpanzees performed by De Waal, Leimgruber, and Greenberg (2008) found that chimp choice of the prosocial option was strongly dependent on the social relationship to the second chimp in the experiment manipulations, which they conclude to be evidence for egoist motivations, such as fear of consequence. A similar experiment and conclusion was drawn when a primate, after it had been attacked, was observed to be comforted by friends, as opposed to friends of the attacker (Romero & De Waal, 2010). This was found again in Faser, Stahl, and Aureli's experiments (2008). Chimpanzees were observed to offer consolation to chimpanzees

who had received aggression. The consolers were often individuals who held the chimpanzee who had received aggression high in value. The rate of consolation was increased if the chimpanzee who had received aggression did not reconcile with the aggressor.

Batson and Shaw (1991) insist this inclination to keep empathy within the in group is not shocking, and the manner in which psychologists go about testing proximate mechanisms for empathy is often flawed. Among the critiques of empathy experimentation is the assumption that empathy must be high in cost (Batson and Shaw, 1991), when in fact the definition of empathy, whether considered separately to be an instinctive emotional response or a cognitive process or both, does not require any action to follow. That genetic relationship and prosociality are correlated should be no surprise, as personal contact forms stronger emotional bonds than do the cognitive generalizations required for the experience of empathy in an individual outside the social circle (Batson and Shaw, 1991). The evolutionary theory of kin selection says that altruistic behavior by an individual will strongly favor the individual's relatives (Silk, 2009). There are other mechanisms which may explain this strong preference found in primates, among them contingent reciprocity and mutualism. There are multiple explanations for individuals acting more frequently upon the empathetic response when it is a relative or close friend in question. It comes into question due to the projection of anthropomorphic feelings of helping behavior only being 'good' if it helps everyone.

It would be difficult to say whether primates experience empathy and display nepotism due to familiarity with their in-group or to gain fitness through the survival of their relatives. The literature describes primate in-group tendencies as "nepotistic", doubtless due to the clan unit nature of the primate social system. Primate studies tend to put focus on the fitness aspect of prosociality, such as kin selection benefits, in addition to seeking to find explanation for

behavioral patterns without considering primate sociality (Akçay, Van Cleve, Feldman, & Roughgarden, 2009). Seeking to avoid anthropomorphism by attempting to explain phenomena without recourse to the attribution of complex behaviors to non-humans errs in the opposite direction. The clan unit of primates could not possibly be solely composed of relatives, due to essential evolutionary mechanisms to avoid in-breeding. The clan must of necessity include non-relatives, making in-group tendencies in primates just that. Observation of a primate showing empathy for another primate, or deferring to the primate leader of the group, can't be explained by kin selection totally, since it would be bizarre that a group of the level of sociality of primates be composed totally of relatives. A high percentage of relatives is to be expected, due to the collective migration of related females or related males to another social group; however primate empathy experiments do not control for levels of relatedness, nor is the level of relatedness established prior to experimentation. The only controls established are those of authority.

Many female primates do not form pair bonds with the father of their offspring, which supports the kin selection explanation, since it can be argued that the offspring/fathers would prefer to err in expressing empathy for each other, rather than allow their relative to be put at a disadvantage. However, primate social groups employ many mechanisms which increase prosociality, such as collective rearing of the young and same sex long term pair bonding (Riedman, 1982; Bailey & Zuk, 2009). The highly prosocial quality of many primate groups might lend more credence to the explanation of empathy as a prosocial mechanism, rather than due to kin selection. The quality of empathy observed in humans is also better explained by prosocial motivations rather than kin selection. Since we most likely have evolved a more sophisticated type of empathetic response from our primate ancestors, it would be reasonable to expect the evolutionary motivations for empathy to remain constant over the evolutionary period.

Using such retroactive analysis, then, empathy seems to be better explained by prosocial, proximate explanations rather than ultimate causes. But like most phenomena, neither one nor the other can be absolutely proven to be false; in the case of empathy, the distinction is necessary to know whether questions of egoism and altruism are even necessary; under an ultimate cause such as kin selection, they would be nonexistent.

It is worth mentioning at this point that the evidence for mirror neurons as learning and imitation mechanisms is well documented (Heyes, 2009). Since primates have a clearly defined neurological system for physical imitation of others, a system which is also involved in the empathetic response, it further supports the concept that humans have empathic abilities through the evolution from primate capabilities. Human mirror neuron capability is far more advanced than primate (Ibid.), with mirror neurons being used far more frequently, such as all throughout the childhood learning process. By extension then, human empathic ability may be assumed to be more advanced and more inclusive than a primate's, considering the mirror neuron's central role in the empathic response. The ability of a human to identify for themselves their own in-group, such as non-family and even to exclude family, evidences this extended empathic ability.

3.4 Conclusion

When considering the possibility of empathic abilities in primates, human capabilities are reverse-engineered to see what might be a reasonable evolutionary adaptation from our phylogenetic ancestors to present day humans. Human empathic capability is often considered to be based upon analogical inference; that is, the neurological and cognitive components of empathy are activated when humans observe similarities. Considering mirror neurons' basic functions, it doesn't seem unreasonable that similarity be a

component of empathy. When observing non-human primates, the evidence for analogical inference is slim to none and all empathy is directed toward the in-group. Based on this, what reason is there to think that primates have any empathic ability, beyond fitness increasing kin selection processes? If primates showed empathy to their kin only, then kin recognition is the only process needed to explain the behaviors. However, kin dispersal combined with power structures within the group imply otherwise.

Mirror neurons aren't merely mechanisms for imitation; they are also involved in learning to imitate. How imitation in learning a skill involved analogical inference isn't clear, aside from the basic imitation process. Empathy can be explained by mechanisms other than analogy, such as the familiarity thesis, wherein one is driven to empathize with something else when one has knowledge of and affection for that thing, just as increased imitation of something results in increased accuracy of the imitation. This mechanism would assume that our most fundamental empathic ability is concerned with individuals and objects that are closest to us and with which we are involved with daily.

Apes have often been observed to have high empathic ability, but only in terms of in-group bias, confined to their family and tribal units. While such empathic abilities might seem selfish in humans, with moralism potentially affecting our analysis as such, phenomena such as empathy for inanimate objects requires a reconsideration of the essential conception of empathy. With the familiarity theory, empathy would have evolved from pair bonding and in-group applications to increase prosociality and loyalty, eventually evolving to include those not genetically related, as is clearly evidenced in humans with empathy extending even to inanimate objects. The basic function of empathy would be to increase bonding within an in-group, as seen in non-human primates. In humans, this

ability is extended to include out-group, to the point of inclusion outside the species and even the concept of being alive, as in the case of empathy for artificial objects. The evolutionary advantage of the empathic response is found in its increase of prosociality between those experiencing it, guaranteeing future helping behaviors between the individuals involved; with the familiarity thesis, it would also allow for increased emotional attachment and familiarity between two individuals, which additionally increases prosociality. In the case of human-inanimate object empathic response, the utility of such an extended empathic ability, which is something that distinguishes the human empathic ability from the primates', would be to increase the emotional bond, and consequently a desire for information or familiarity with the inanimate object. This desire for increased information would be particularly useful in terms of survival, such as a high level of knowledge and consequently skill with a favorite weapon or gathering tool.

3.5 Future Research

At present, it would be impossible to settle upon familiarity as the actual mechanism for empathy, due to the lack of experimentation on this particular question. Hopefully in the future empathy research will involve more open questions, with a movement away from the strict egoist-altruist dichotomy, and experimentation to answer the question of relatedness and emotional attachment's effects upon empathy.

The familiarity thesis in essence states that the empathic response, emotional attachment, and knowledge of or familiarity with something are all tied together. In order to test this experimentally, a possible set up would be to vary the degrees of knowledge of an object or person, then test the level of empathy while keeping emotional attachment at a

constant level. Also, testing the level of emotional attachment, whether negative or positive, and the strength and accuracy of the empathic response. With inanimate objects, the strength of the empathic response would most likely be limited to sympathizing with an object. With other humans, the empathic response could also include identification of emotions. It would be very interesting to measure the accuracy of the empathic response with varying degrees of hatred of a person.

To test the strength of familiarity versus analogical inference, two related individuals' accuracy could be compared with the accuracy of two related individuals who had little knowledge of each other. Also two individuals with a high level of affection for each other, such as a couple or best friends, could be compared with two individuals who just got acquainted, and with two people who are not very close.

Another question involves individualist versus collectivist cultures. While in individualistic cultures the individual is defined by their own set of traits, in collectivistic cultures the individual defines themselves by the social norm (Aaker and Williams, 1998). The familiarity thesis would suggest that an individual in a collectivistic culture would select normal, average individuals to be in the in-group, while putting abnormal individuals into the out-group. An experiment to determine this would involve a small group of 5 individuals, with one outstanding, three average, and one sub-standard individual for some characteristic such as looks, financial status, intelligence, or method of dress. Although these characteristics are selected for heavily in collectivist society, more controllable characteristics might be sexual orientation, marital status, education, age, or sexual promiscuity. For a control, the participants would need to be sorted into superior, average, and inferior status for whatever quality is being tested for. The establishment of this would

involve a direct conversation about the quality in question. Familiarity thesis would predict that an individual would empathize the most with those who are of their own group, while presenting negative emotions and a lack of understanding towards those who are superior, and mere politeness to those who are inferior. This understanding of collectivism would assume that an individual would show politeness towards those in the out-group, to preserve group harmony, while internally excluding out-group individuals. The collectivistic concept of 'sub-test' analysis would be relevant to those who are in the in-group and superior to the participant, while no analysis would be necessary for the inferior individuals, since their usefulness is decreased by their inferiority, and with it the need to analyze the conversation. The language analysis performed would translate into empathic accuracy, with possible exception to the case of the superior individuals, since they would still be considered out-group.

Another interesting experiment involving different cultural views would involve participants who are individualist and some who are collectivist. The level of empathic accuracy could then be compared, whether the participants only saw each other (analogical inference), knew each other for a short time, or knew each other for an extended time. Collectivism is commonly thought to involve a higher level of empathic development, due to the demands of group compatibility, but this has not been proven (Aaker and Williams, 1998). As demonstrated in the previous experimental suggestion, what might be mistaken for high levels of empathic development might merely be the collectivist desire to keep the peace by being polite. To test this, the empathic abilities of coworkers for collectivists and individualists might be contrasted. A workplace environment would simulate the necessary conditions where peace-keeping would be of highest importance, but empathic accuracy

might not necessarily be fostered. Under the familiarity thesis, empathic accuracy would increase not only with familiarity itself, but also with an increased degree of personal knowledge of another, such that their expressions might be specially mapped neurologically. If coworkers are keeping their relationships to the minimum level to be polite, high degrees of accuracy would not be expected, such as would be the case with friends. If collectivist and individualist coworkers were found to be equally empathically accurate, then it would support the idea that collectivism does not result inherently in a higher level of empathic accuracy, but rather in general politeness.

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