

Collaborative Research

Understanding Empathy

One of the greatest problems of moral psychology, and perhaps one of the greatest problems in human history has been explored by many people in many disciplines: Why do normal people commit atrocities? Jean Decety, a leader in empathy research, addresses this question in the context of his work.

It is one of the greatest issues in moral psychology and one of the most unsettling questions about human nature: Why do normal people commit atrocities? Jean Decety, Irving B. Harris Professor of Psychology and Psychiatry at the University of Chicago, believes it is in part due to the failure of a biological imperative ingrained in human behavior, empathy.

Nazi Germany tenders many vivid examples of this failure. Decety is haunted by one image in particular, which he viewed twenty years ago on his first visit to the Yad-Vasem Holocaust Memorial in Jerusalem. In a photograph, a woman and her infant child have been stripped naked and summarily executed. Decety describes the scene as deeply moving, but also puzzling; most of the Schutzstaffel (SS) soldiers were not psychopaths, a clinical term for individuals who lack empathy.

“How can ordinary people, like those SS officers in Nazi Germany, turn off their empathy and shoot at a woman and her child – naked and defenseless? What is interesting and scary about this person, the Nazi soldier, is that he was like you and me. He was an ordinary person. I am fascinated and deeply troubled by how people could do these things for purely ideological reasons. I want to understand how.”

According to Decety, human empathy is determined by both biology and culture. It is both evolutionarily adapted and highly flexible. Though it has many definitions, most researchers view empathy as the ability to share and understand what another person

is thinking and feeling, and to respond with care to others in need.

“The concept of empathy is a psychological construct, so we can’t look at empathy and the brain as such – we have to break the concept of empathy down into its pieces and then look at how the components work together, and also at how each of these components can be modulated (inhibited or amplified) by racial bias, by ideology, by hatred or by love,” said Decety.

Understanding empathy— how it evolved, how it develops in children, what relationship it has with morality, why and how it breaks down in a number of neuropsychiatric disorders, which brain circuits it relies on, how hormones affect it, and how we can teach it – are all important components of Decety’s research.

Understanding Lack of Empathy

One way to understand empathy is to look at cases where it breaks down. To this end, Decety and his colleague Kent Kiehl, a professor of psychology at the Mind Institute of the University of New Mexico, are using a mobile MRI scanner to investigate incarcerated psychopaths in New Mexico prisons.

Psychopathy is a clinical term, defined by “a callous lack of regard for others. It is a disorder that involves two components: emotional dysfunction (reduced guilt, empathy, and attachment to significant others) and antisocial behavior,” explains Decety.

Though psychopathy is clinically well-documented, its neuropsychology remains



poorly understood. To improve this understanding, Decety, Kiehl, and Laurie Skelly, a University of Chicago graduate student, exposed the inmates to empathy-eliciting video clips while they were in an fMRI scanner. They found preliminary evidence correlating psychopathic traits with reduced activity in the anterior insula and greater activity in the ventral striatum. This latter region is critical for processing rewards. These findings support a similar study conducted at the University of Chicago by Decety, Kalina Michalska, a post-doctoral scholar, and Benjamin Lahey, a professor in the Department of Health Studies. The study found that youth with aggressive conduct disorder and psychopathic tendencies showed atypical patterns of brain response to empathy-eliciting stimuli. The investigators have interpreted this to mean that these youth enjoyed the pain of others, instead of seeing it as an aversive stimulus.

Disruptions in affective processing in the brain can undermine empathy in psychopaths, but social prejudice can also undermine empathy in typically developed individuals,

according to other studies. At the University of Chicago, Jean Decety, Joshua Correll, psychology professor, and Stephanie Echols, graduate student, have examined how social stereotypes can change our perceptions of the pain of others. In their study, they examined subject response (using combined behavioral and functional neuroimaging measures) to short video clips portraying: (1) a healthy individual similar to the participant, (2) an individual infected with AIDS as a result of a blood transfusion, and (3) an individual infected with AIDS as a result of intravenous drug use. The study showed that the more a participant blamed the individual in the clips for his or her condition, the less pain he or she attributed to them. Ultimately, the study suggested that the ability to feel the pain of others depends on assumptions about who they are: a drug addict or simply an unlucky person “like us.”

In another project recently funded by the United States-Israel Binational Science Foundation, Decety and Simone Shamay-Tsoory, a professor of psychology at the

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JEAN DECETY

FEATURED PUBLICATION FROM JEAN DECETY AND KALINA MICHALSKA



Decety, J. & Michalska, K.J. (2010). Neurodevelopmental changes in the circuits underlying empathy and sympathy from childhood to adulthood. *Developmental Science*. Epub ahead of print.

Empathy and sympathy play crucial roles in much of human social interaction and are necessary components for healthy coexistence. Sympathy is thought to be a proxy for motivating prosocial behavior and providing the affective and motivational base for moral development. The purpose of the present study was to use functional MRI to characterize developmental changes in brain activation in the neural circuits underpinning empathy and sympathy. Fifty-seven individuals, whose age ranged from 7 to 40 years old, were presented with short animated visual stimuli depicting painful and non-painful situations. These situations involved either a person whose pain was accidentally caused or a person whose pain was intentionally inflicted by another individual to elicit empathic (feeling as the other) or sympathetic (feeling concern for the other) emotions, respectively. Results demonstrate monotonic age-related changes in the amygdala, supplementary motor area, and posterior insula when participants were exposed to painful situations that were accidentally caused. When participants observed painful situations intentionally inflicted by another individual, age-related changes were detected in the dorsolateral prefrontal and ventromedial prefrontal cortex, with a gradual shift in that latter region from its medial to its lateral portion. This pattern of activation reflects a change from a visceral emotional response critical for the analysis of the affective significance of stimuli to a more evaluative function. Further, these data provide evidence for partially distinct neural mechanisms subserving empathy and sympathy, and demonstrate the usefulness of a developmental neurobiological approach to the new emerging area of moral neuroscience.

THE ABILITY TO FEEL THE PAIN OF OTHERS DEPENDS ON ASSUMPTIONS ABOUT WHO THEY ARE: A DRUG ADDICT OR SIMPLY AN UNLUCKY PERSON “LIKE US.”

University of Haifa in Israel, are studying reactions of Israeli-Jews and Israeli-Arabs to empathy-eliciting tasks. These experiments will address the roles of religion and race in empathy.

Neurodevelopment of Empathy

Decety and Michalska have also used fMRI scanning to understand developmental changes in brain activation related to empathy and moral reasoning. They scanned 57 individuals (aged 7 to 40 years old) while the participants were viewing painful and non-painful situations. Some of these situations showed a person being hurt by an accident, while others showed a person being hurt intentionally by another individual. While Decety and Michalska did not see any changes across different ages in the accidental category, they did see differences in brain activity when subjects viewed scenarios of intentional harm.

According to Decety and Michalska, the changes in the brain scans indicate that as people get older, they are better able to moderate visceral emotional responses (subserved by the amygdala and insula) to the pain of others, and simultaneously increase their ability to evaluate the context of these painful situations. This is associated with an increased activity in the ventromedial prefrontal cortex and is consistent with research suggesting that the affective component of empathy develops earlier than the cognitive component.

Decety and Michalska continue this research on the relationship between empathy and moral reasoning using a new series of video clips that depict intentional versus accidental harm to people, as well as damage to objects, and have recently scanned 121 participants, from 4 to 38 years of age. They look at changes

in brain response, gaze pattern, and pupil dilation, as well as at how severely participants think wrongdoers should be punished. They also examine the participants' ratings of wrongdoers' malevolent intent across different ages.

Animal Models of Empathy

The fact that humans are not alone in their capacity for empathy means that we can also look to other animals to develop experimental paradigms. With Peggy Mason, a professor and Chair of the University of Chicago's Committee on Neurobiology, Decety and his graduate student Inbal Bartal are investigating the neural and cognitive mechanisms underpinning empathy with animal models.

“While it is unlikely that non-human animals are aware of their feelings and emotions, most of the mechanisms that underlie empathy and concern are present, and are affected by various interpersonal factors (like in-group versus out-group distinctions) like humans. Therefore, animal models are critical because we can do interventions that cannot be done for obvious ethical reasons in humans. We can manipulate the physical and social environment, do genetics studies, make surgical lesions, and perform pharmacological interventions,” said Decety.

Overcoming Stereotypes of the Other

Despite the fact that a vast majority of people and many social animals, like bonobos and chimpanzees, have an ingrained sense of empathy, this function can break down in normal individuals when dealing with members of an out-group. According to Decety, the ability to “turn off” empathy in

certain situations likely evolved to help early humans preserve resources.

“Because of our evolutionary history, the implicit and non-conscious processes involved in empathy are biased toward in-group members, and it takes some effortful control, some education, and some nurturing to extend our empathy concerns towards out-group members. One efficient way to achieve this goal is not to think about the group as a whole, but to focus on one single individual and imagine that this person is like us,” explained Decety.

For Decety, George Orwell's autobiographical account of his experiences in the Spanish Civil War offers powerful insight into an individual's capacity to use empathy to undermine these in-group/out-group distinctions. In his account, Orwell tells a story about witnessing the humanity of an enemy soldier:

“At this moment a man, presumably carrying a message to an officer, jumped out of the trench and ran along the top of the parapet in full view. He was half-dressed and was holding up his trousers with both hands as he ran. I refrained from shooting at him. It is true that I am a poor shot and unlikely to hit a running man at a hundred yards... Still, I did not shoot partly because of that

detail about the trousers. I had come here to shoot at “Fascists,” but a man who is holding up his trousers isn't a “Fascist,” he is visibly a fellow-creature, similar to yourself, and you don't feel like shooting at him.”

Though researchers understand the neuropsychology of empathy better than ever before, they don't fully understand how gut affective responses are modulated by higher cognitive mechanisms, an ability that accounts for the complexity of human empathy expression.

How do we increase the amount of empathy in the world today? Despite its complexity, Decety has a concrete suggestion:

“Research shows that attachment security provides a foundation for prosocial behavior, empathic concern and care giving. One very simple way to foster empathy and sympathy is just to be good, caring parents.” ■

LEFT: Decety scanning at the Brain Research Imaging Center.

BELOW: A child undergoes fMRI scanning for a research study examining empathy and moral reasoning.



RECENT PUBLICATIONS FROM JEAN DECETY

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