NEURAL UNDERPINNINGS OF THE EMOTIONAL REGULATION OF ALTRUISTIC BEHAVIOR

*S. PRENDES[1], J. J. HSU[2], T. GUARDIA[1], Z. KETTLES[1], R. CACEDA[1]
[1]Psychiatry & Behavioral Sci., [2]Radiology, Univ. of Miami Miller Sch. of Med., Miami, FL

BACKGROUND: Behavior can be considered the ultimate marker of a person's morality. At the center of morality is the practice of disinterested and selfless concern for others that is considered altruism. These interactions are frequently found in several aspects of our daily lives. Altruistic behaviors can be influenced by expectations of further reciprocity and the development of reputation. Altruistic behaviors are also vulnerable to intense emotions such as anger and spite. We aim to understand the neural substrates of emotional regulation that modulate altruistic behavior by combining a monetary decision-making task (trust game) and functional magnetic resonance (fMRI) scanning. We hypothesize that: 1) baseline altruistic behavior will be influenced by previous emotional exchanges; and 2) this emotional regulation will be reflected in increased amygdala and ventral striatum activity, and in their connectivity with the anterior cingulate and dorsolateral prefrontal cortex.
METHODS: Thirty healthy 18-30 year-old individuals of both genders are characterized for impulsivity, moral development, depression and anxiety symptoms, and trauma history. Next, subjects undergo fMRI scanning while playing a modified version of the trust game. Each subject plays two versions of the trust game. In the first version, the subject has the role of the trustee. In the second version, the subject is exposed to fair and unfair experiences before playing as the trustee.
RESULTS: Preliminary results from four subjects show a trend to be less giving when they are subject to unfair experiences before playing the role of the trustee. We also found increased neural activation in the right orbitofrontal cortex when subjects decided to reciprocate their partner's trust. Reciprocating the partner's trust after previous fair treatment was associated with activation of the ventral striatum.
CONCLUSIONS: Altruistic behavior seems vulnerable to negative emotions. Altruistic behaviors (both disinterested and in response to prior fair treatment) seem to be associated with activation of the mesolimbic system. Completion of the study will allow for further interrogation of the neural substrates regulating altruistic behaviors, as well as personality and developmental correlates.