

NEURAL BASIS OF SOCIAL PERCEPTION OF A HUMAN VERSUS VIRTUAL HUMAN

Jessica Gayda¹, Andrea Tartaro², Zhang Li¹, Justine Cassell², Joan Y. Chiao^{1,3}

1. Department of Psychology, Northwestern University

2. Center for Technology and Social Behavior, Northwestern University

3. Institute for Neuroscience, Northwestern University

Are virtual humans socially understood as human? To investigate this question, we used functional magnetic resonance imaging (fMRI) to measure the neural correlates of perception and social evaluation of two types of agents: an Embodied Conversational Agent (ECA or virtual human) and a real human. Fourteen participants viewed static images of both the human and ECA, rated each image for emotional valence, and completed a post-scan survey on social impressions of the two agents. No significant differences were found in behavioral measures of rating or reaction time, although the real human was rated as more socially relatable in three dimensions. Viewing either kind of agent relative to rest elicited neural activity in a network of brain regions previously associated with social judgments, including left superior temporal sulcus and right fusiform gyrus. Viewing the ECA relative to human resulted in increased activation in superior temporal sulcus, anterior cingulate gyrus, left precuneus, right angular gyrus, and left inferior frontal gyrus, areas associated with social perception, attention, and cognitive control. The condition of human relative to ECA revealed no areas of significant activation. Interestingly, this finding stands in contrast to previous research which suggests passive viewing of humans but not virtual humans elicits greater neural activation in regions associated with social judgment and mentalizing. Our results suggest that while accurate social judgments can be made of either real humans or virtual humans, it appears the latter might require heightened cognitive processing, perhaps because of the novelty and unfamiliarity of virtual humans.