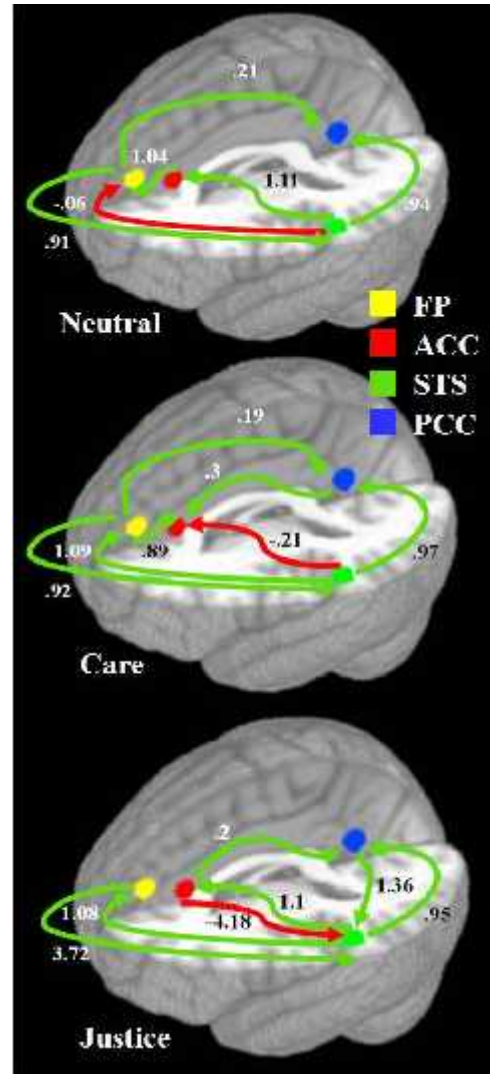# Human Neuroscience and Neural Processing

Neuroscience is the study of the nervous system, ranging from genetics to cellular biology to higher-order cognition. Our research focuses upon the human brain and its infinite complexities. We seek to understand how biological processes of the brain give rise to human cognition. We also study how challenges to the brain – such as physical trauma, mental illness, or drug addiction – impact human behavior and cognitive function.

Much of our research focuses upon identifying and characterizing functional brain networks. Individual brain regions often carry out numerous functions. We seek to identify networks of brain regions that act in concert to perform a behavior or cognitive task, and model how that network differs between tasks or between clinical populations. By analyzing global brain networks (instead of constraining our analysis to individual components of the network), we gain a broader perspective into plethora of coordinated brain activities underlying human cognition.

A growing interest is effective connectivity, which describes both the strength and directionality between neural components of a network. Effective connectivity analyses will be a staple of the Brain Imaging Research Center.

Changes in directional influences for brain regions mediating Neutral-, Care-, and Justice- based reasoning.
Caceda et al, under review.

The following societies and institutions offer additional insights into human neuroscience.

The Society for Biological Psychiatry (www.sobp.org)
The Organization for Human Brain Mapping (www.humanbrainmapping.org)
The American College of Neuropsychopharmacology (www.acnp.org)
The Cognitive Neuroscience society (www.cogneurosociety.org)
The Society for Neuroscience (www.sfn.org)

Neuroimaging Informatics Tools and Resources Clearinghouse (www.nitrc.org) provides links to a host of publicly available neuroimaging tools.
Analysis of Functional NeuroImages (afni.nimh.nih.gov) offers countless neuroimaging tools for statistical analyses of your data.