Neural Representation of Inequality

Abstract: In order to implement fairness considerations, agents need to detect that people work and are rewarded unequally. Such inequality can be advantageous (I receive higher pay than someone else for the same work or I work less than the other person for the same pay) or disadvantageous (I receive lower pay for the same work or I work more for the same pay). We investigated the neural representation of inequality by using functional neuroimaging while participants processed situations of inequality in pay or work. Activations of the lateral prefrontal cortex increased with inequality, irrespective of whether it was advantageous or disadvantageous and irrespective of whether it concerned pay or work. This activation pattern differed from individual and average preferences towards inequality in that participants showed a stronger aversion to disadvantageous inequality than to advantageous inequality. Functional coupling of the lateral prefrontal area representing inequality with a more dorsal and posterior region predicted how different subjects responded to advantageous inequality. Thus, parts of the lateral prefrontal cortex appear to play a role in the detection of inequality, which in
turn could be used to implement fairness considerations according to the social preferences of the individual.