



Altruism, Charity, and the Brain



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ALTRUISM

Most studies of reward-guided behavior have used personally rewarding stimuli (e.g., money, food). In the natural environment, however, behaviors are often performed without personal reward.

The existence of such altruistic behaviors raises questions:

- Why are some people more altruistic than others?
- Are socially rewarding stimuli processed using similar neural systems as personally rewarding stimuli (e.g., money, food)?
- Does self-reported altruism mediate brain processing during reward-guided actions?

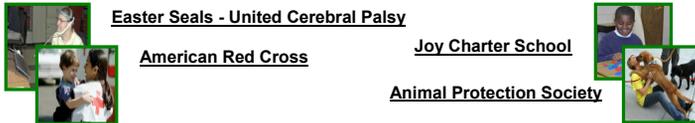
Here, we investigate how personally and socially directed actions differentially influence brain systems for decision making and social cognition.

METHODS

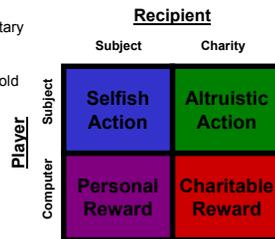
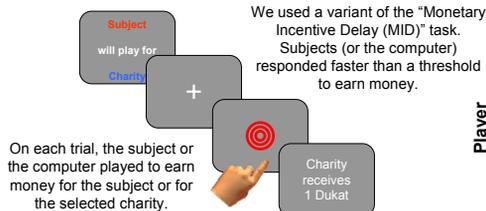
1. Overview of the Experiment

- Participants: 27 young adults (mean age: 24y; 13 female)
- Subjects performed a response-time task to earn money for themselves or a selected charity
- fMRI data acquisition: 3T GE Scanner (TR: 1.5s; TE: 30ms; 34 axial slices)
- Data analysis: Preprocessing using SPM steps; identification of active voxels using area under curve measures and second-level analyses
- Altruism ratings: Subjects completed the Self-Report Altruism Scale (Rushton)

2. Selection of a Charity



3. Experimental Task (fMRI)



Four conditions were used.

4. Self-Reported Altruism

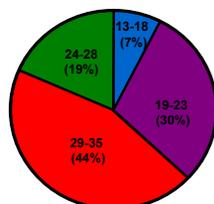
Subjects completed Rushton's (1981) *Self-report Altruism Scale*. We derived an Altruism Score from responses to 10 of the items that maximally differentiated our subjects (according to cluster analysis).

Instructions: Rate the frequency (0=Never; 4=Very Often) with which you have done the following acts.

1. I have given directions to a stranger.
2. I have made change for a stranger.
3. I have given money to a charity.
4. I have given money to a stranger.
5. I have donated goods or clothes.
6. I have done volunteer work.
7. I have carried a stranger's belongings.
8. I have held the door open for a stranger.
9. I have let someone cut in front of me in line.
10. I have helped an unfamiliar classmate.

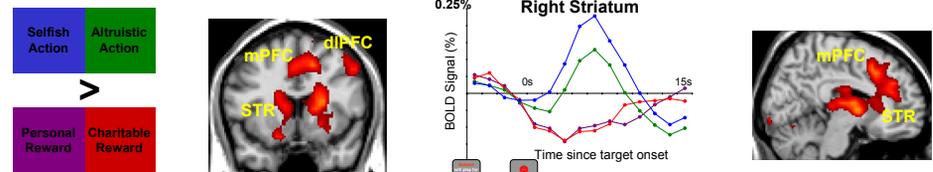
ALTRUISM SCORES

n = 27

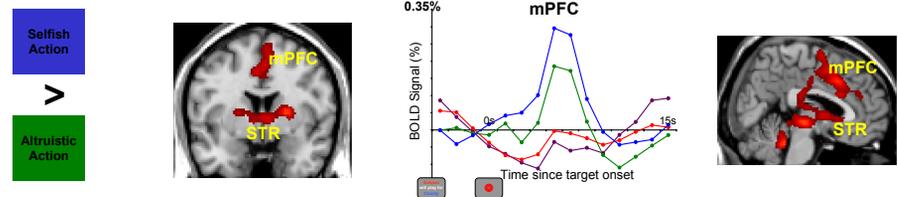


fMRI RESULTS

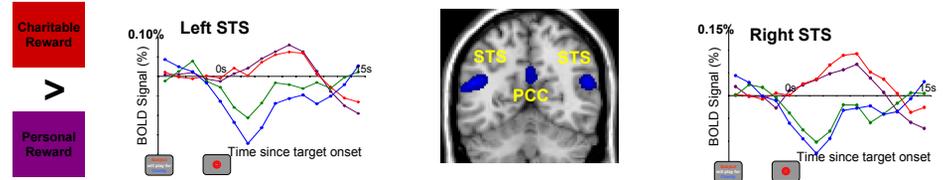
1. Reward-guided behavior evokes striatal and prefrontal activation



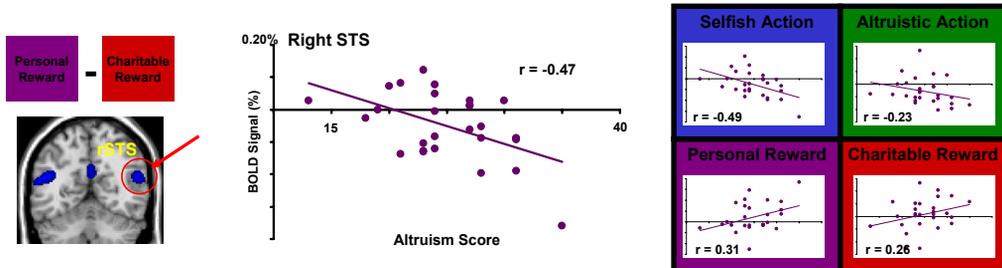
2. Fronto-striatal activation is modulated by reward target: personal or social



3. Perception of charitable actions evokes STS, posterior cingulate activation



4. STS activation is correlated with self-reported altruism



CONCLUSIONS

- ❖ Actions guided by social rewards evoke activation in regions associated with personal rewards.
- ❖ Modulatory effects of social rewards could be explained by motivational factors.
- ❖ Perception of reward-guided agency influences activation of regions important for theory of mind.
- ❖ Self-reported altruism predicts activation amplitude in the superior temporal sulcus.