Animal models of human social behavior

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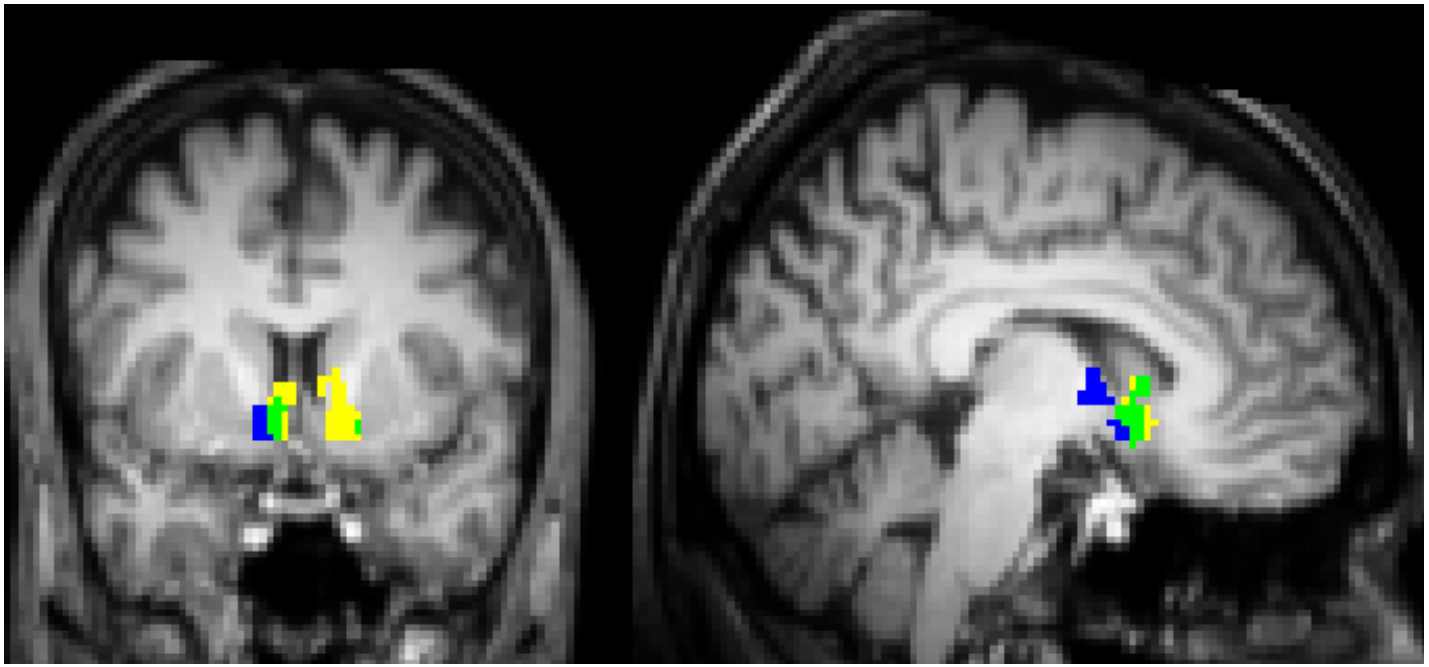
- I believe the biological basis of human social behavior is interesting and important and that animal models are useful for understanding this.

Neural correlates of taxation and charity

"Reward circuitry" activation:

Yellow: $ to Self
Blue: $ to Charity
Green: Overlap

Mandatory taxation to pay for a public good activates the same neural "reward circuitry" as does $ to the self

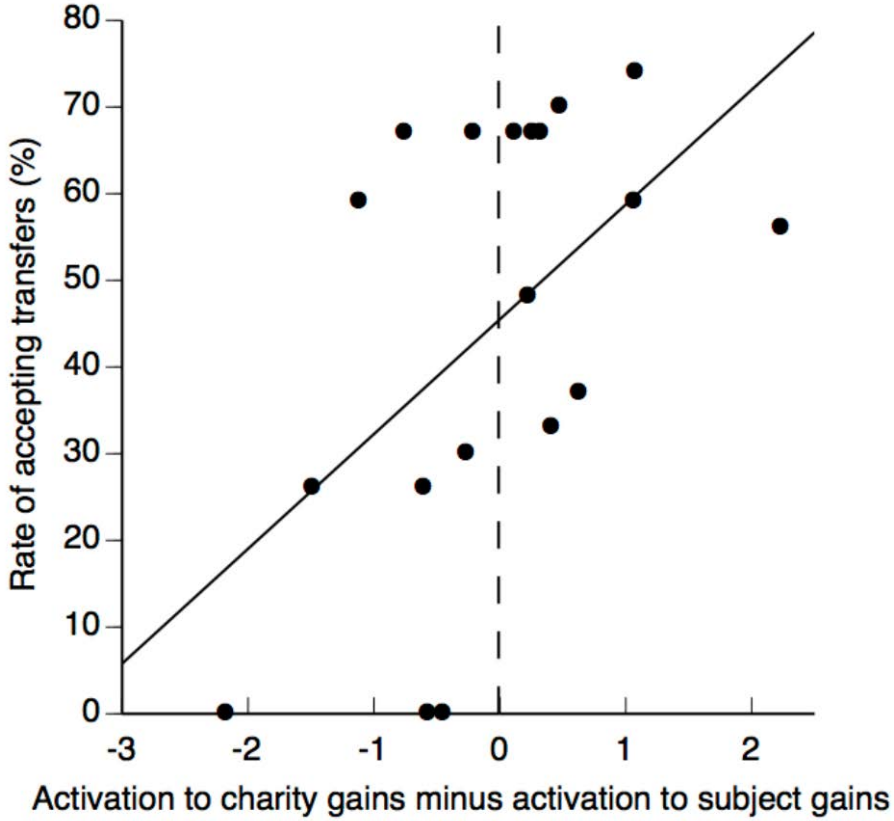


"Neural Responses to Taxation and Voluntary Giving Reveal Motives for Charitable Donations."
Harbaugh, Mayr, Burghart. Science. 2007.

And the degree of activation predicts giving

Egoists:
highrr activation from own gains

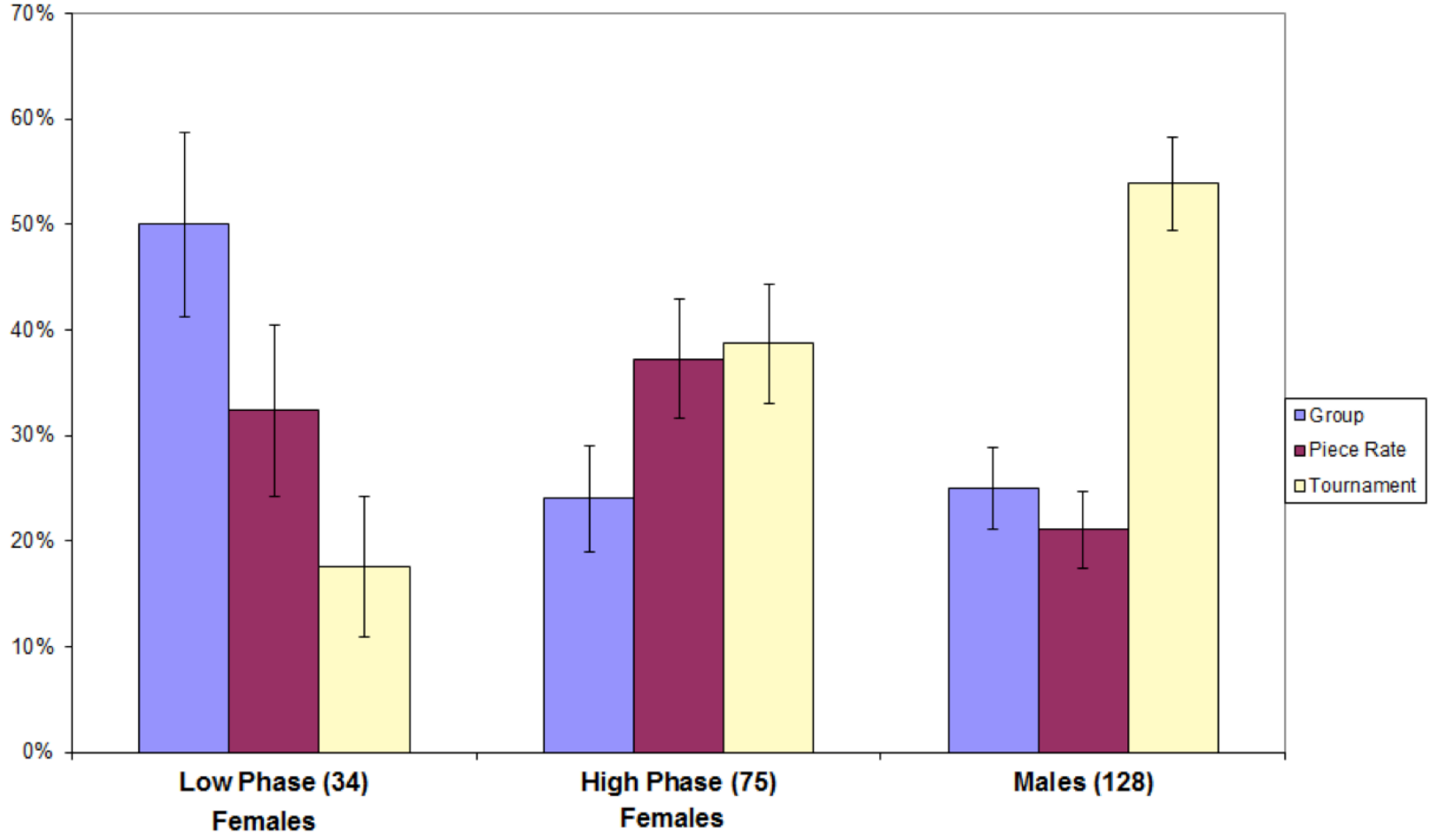
Altruists:
higher activation from charity gains



R^2 = 27%, p=0.02

"Altruists" give nearly twice as often as egoists

Choice to compete, cooperate varies over the menstrual cycle



"The Menstrual Cycle and Performance Feedback Alter Gender Differences in Competitive Choices." Wozniak, Harbaugh, Mayr. Under review.

- But there are limitations

A game with 10 players:

Cost	Value	Net Benefit of exchange
1	2	1
2	3	1
3	4	1
4	5	1
5	6	1

- 5 have a good they would be willing to give up – at a cost
- 5 want a good that they value a certain amount
- Easy to see 5 exchanges that produce a total of 5 units of net benefit

What *should* happen:

Cost	Value	Net benefit of exchange
1	6	5
2	5	3
3	4	1
4	3	-1
5	2	-3

- Order by ascending cost, descending value
- Make decision to exchange on the margin
- First exchange produces 5 units of net benefit
- Then stop
- Get 9 units of benefit instead of just 5
- Very hard to organize this

What *does* happen:

Cost	Value	Net benefit of exchange
1	6	5
2	5	3
3	4	1
4	3	-1
5	2	-3

- Use children
- Deal out playing cards: 5 red for sellers, 5 black for buyers
- Set simple rules – transferable property rights, prices
- They will get 9 units of benefit instead of just 5, price = 3.5
- Self interest leads to maximum total net benefit

An external cost:

Cost	Value	Net benefit	External cost	Social net benefit
1	6	5	-2	3
2	5	3	-2	1
3	4	1	-2	-1
4	3	-1	-2	-3
5	2	-3	-2	-5

- Still get 3 trades
- 9 units of benefits, minus 3x2. Social benefit = 3
- 2 trades would be better
- Self interest doesn't lead to maximum total net benefit
- Why not impose a 2 unit tax?

The most important forms of human social behavior are politics and market exchanges

- Animals compete
- Maybe even exchange
- But they don’t establish or manipulate the rules of exchange
- They don’t use politics to set rules that can harness one motive for another purpose
- Can animal models tell us much about how and when human markets and politics succeed, and fail?