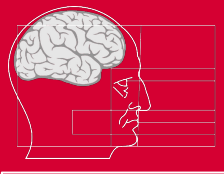

MAX PLANCK UCL CENTRE

COMP 2 PSYCH

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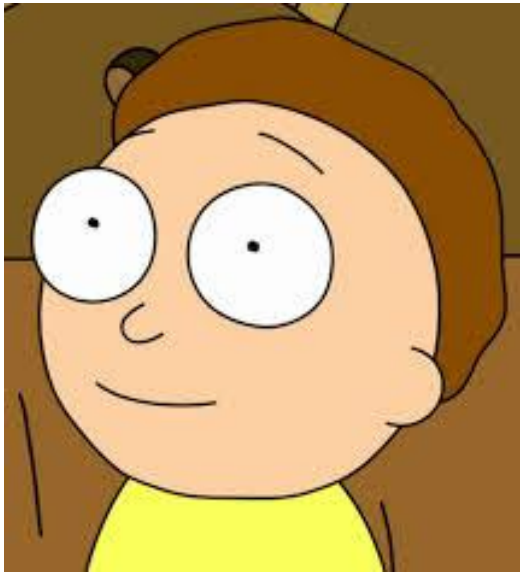
Symposium and Advanced Course on Computational Psychiatry and Ageing Research

The Impact of Preferences on Emotional Responses to Altruism

Yuki Shimura


NETFLIX



Motivation

- Generous acts (e.g., spending money on others) predict increased happiness. *Dunn et al., (2008) Science.*

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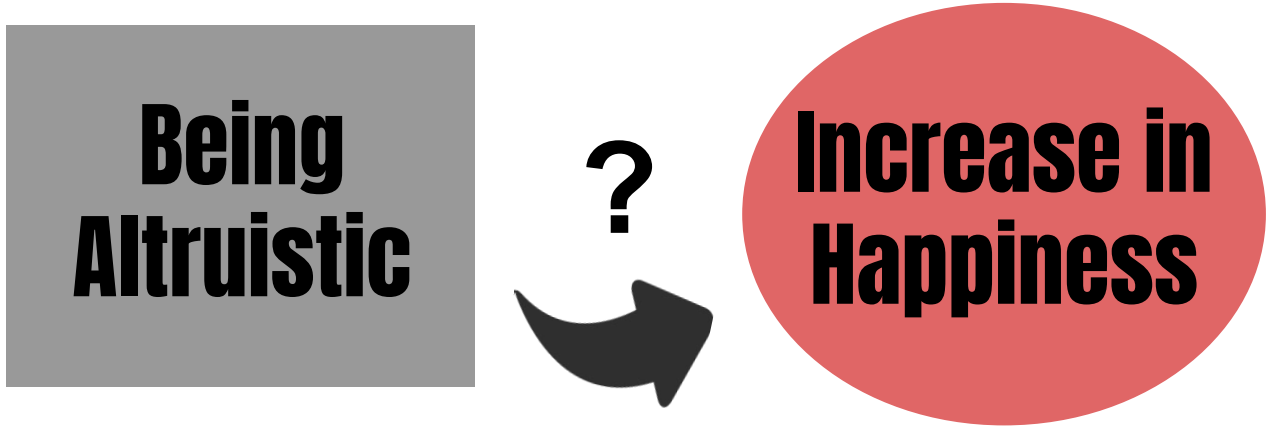
- **Dictator game:** some people give a portion of the money to another person even though they do not have to.

- Are those are the same people for whom being altruistic increases happiness?

Hypothesis



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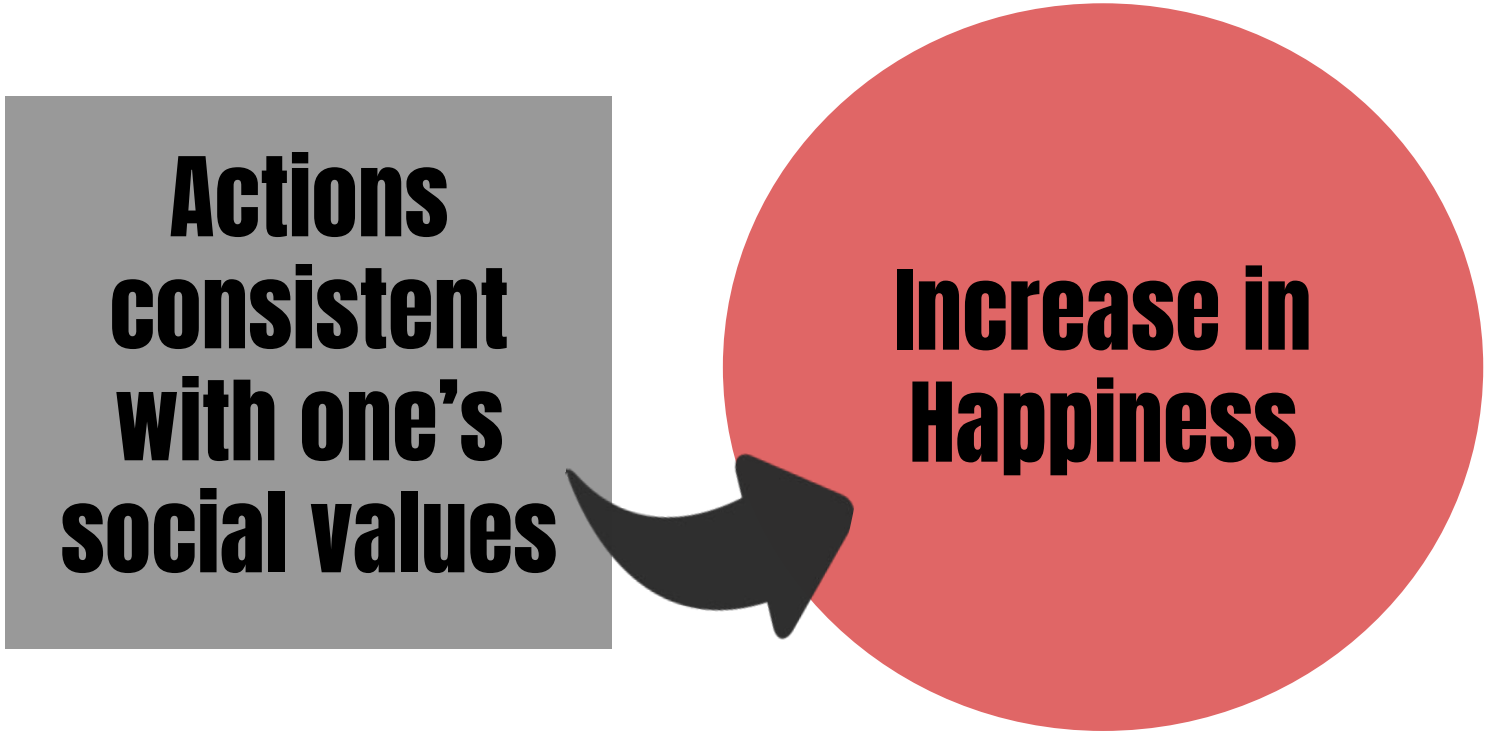
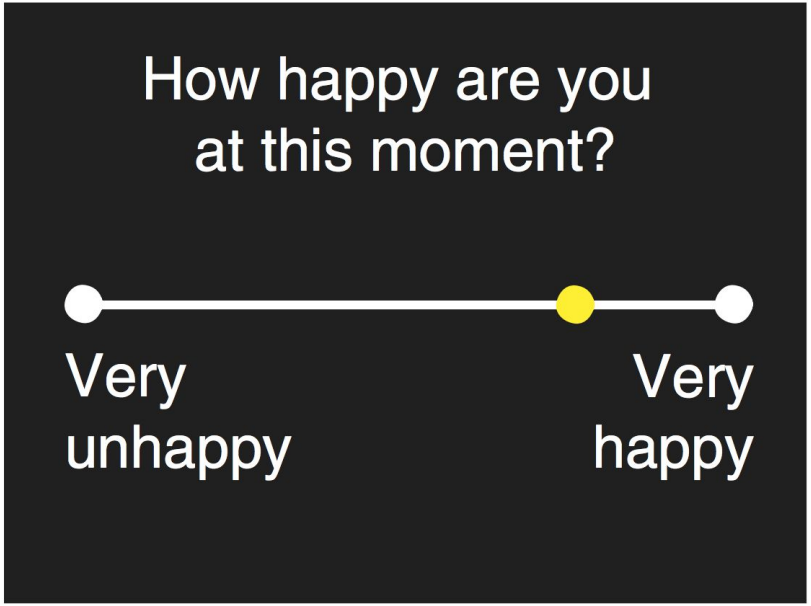

Actions consistent with one's social values
Increase in Happiness

Background

Rutledge, Skandali, Dayan & Dolan (2014) PNAS



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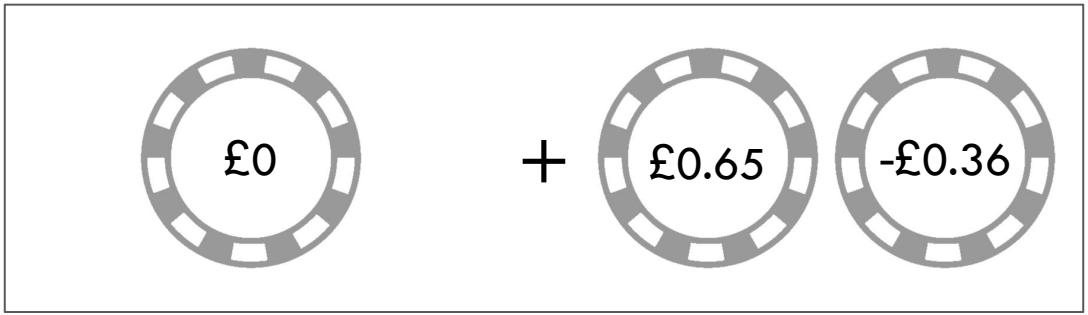

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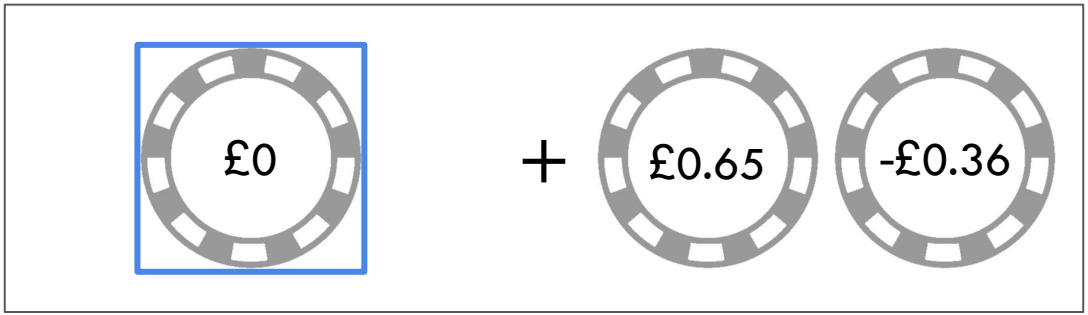

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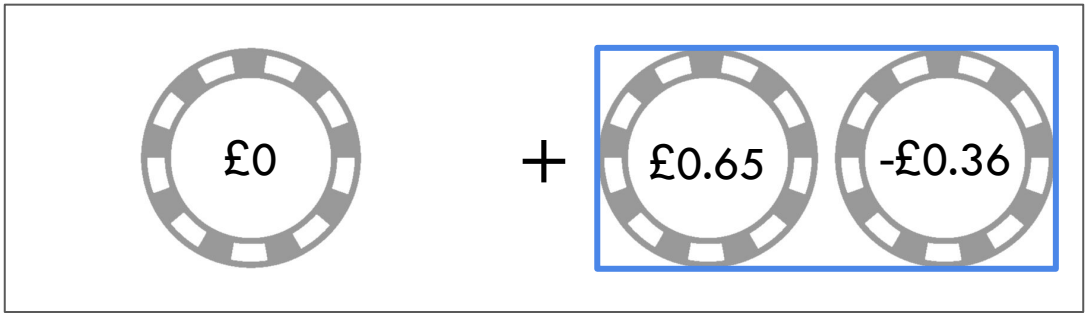

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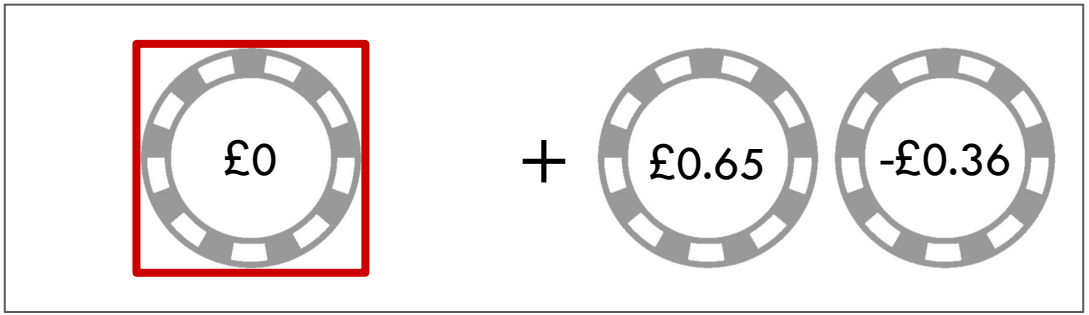
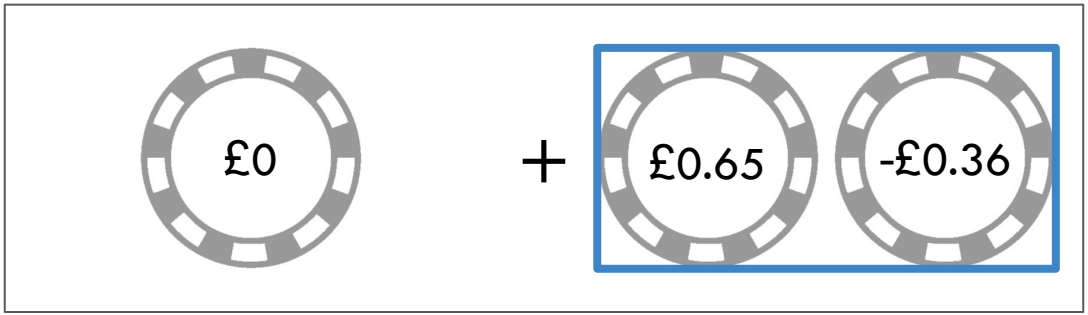


$$\text{Happiness}(t) = w_0 + w_1 \sum_{j=1}^{t} \gamma^{(t-j)} \, \text{CR}_j$$

Certain Reward

Background

Rutledge, Skandali, Dayan & Dolan (2014) PNAS



$$\text{Happiness}(t) = w_0 + w_1 \sum_{j=1}^{t} \gamma^{(t-j)} \text{CR}_j + w_2 \sum_{j=1}^{t} \gamma^{(t-j)} \text{EV}_j$$

Certain Reward

Expected Value
(average of the gamble)

Background

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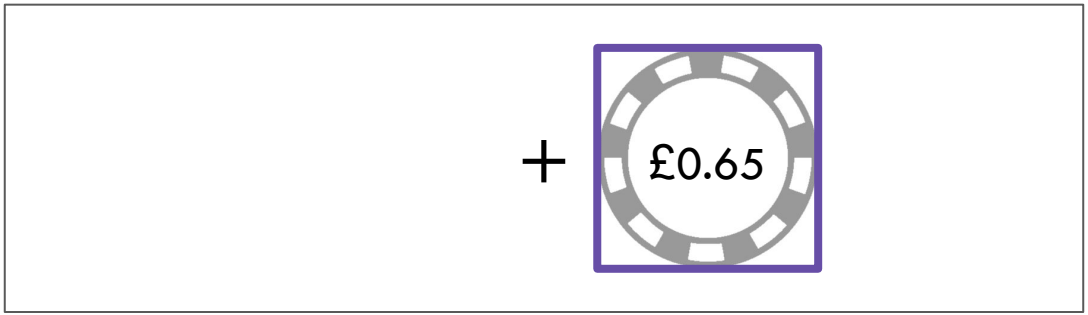

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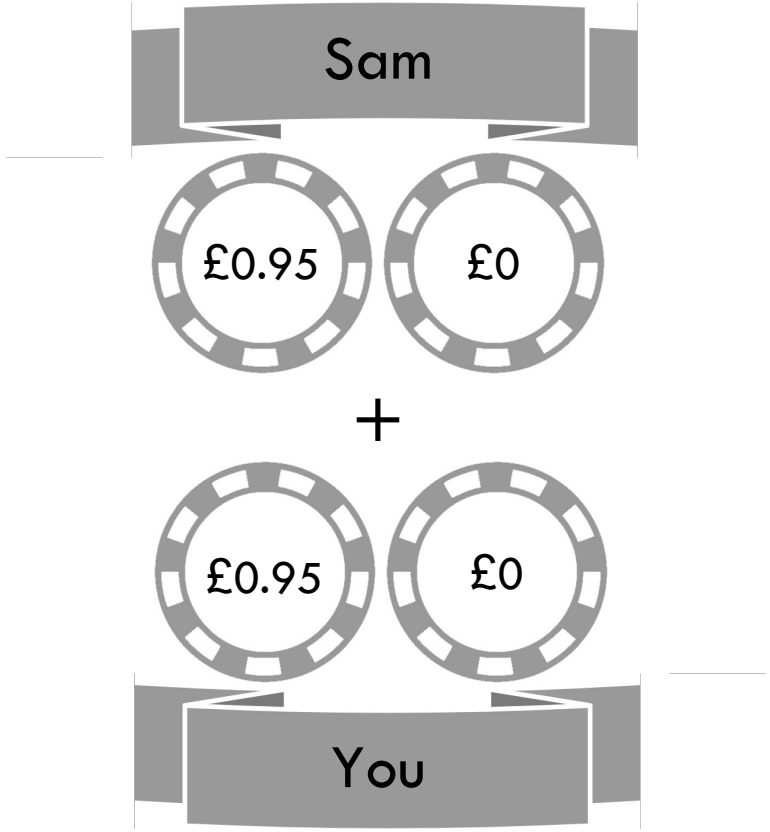
Certain Reward

Expected Value
(average of the gamble)

Reward Prediction Error
(reward - EV)

Background

Rutledge, de Berker, Espenhahn, Dayan & Dolan (2014) Nature Commun



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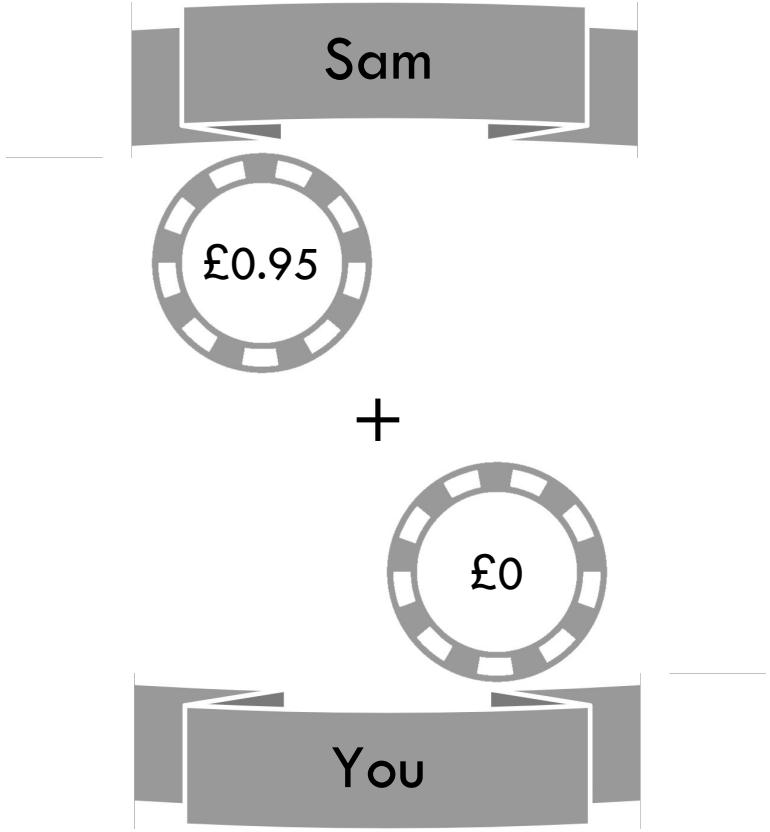

Background

Rutledge, de Berker, Espenhahn, Dayan & Dolan (2014) Nature Commun

$$\text{Happiness}(t) = w_0 + w_1 \sum_{j=1}^{t} \gamma^{(t-j)} \quad \text{CR}_j \quad + w_2 \sum_{j=1}^{t} \gamma^{(t-j)} \quad \text{EV}_j \quad + w_3 \sum_{j=1}^{t} \gamma^{(t-j)} \quad \text{RPE}_j$$

$$+ w_4 \sum_{j=1}^{t} \gamma^{(t-j)} \max(\text{R}_j - \text{O}_j, 0) + w_5 \sum_{j=1}^{t} \gamma^{(t-j)} \max(\text{O}_j - \text{R}_j, 0)$$

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(You get more than the other)

(You get less than the other)

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Rutledge, de Berker, Espenhahn, Dayan & Dolan (2014) Nature Commun

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(You get more than the other)

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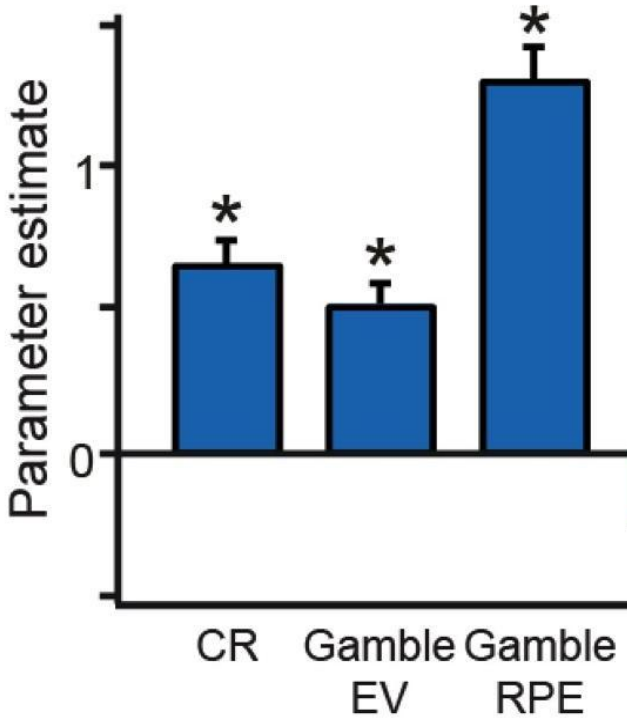
Guilt

Envy

Background

Rutledge, de Berker, Espenhahn, Dayan & Dolan (2014) Nature Commun



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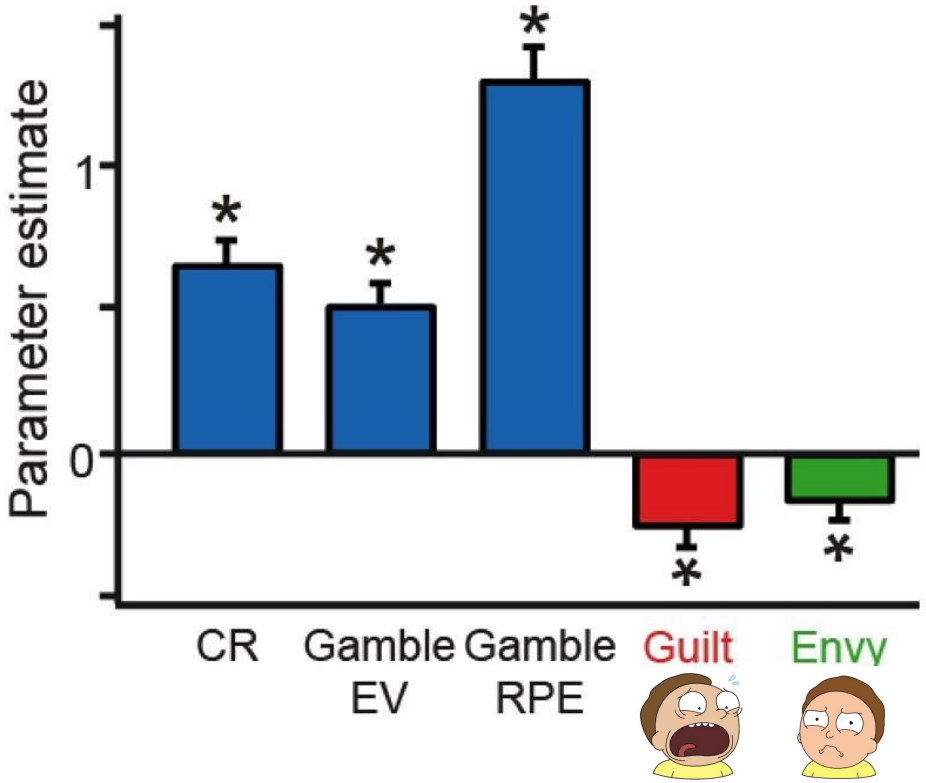

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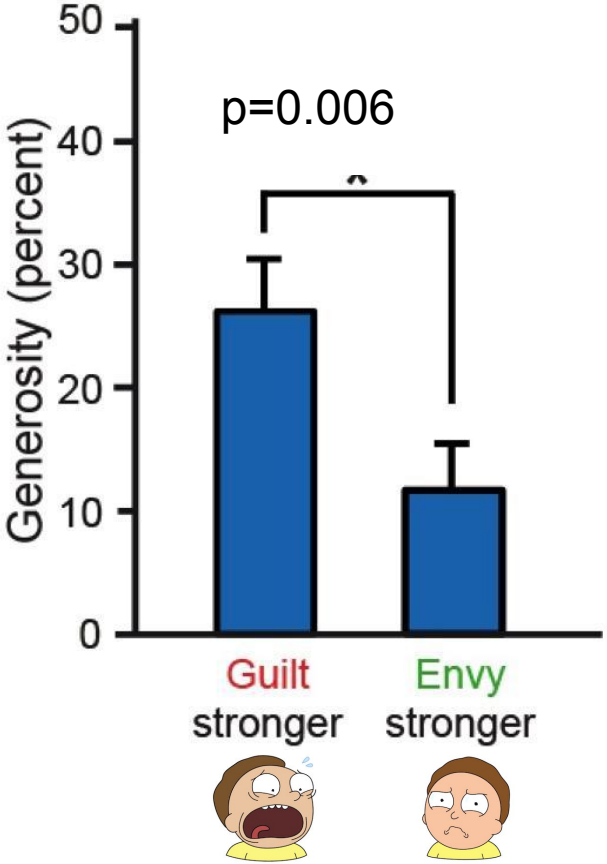
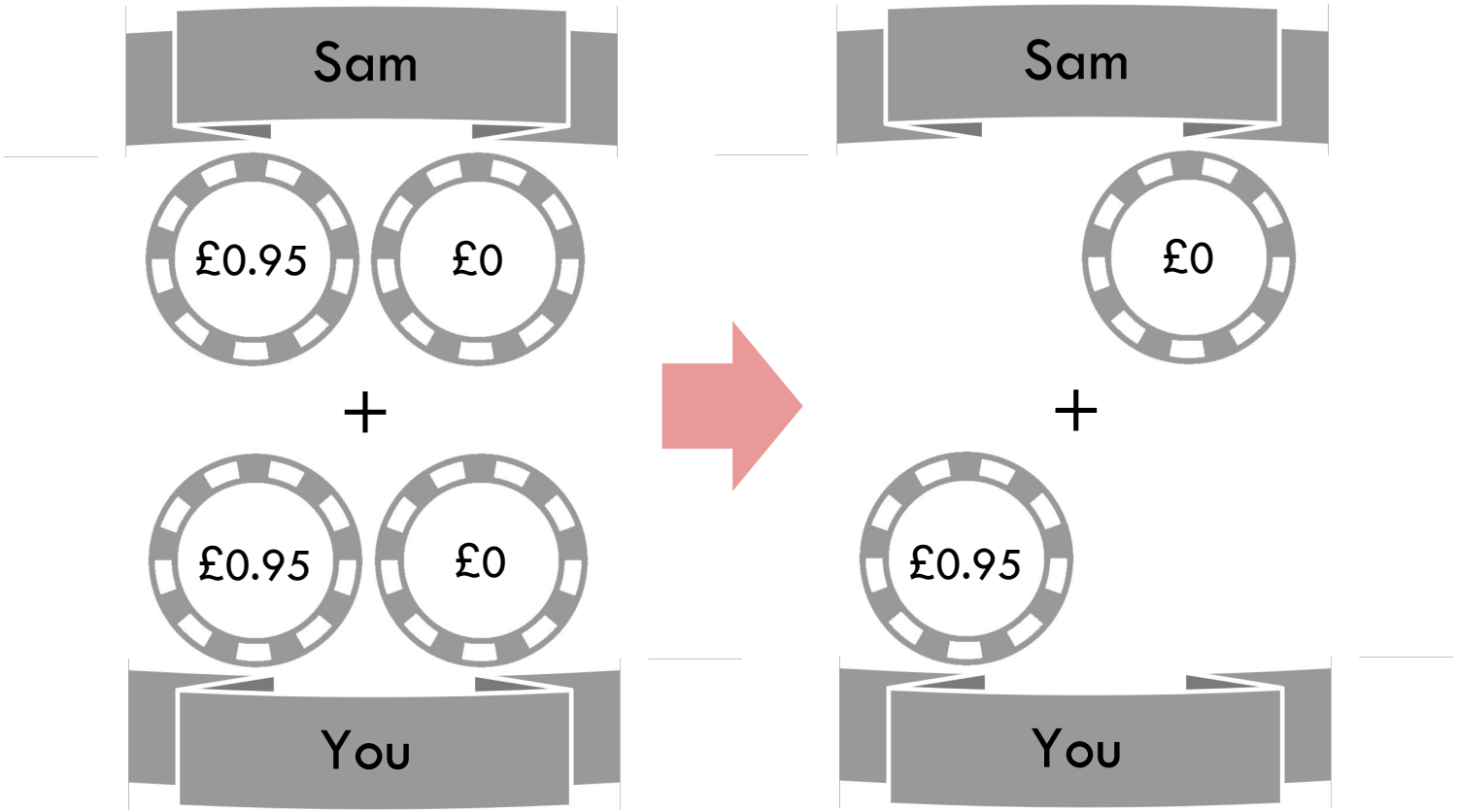


My Experiment



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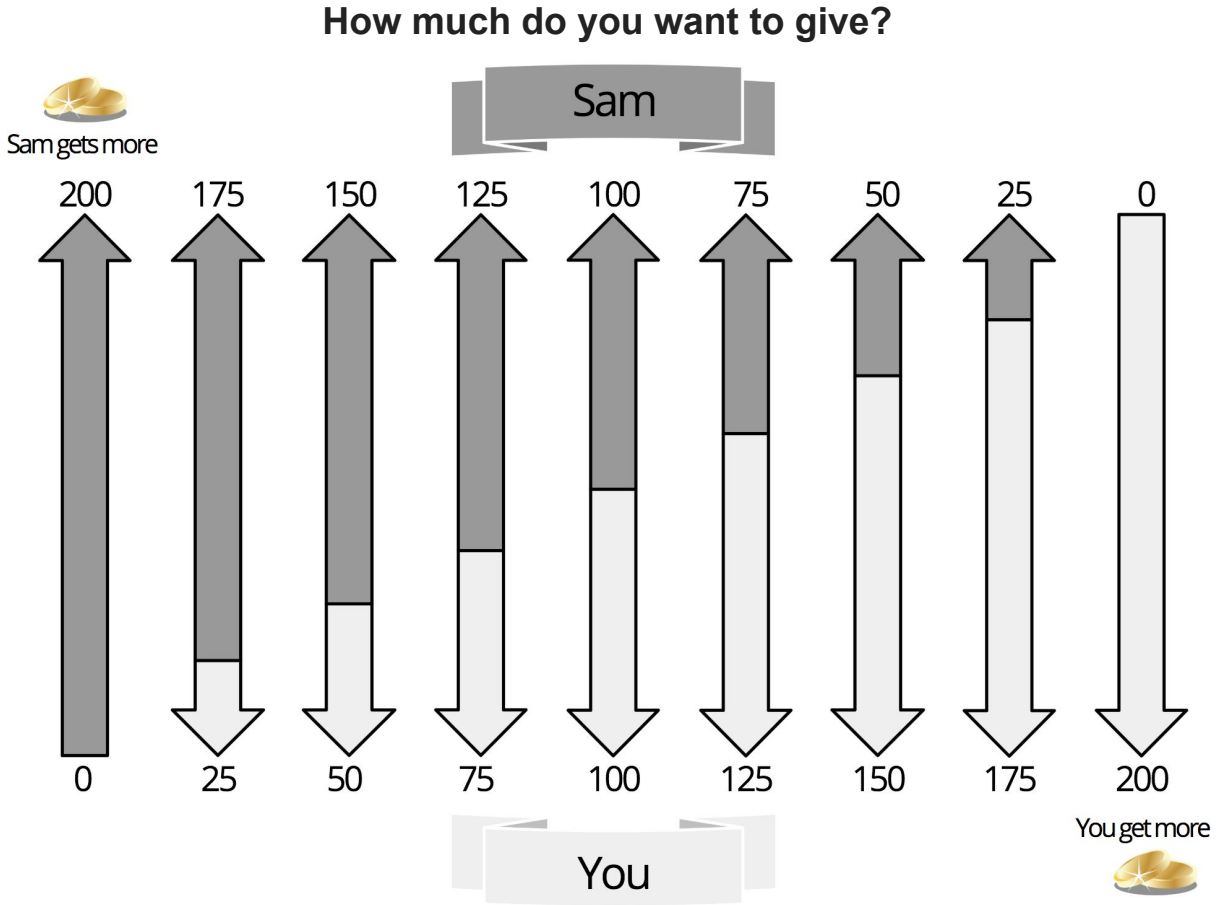

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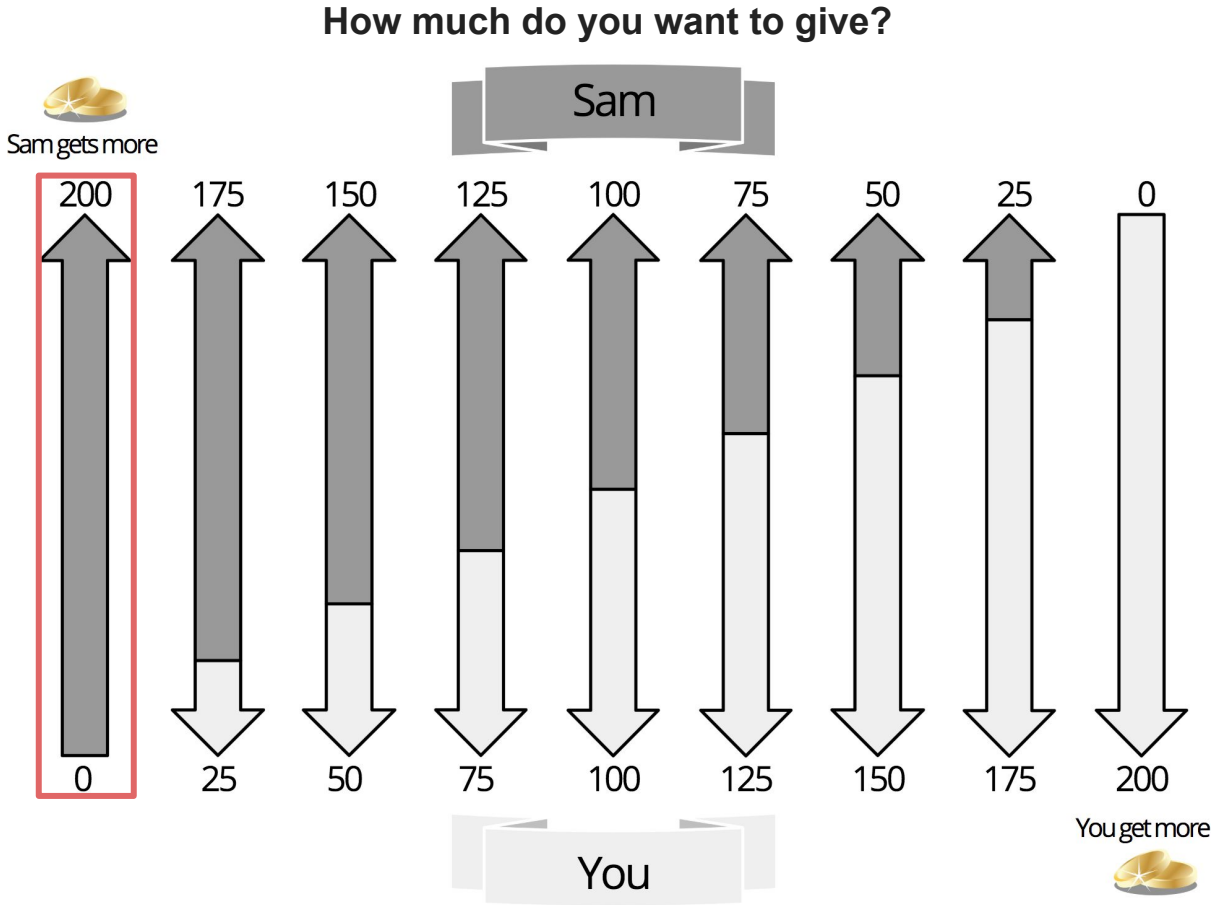

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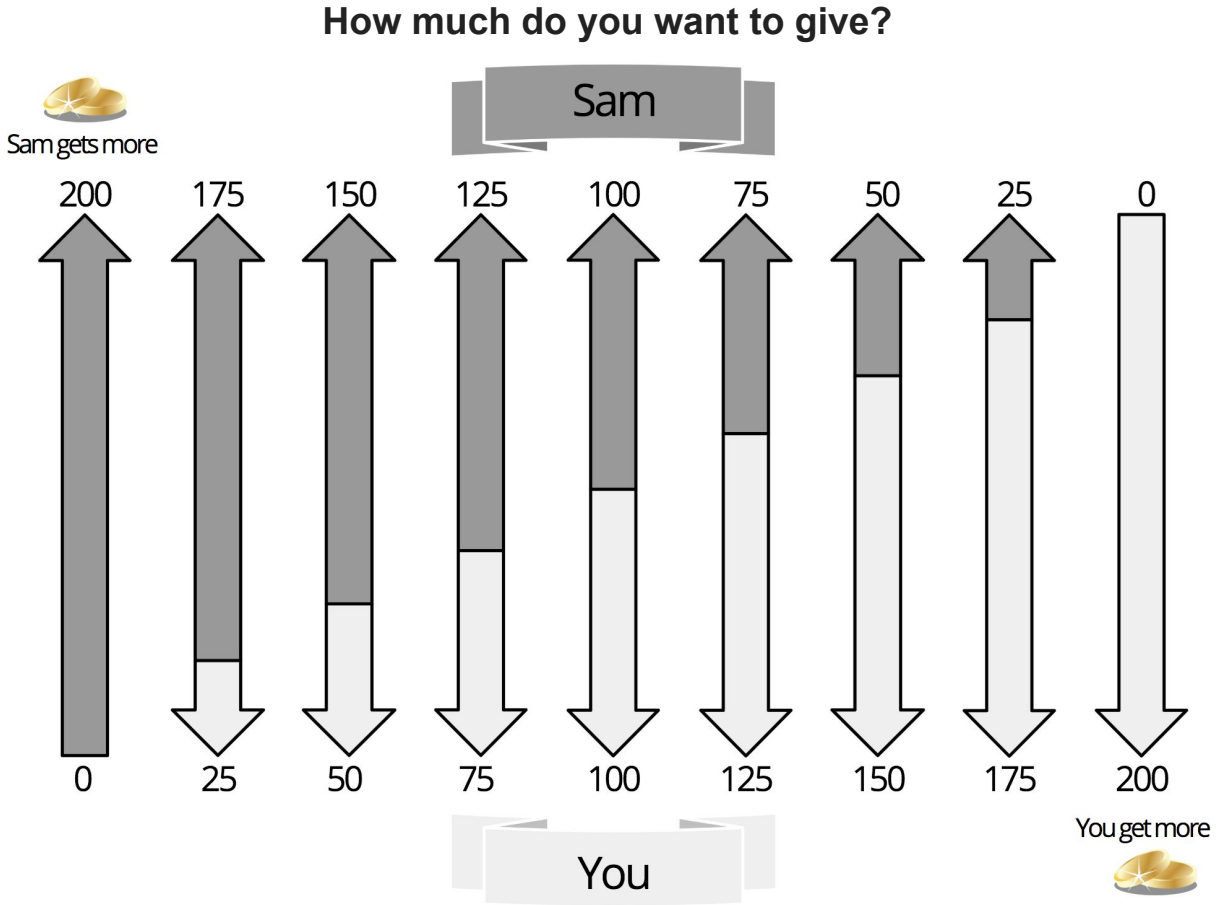

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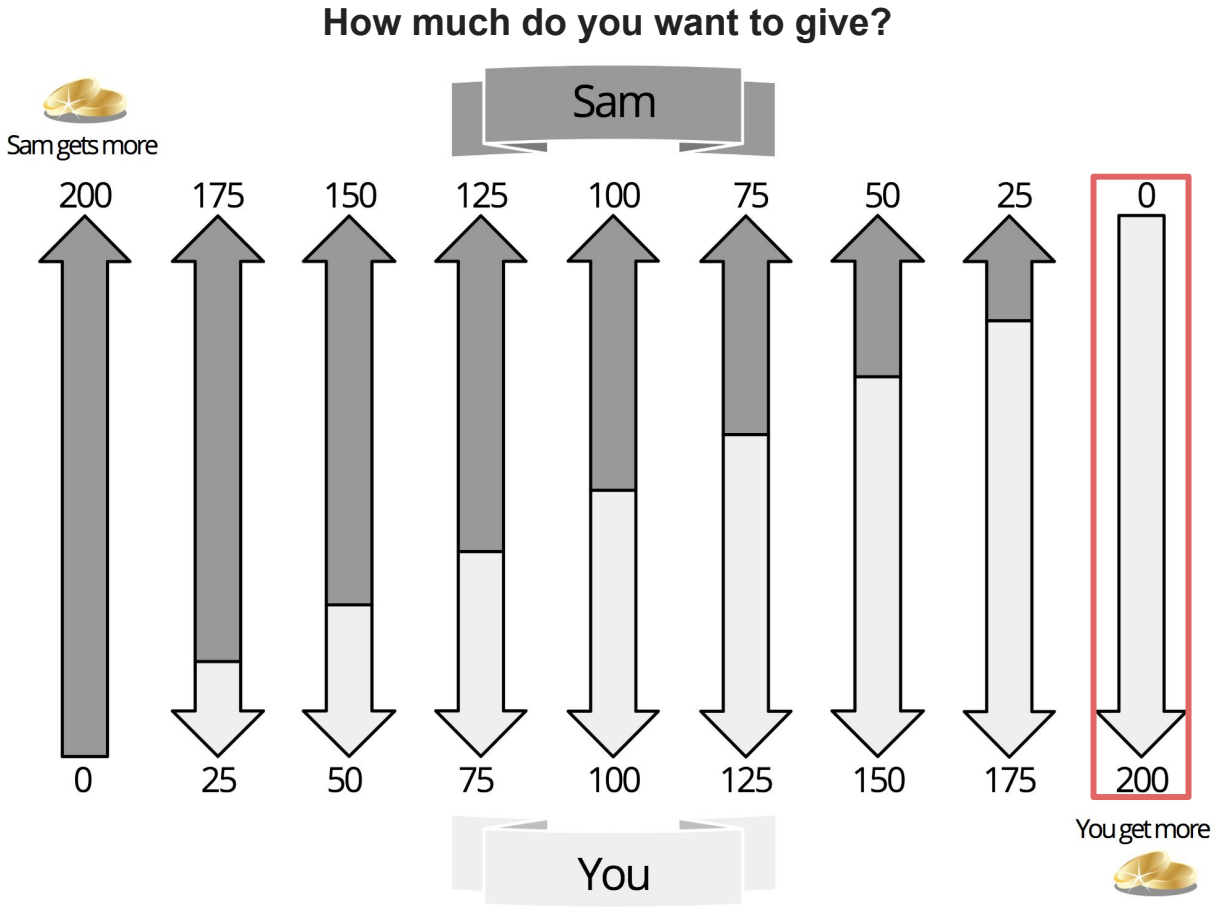

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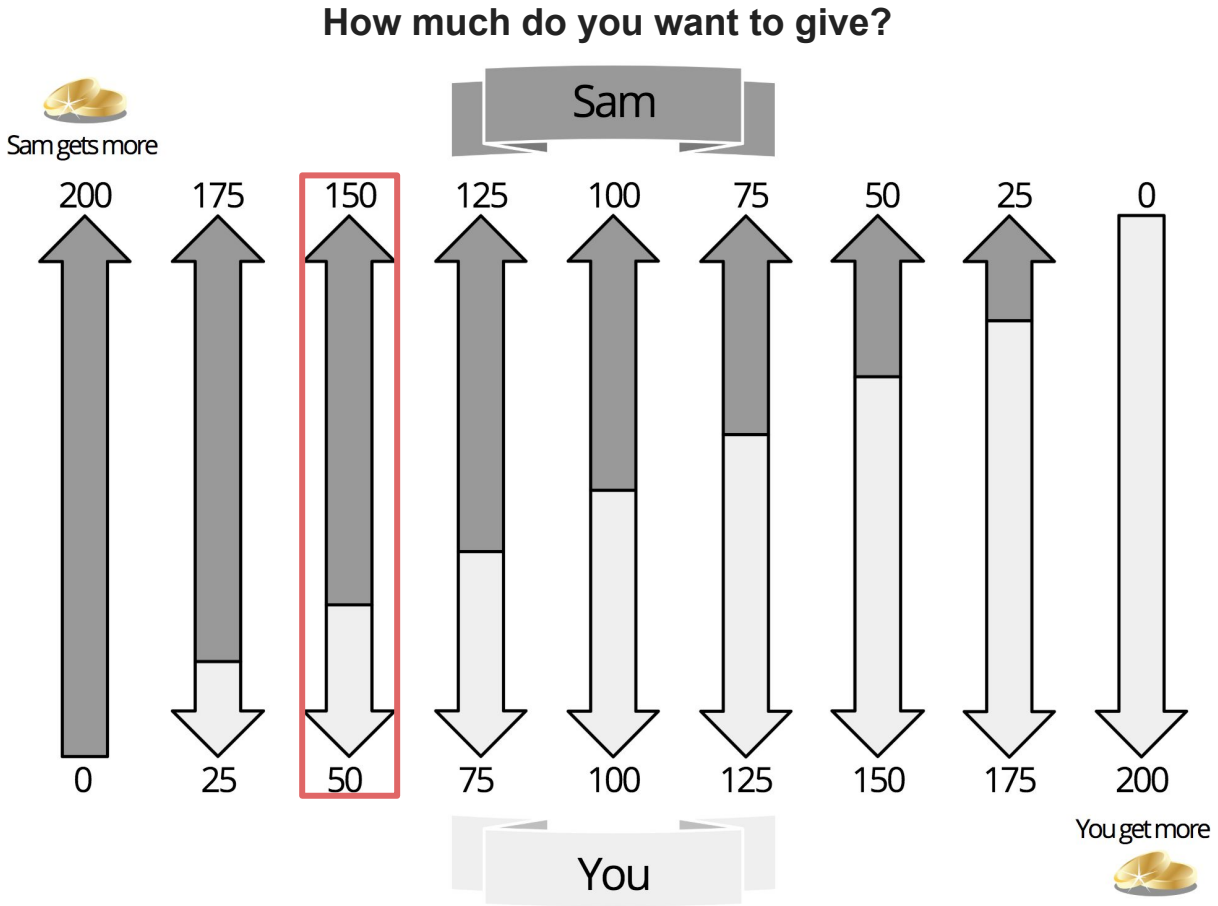

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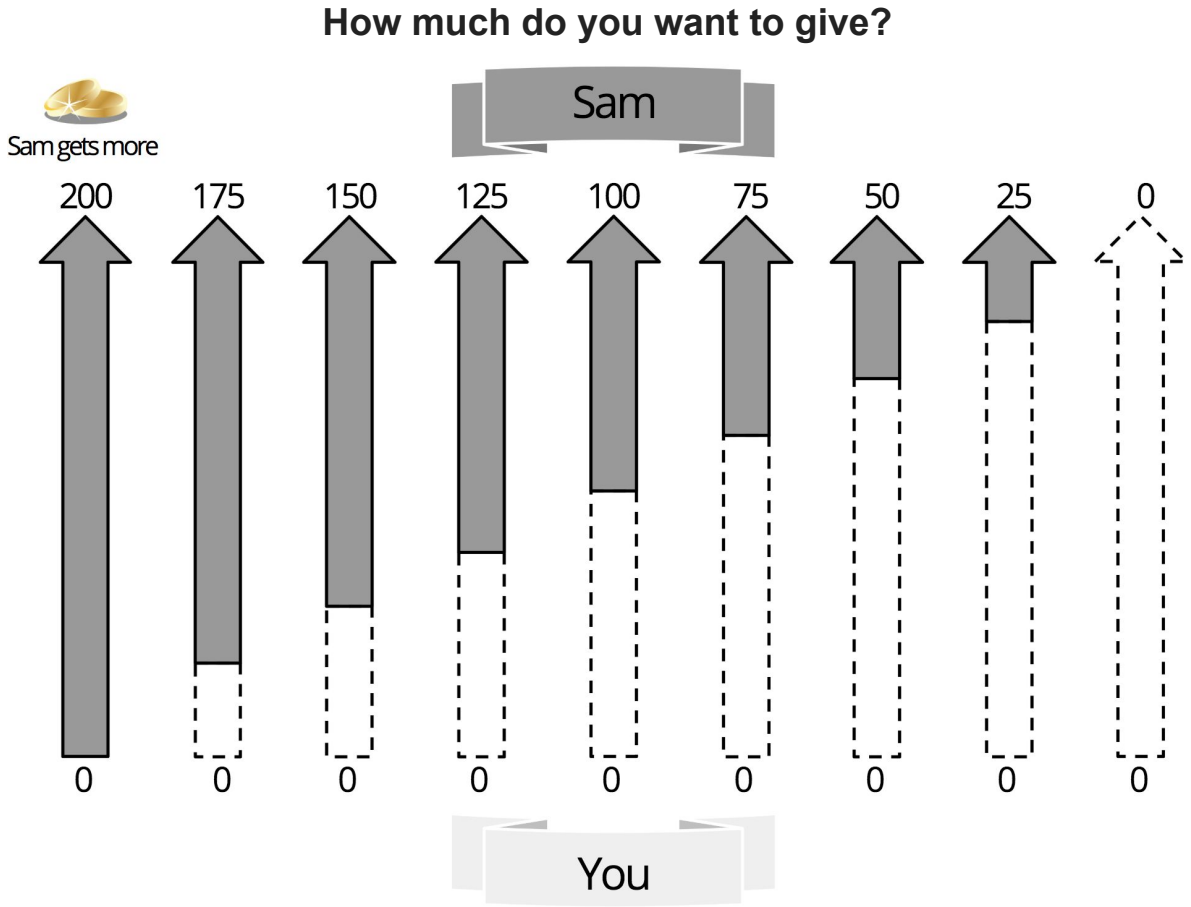

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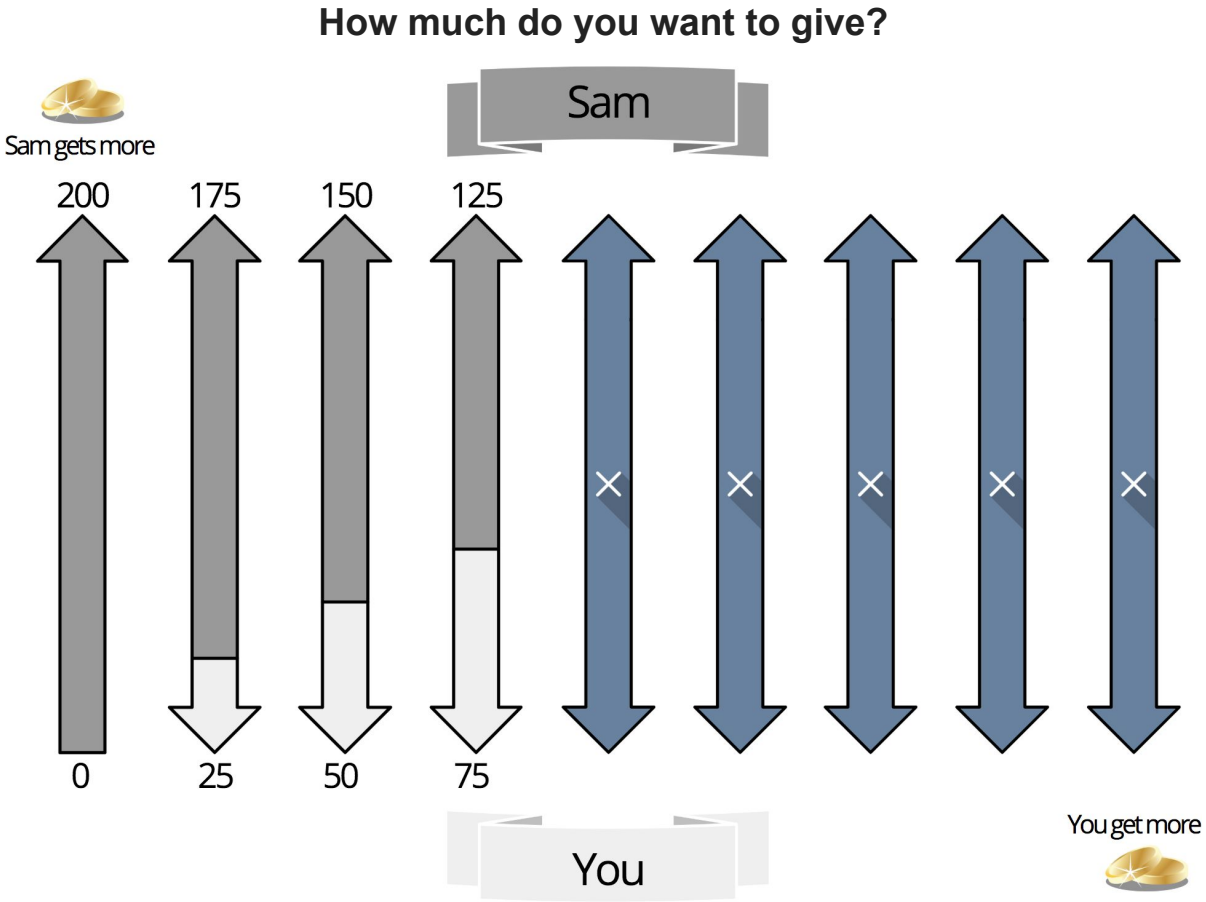
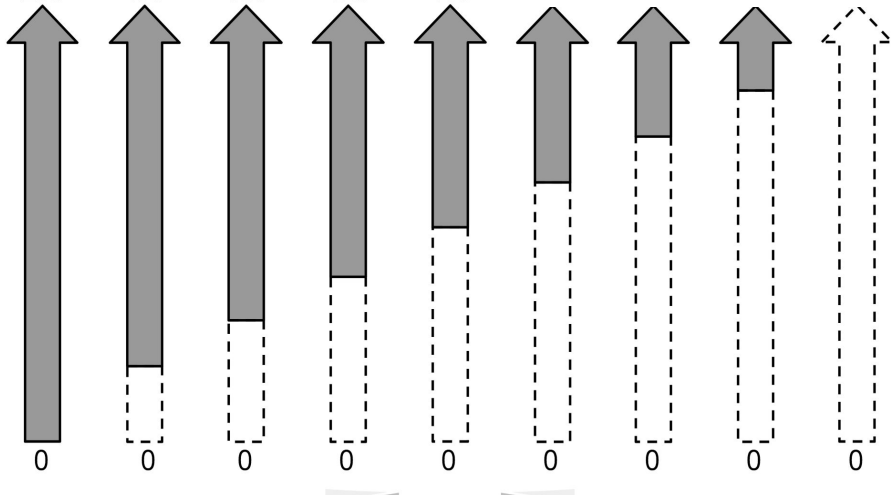


Computational Model - Gift

$$\text{Happiness}(t) = w_0 + w_1 \sum_{j=1}^{t} \gamma^{(t-j)} \max(\beta_{\text{belief}} - \text{O}_\text{j}, 0) + w_2 \sum_{j=1}^{t} \gamma^{(t-j)} \max(\text{O}_\text{j} - \beta_{\text{belief}}, 0) + w_3 \sum_{j=1}^{t} \gamma^{(t-j)} \text{O}_j$$



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Giving less than enough

Computational Model - Gift

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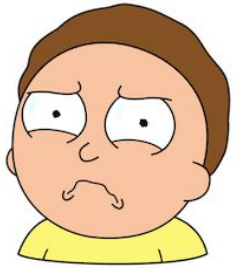
Giving more than enough



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How much you give to your partner

Computational Model - Gift

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How much you think you should give to their partner

Goal

- Building a happiness model which can predict happiness associated with altruism.

Goal

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- Dissociating between **what people think they should do** and **what they actually do**.

Predictions

- Prosocial people have bigger guilt than envy parameters for both gamble and gift trials.

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- People are happiest when their actions match their beliefs.

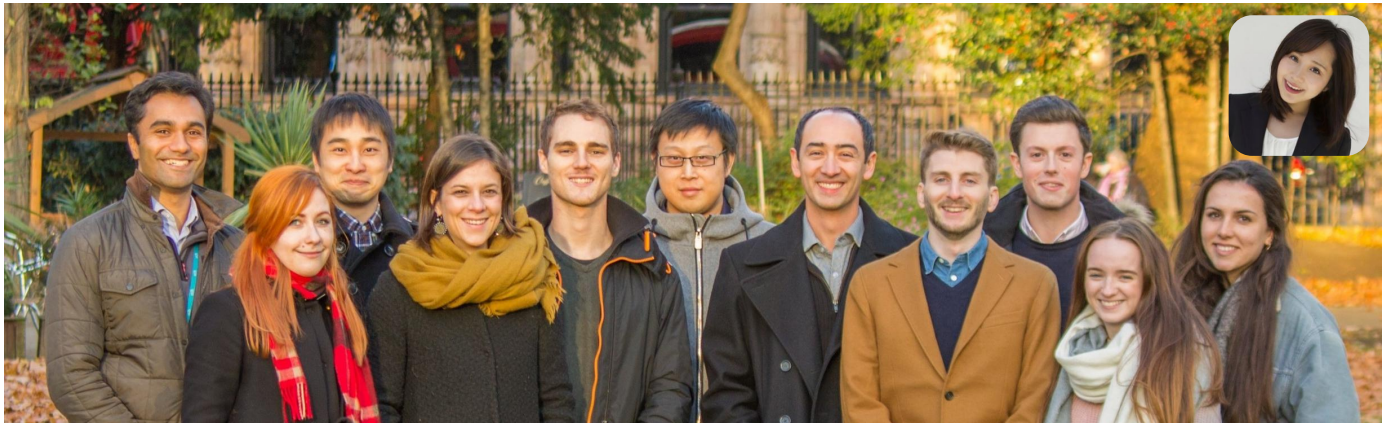
Predictions

- Prosocial people have bigger guilt than envy parameters for both gamble and gift trials.

- People are happiest when their actions match their beliefs.

- People might be even **happier** than if they had a choice, gave all the money to themselves, and felt guilty about it.

Thank you!



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