Experimental design for

Interactive SPE

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General idea for this study

How social placebo effect modulate real-life social interaction and its computational bases, implications?

Interactive economic games

Trust—TG
Cooperation — PD
Resource allocation and society stability — UG
Competition — social bandit task

Computational bases

POMDP
Theory of Mind model
Exploration-exploitation model

Evolutional modeling (simulation)

Implication for society

Matching rules for participants

Dyads are matched in SVO-type, and gender

Within-subject design, N(dyads)=60

Each participant won't meet the same person twice

1st visit	2nd visit
spray+ ~ control	control ~ control
spray+ ~ spray+	control ~ spray+
control ~ control	spray+ ~ control
control ~ spray+	spray+ ~ spray+
spray+ ~ spray+	control ~ control
control ~ spray+	control ~ control

Interactive tasks

Sequential trust game（6 rounds）

{N(investor) and N(trustee) should be matched in spray+ and control}

Player 1 (investor)

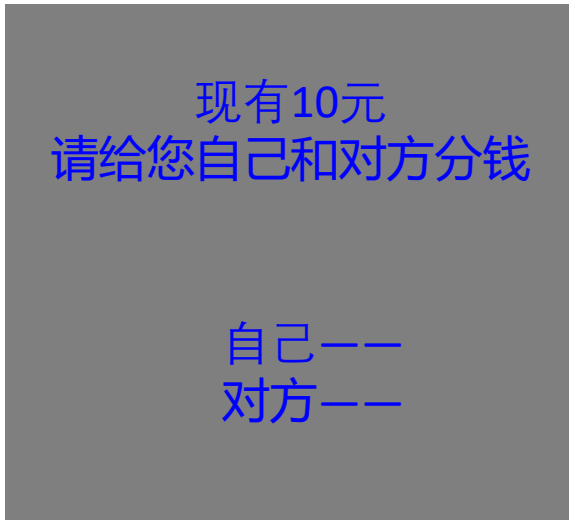
Waiting

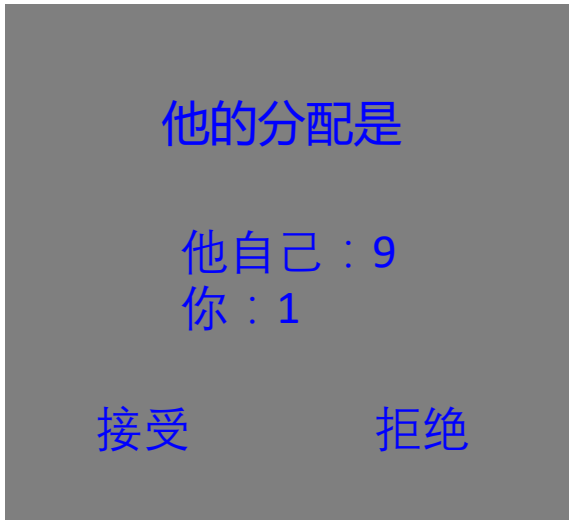
Player 2 (trustee)

Interactive tasks

Sequential ultimate game（6 rounds）

{N(dictator) and N(reciever) should be matched in spray+ and control}





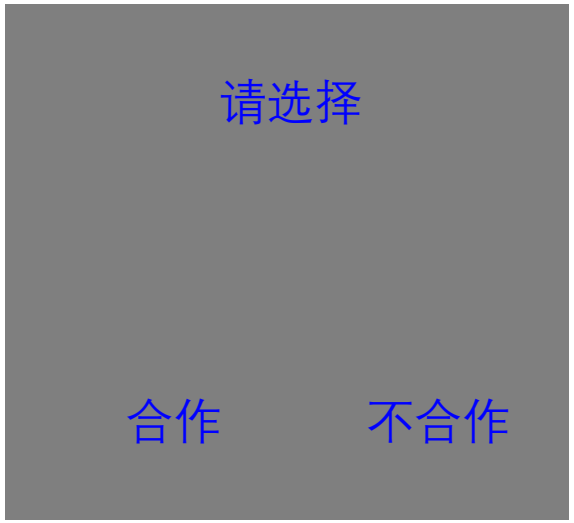
Player 1 (allocator)

Waiting

Player 2 (receiver)

Interactive tasks

Repeated Prisoner dilemma（6 rounds）



Player 1
&
Player 2

Waiting

Player 1
&
Player 2

A new designed interactive tasks

Social bandit competition task

Background

Featured Simulation Competition

Santa 2020 - The Candy Cane Contest

May your workdays be merry and bright

Kaggle · 788 teams · 2 months ago

Overview Code Discussion Leaderboard Rules

Overview

Description
Evaluation
Timeline
Environment Rules
Prizes

It's the most wonderful time of the year
With the elves eating candy
They'll feel super dandy and be of good cheer
It's the most wonderful time of the year

It's the hap-happiest season of all
When spirits are lifted the toys will be gifted
And games to enthrall!
It's the hap-happiest season of all

The party for throwing
Has snow cones a'glowing
With bragging rights out on display.
So now you must plan it,
To beat the armed bandits
who keep all the candy away.

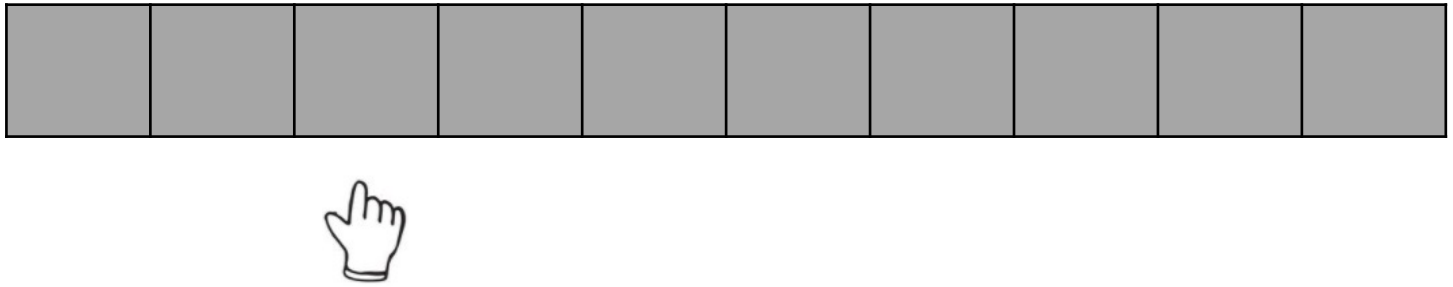
It's the most wonderful time of the year!

https://www.kaggle.com/c/santa-2020/overview/description

A new designed interactive tasks

Social bandit competition task

Designed details

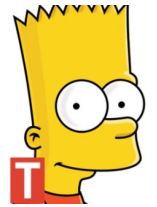


10 arm-bandits task

Participants should to choose one bandit at each trial to maximize his/her total reward, each bandit has its own reward distribution which is hidden for participants

This task anchor the exploration-exploitation process with reinforced value learning.

Player 1



Player 2

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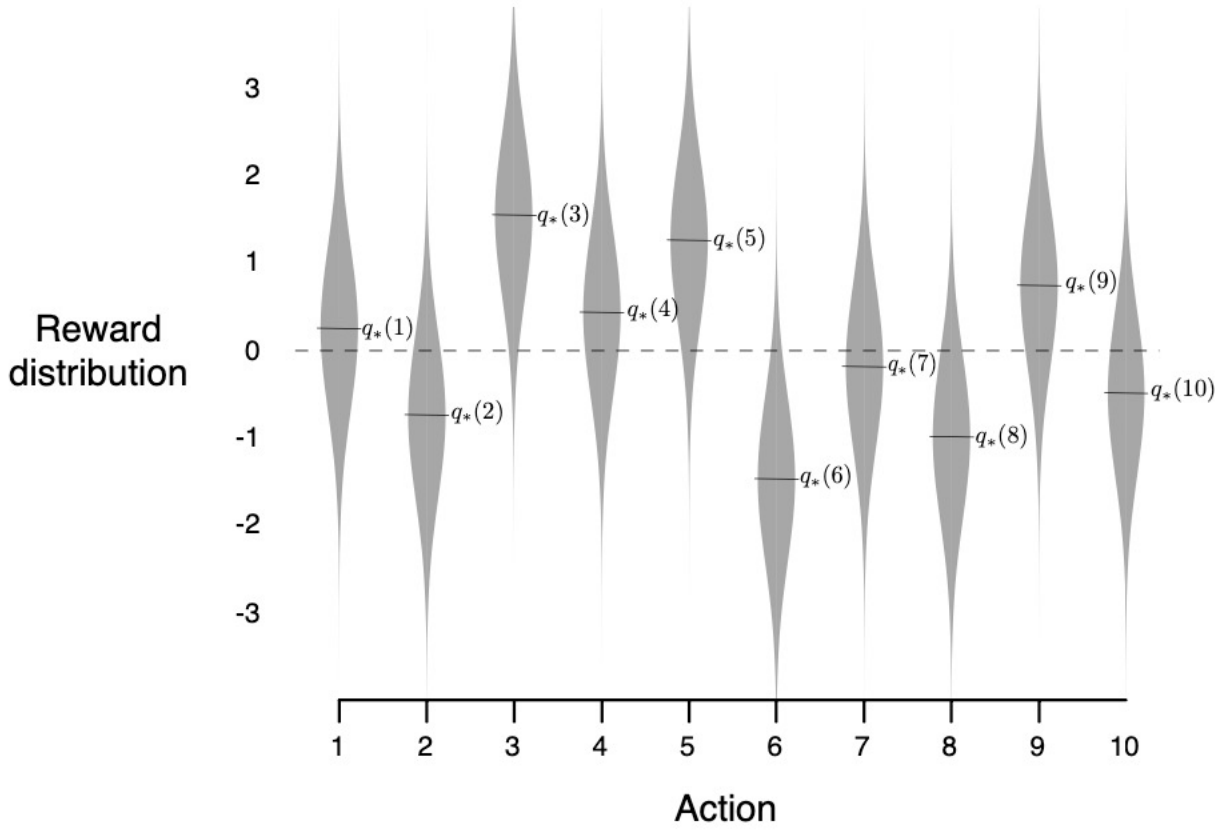
Social bandit competition task

Designed details

Reward distribution for each bandit



Richard S. Sutton and Andrew G. Barto, 2018

A new designed interactive tasks

Social bandit competition task

Game configurations

1. Game length: 500 trials

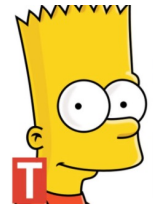
2. Player1先玩，等player1学习到了每个bandit的概率分布之后，player2的电脑上呈现同样的bandit（reward distribution完全一样）开始玩。

3. player2开始玩的同时，player1可以给player2 send signal，即player1可以告诉player2 选哪个bandit会拿钱。

4. player1可以看得到player2的选择以及得到的钱数，player2看不到player1的选择以及钱数

5. 如果player1最后拿到的钱>player2, player1会得到额外的奖励，player2扣除自己在任务中拿到的钱的30%
如果player2最后拿到的钱>player1, player2会得到额外的奖励，player1扣除自己在任务中拿到的钱的30%

Player 1



Player 2

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Social bandit competition task

涉及到的心理计算过程：

Theory of mind

对uncertainty的学习，uncertainty = environment + social uncertainty

Competition

Player2本身在探索环境中的exploration-exploitation 以及advice对此的影响

需要确定的实验参数：

总trial数（需要先用online实验确定被试需要多少trial能学会）

对于惩罚的部分，是否是扣除已获得奖励的30%（需要在10个左右的pilot数据上先model，然后再simulate，simulate的时候调整这个参数看结果会如何）

Note

需要给被试强调：
在不同的游戏中，与之配对的人是不一样的。避免
被试彼此学习到对方的行为模式。且这几个游戏的顺序需要counter-balance