Competitive Risk Study Proposals

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Questions

- How does competition affect risk preferences?
- Is a competitive reward structure (e.g.; contest) sufficient to change behavior, or is actual information about competitors important?
- Which affects behavior more? A competitive bonus on top of an individual bonus, or an 'all or nothing' competitive bonus?
- How are the effects of competition on risk taking moderated by the risk–reward relationship in the environment?

6 Experimental conditions

- We can create 6 conditions by comparing which information is given (individual or social), and the reward structure (individual, individual + competitive, competitive only):

Reward Condition

Information Condition	Individual 	Individual + Competition 	Competition 
Individual 	Individual information, Individual reward *"I am completely alone in this task"*	Individual information, solitary + comp reward *"I don't see what the other people are doing, but my reward depends on both my performance AND how I compare to my competitor"*	Individual information, comp reward *"I don't see what the other people are doing, and my reward depends only on how I compare to my competitor"*
Social 	Social information, Individual reward *"I see what other people do, but my bonus is unaffected by others"*	Social information, solitary + comp reward. *"I see what the other people are doing, and my reward depends on both my performance AND how I compare to my competitor"*	Social information, comp reward *"I see what the other people are doing, and my reward depends only on how I compare to my competitor"*

Reward conditions

The reward conditions dictate how a player's performance, and possibily the performance of a competitor, contributes to a final monetary bonus. Consider a task that results in points, where each point is worth $0.01. Two players A and B complete the task and player A earns 150 points, while player B earns 200 points.

	Condition	Description	Player A'a	Player B
r.I	Individual only	Earnings depend only on individual performance	150p	200p
r.IC	Individual + Competition Bonus	Earnings depend on individual performance plus a bonus if you outperform your competitor	150p	200p + **100p** = 300p
r.C	Competition Bonus only	Earnings only depend on your performance relative to your competitor. If you lose, you win nothing.	0p	**100p**

Information conditions

The information condition dictates whether players receive some sort of feedback on their competitor's performance during the task.

	Condition	Description
i.I	Individual only (I)	Individuals only know their performance throughout the game. In the competitive reward conditions, they only learn how their competitor did at the end
i.IS	Individual + Social (IS)	Individuals know both their performance and that of others over time

- In the i.IS condition, the rate at which individuals receive information about others' performance is a free parameter (e.g.; after every trial? every X trials?)

Tasks

Paradigm	Description	Versions	Learning?	Uncertainty?
Holt and Laury (Holt & Laury, 2002)	Repeated selections between 10 paired lottery choices.	-	No	No
Standard DFD gambles (boxes, pie charts)	Repeated selections between gambles varying in risk and EV.	-	No	No
Columbia Card Task (Figner et al., 2009)	Select cards until they decide to stop, or they select the joker.	1) Hot: Sequential 2) Cold: Simultaneous	Yes	No
BART (Lejuez et al., 2002)	Pump a balloon until they cash out, or the balloon pops	1) Hot: Sequential2) Cold: Simultaneous	Yes	Yes

Environments

What statistical environments should people play in? I can consider three domains that vary in the relationship between risk and reward.

Domain	Example	Description	Question
Risk favorable	Stock Market.	Positive risk-reward correlation (e.g.; risky options have higher EV)	In environments with a positive risk-reward correlation, can competition cause people to become more risky, and thus earn more at both the individual and group level?
Risk Neutral	?	No risk-reward correlation (all options have same EV)	In environments with no risk-reward correlation, does competition still increase risk?
Risk unfavorable	Smoking. Risky sex	Negative risk-reward correlation (risky options have lower-EV)	In environments with a negative risk-reward correlation, does compeititon cause people to become more risky, and earn less, or do they become less risky, and earn more??

Study Proposals

1. DFD. 20 repeated choices between 2 (binary) gambles. One high risk, one low risk
   - 2: Information Conditions
     - Individual (i.I)
     - Social (i.S)
   - 3: Reward Conditions
     - Individual (r.I)
     - Individual + Competition (r.IC)
     - Competition only (r.C)
   - 3: Environments
     - Risk Favorable: A (EV = +1.5, VAR = 5), B (EV = +2.0, VAR = 10),
     - Risk Neutral: A (EV = +1.5, VAR = 7.5), B (EV = +1.5, VAR = 10),
     - Risk Unfravorable: A (EV = +1.5, VAR = 7.5), B (EV = +1.0, VAR = 10)
   - Social information
     - Every 5 choices, players receive social information (3 times)
2. BART. 40 repeated plays of the BART with a maximum popping value of 10.
   - 2: Information Conditions
     - Individual (i.I)
     - Social (i.S)
   - 3: Reward Conditions
     - Individual (r.I)
     - Individual + Competition (r.IC)
     - Competition only (r.C)
   - 2: Environment
     - Risk favorable: Balloons more likely to pop at large values.
     - Risk "neutral": Balloons equally likely to pop anywhere.
   - Social information
     - Every 10 balloons, players receive social information (3 times)