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High stakes behavior with low payoffs: Inducing preferences with Holt–Laury gambles

John Dickhaut[a], Daniel Houser[b], Jason A. Aimone[c,d,*], Dorina Tila[e], Cathleen Johnson[f]

[a] Economics and Accounting, Chapman University, One University Drive, Orange, CA 92866, USA
[b] Interdisciplinary Center for Economic Science, George Mason University, 3330 Washington Boulevard, Arlington, VA 22201, USA
[c] Virginia Tech Carilion Research Institute, Virginia Polytechnic Institute and State University, 2 Riverside Circle, Roanoke, VA 24016, USA
[d] Department of Economics, Hankamer School of Business, Baylor University, Waco, TX 76798, USA
[e] Economics, University of New York Tirana, Rruga Komuna e Parisit, Tirana, Albania
[f] BASIS Independent Schools, Tucson, AZ, USA

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ABSTRACT

Kahneman and Tversky (1979) argued that risky decisions in high stakes environments can be informed using questionnaires with hypothetical choices. Yet results by Holt and Laury (2002) suggest that questionnaire responses and decisions in hypothetical and low monetary payoff environments do not well predict decisions in higher monetary payoff environments. This raises the question of whether investigating decision making in high stakes environments requires using high stakes. Here we show that one can induce preferences using the binary-lottery reward technique (e.g., Berg et al., 1986) in order to study high-stakes decision making using low-stakes. In particular, we induce preferences such that decisions in a low-stakes environment reflect well the choices made in the high stakes environment of Holt and Laury (2002). This finding is of interest to anyone interested in studying high-stakes decision behavior without paying high stakes.

1. Introduction

Many pressing economic issues, from financial system bailouts to asset market bubbles to CEO salaries, involve decisions in high stakes environments. In order to test theories relevant to these environments one might need to wait for months (or years) for the appropriate data to become available. If the situation is pressing, and advice is needed quickly, laboratory experiments are often recommended. Yet laboratory experiments, due to their reliance on typically relatively small pecuniary rewards, may be limited in their ability to study behavior in high stakes environments. Here, we argue that this limitation is not as severe as it might at first seem. Indeed, this paper demonstrates a preference-induction procedure (Berg et al., 1986, henceforth BDDO) that allows researchers to study high-stakes behavior in a cost-effective low-stakes environment.

The role of stake-size has been long debated. For example, Kahneman and Tversky (1979) defend hypothetical choices by arguing that subjects have no reason not to tell the truth. Also, Camerer and Hogarth (1999) argue that choices may involve differential productive effort, which can affect what the experimenter observes. Even when choices involve dollars,

* Corresponding author. Tel.: +1 678 612 2904.
E-mail address: jaimone@vtc.vt.edu (J.A. Aimone).

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Table 1
A. Holt–Laury paired lottery-choice decisions: low payout treatment.

	Gamble A (Safe)		Gamble B (Risky)	
	Chance of receiving 2 dollars	Chance of receiving 1.6 dollars	Chance of receiving 3.85 dollars	Chance of receiving 0.1 dollars
Decision 1	10%	90%	10%	90%
Decision 2	20%	80%	20%	80%
Decision 3	30%	70%	30%	70%
Decision 4	40%	60%	40%	60%
Decision 5	50%	50%	50%	50%
Decision 6	60%	40%	60%	40%
Decision 7	70%	30%	70%	30%
Decision 8	80%	20%	80%	20%
Decision 9	90%	10%	90%	10%
Decision 10	100%	0%	100%	0%

B. Holt–Laury treatments

Treatment	Gamble A		Gamble B	
Low	$2.00	$1.60	$3.85	$0.10
x20	$40.00	$32.00	$77.00	$2.00
x50	$100.00	$80.00	$192.50	$5.00
x90	$180.00	$144.00	$346.50	$9.00
Hypothetical x20[a]	$40.00	$32.00	$77.00	$2.00
Hypothetical x50[a]	$100.00	$80.00	$192.50	$5.00
Hypothetical x90[a]	$180.00	$144.00	$346.50	$9.00

[a] In the hypothetical treatments dollar amounts listed are hypothetical amounts only.

cognitive costs may lead to distortions from a subject's true preferences. Camerer and Hogarth (1999) assert further that experiments using salient rewards do not overturned "anomalies" observed in hypothetical choice environments. Harrison (1994), on the other hand, argues that changing incentives affects choices in the Allais Paradox and also preference reversals. His observations may suggest concerns for experiments using small cash payments.

Responding to such concerns, Holt and Laury (2002) (henceforth, HL) conduct risk-elicitation games using high stakes. Their study focuses on a sequence of paired lottery comparisons under both hypothetical and real-dollar payments. They find that choices under hypothetical payments do not vary with stake-size, while people display increasing risk aversion as real dollar stakes increase. HL's finding emphasizes the importance of salient rewards, but also leaves as an open concern whether one can learn about high-stakes decision making using small-stakes environments. This concern is reinforced by experiments reported by Fehr-Duda et al. (2010), which point to the importance of emotions in influencing high-stakes decisions. Even so, if a utility function, such as HL's power expo utility function, explains stake dependent behavior well, our inducing procedure should be able to replicate the predictive power of that function, as we show is indeed the case.

Despite these concerns, this paper reports evidence that one can use low stakes experiments to produce choices that well-reflect decisions made in that same environment when stakes are much higher. In particular, we show that one can induce preferences (Roth and Malouf, 1979 and BDDO) in such a way that high-stakes behavior is generated in a low-stakes environment.

We incorporate the inducing procedure of BDDO into the HL experimental design, thereby inducing the HL power-expo utility function. We study five treatments. The first four coincide with the four actual stakes treatments in HL: Low payouts, 20x payouts, 50x payouts, and 90x payouts. Our replication of the HL subjects' behavior demonstrates the feasibility of accurately inducing high stakes in a low stakes environment. The fifth treatment does not occur in HL, but predicts decisions that would occur with 180x the payouts of the HL low payoff treatment. This treatment demonstrates how the high stakes inducing technique can be used to explore behavior in novel environments previously too expensive to feasibly test. We refer to our treatments as the DHATJ treatments within the tables and figures.[1]

2. Design

In Holt and Laury (2002), subjects in each treatment made ten decisions between two gambles (illustrated in Table 1a.) One gamble was a "safe" gamble with a small difference between the two possible payouts, while the other was "riskier" with a higher difference between payoffs. As seen in the table, HL's seven treatments included four levels of increasing actual stake sizes and three corresponding hypothetical high stakes treatments. In the hypothetical treatments subjects' instructions asked what they would do in the event they faced the decisions in an actual high stakes environment. Subjects received payment based on one randomly selected draw from their ten decisions.

[1] The supplemental information contains instructions, and further experimental design details.