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"I" Make You Risk-averse: The Effect of First-person Pronoun Use in a Lottery Choice Experiment

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Abstract

Does repeated exposure to the first-person pronoun "I" influence people's attitudes toward risk? In a lottery-choice experiment, I directly manipulate the use of the pronoun "I" in two treatment conditions: "I," in which the pronoun is included, and "No I," in which it is omitted. I find that subjects in the "I" treatment condition appear to be more risk-averse than those in the "No I" treatment, suggesting a simple and cheap but effective way for policymakers and practitioners to mount interventions.

Keyword: Risk preferences; Attitudes toward risk; Risk aversion; First-person pronoun; Laboratory experiment

JEL Classification: D81, C91

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I. Introduction

Risk preference, that is, one's attitude toward risk, determines a wide scope of economic behavior under uncertainty, including portfolio choices, insurance purchases, heavy drinking, aggressive driving, cigarette smoking and safety equipment use (Barsky et al., 1997; Anderson and Mellor, 2008; Sapienza, Zingales and Maestripieri, 2009). These types of risk behavior can have devastating consequences such as personal bankruptcy, serious injury, critical disease and even mortality—all of which significantly influence one's life and sometimes society at large. However, many of these undesirable outcomes initially stem from impulsive decisions. In promoting people's economic well-being, it is critical to develop interventions to prevent people from taking excessive risks.

In this study, I propose and examine a novel, easy-to-administer intervention that effectively reduces a person's tendency to take risks. I directly manipulate the use of the first-person pronoun "I" in a lottery-choice experiment. In the "I" treatment condition, "I"s are included throughout the lottery-choice task. In the "No I" treatment, all of the "I"s are simply omitted. I find that this subtle pronoun change has a significant effect on people's risk attitudes, with those in the "I" treatment group exhibiting a higher level of risk aversion than their counterparts in the "No I" group.

Although the effects of pronouns on economic decision-making have gone largely unexplored in the economics literature, the first-person pronoun "I" is used strategically by writers, speakers and business practitioners to influence people's perceptions, attitudes and values. Books written in the first person can make their readers feel more connected to the character speaking. Political speakers use "I" to convince their audiences that they are taking responsibility (Bramley, 2001). Companies use "I" (e.g., iPhone, iRobot) and "my" (e.g., MySpace) in brand or product names to elicit favorable brand attitudes (Kachersky and Carnevale, 2015).[1] Evidence from studies in related fields highlights the effects of first-person pronouns on judgment and decision making.

[1] Kachersky and Carnevale (2015) show that using "I" in brand names elicits more favorable brand attitudes when the products claim to deliver "personal" benefits.

In one line of research, subjects primed with independence through repeated exposure to first-person pronouns give higher endorsements to individualist values than those primed with interdependence (Gardner, Gabriel and Lee, 1999). In fact, the pronoun-circling task is a common priming technique used to activate an individualistic orientation in social and cultural psychology. In another strand of literature, research on psychological distancing reveals that pronoun use alters the perspective people adopt during introspection and directly influences their thoughts and feelings under social stress. For example, subjects who adopt a self-immersed perspective by using the first-person pronoun "I" to self-talk display higher levels of stress in socially anxious situations than those who adopt a self-distanced (observer's) perspective by using non first-person pronouns to self-talk (Kross et al., 2014).[2] Overall, pronoun use plays an important role in determining how individuals perceive events, objects, people and situations.

The preceding discussion leads to two competing hypotheses on the effects of the first-person pronoun "I" on individual decision making under uncertainty. Research on priming suggests that repetitive exposure to the pronoun "I" activates individualism, which studies have linked to overconfidence, and thus increases a person's risk-taking propensity. In line with this hypothesis, Breuer, Riesener and Salznann (2012) use both individual- and country-level data and find that individualism is positively related to financial risk-taking behavior. In contrast, motivated by studies of self-distancing, the use of "I" is thought to promote a self-immersed perspective in which individuals perceive outcomes as their own gains or losses and subsequently become more cautious in their decision-making. Dropping "I" creates psychological distance between decision makers and the ensuing outcomes, such that they feel the gain/loss less personally and behave in a less risk-averse manner. In this study, I test the individualism and self-immersion hypotheses in a controlled laboratory environment. I manipulate subjects' exposure to "I" and observe its effects on their willingness to take risks in a lottery-choice task widely used by

[2] In a similar vein, Newman et al. (2003) and Hancook et al. (2008) find that individuals use fewer self-oriented pronouns (e.g., "I" and "me") when lying than when telling the truth, possibly due to the deceivers' desire to create psychological distance between themselves and their lies.

experimental economists. More importantly, the experimental design allows for causal attribution, which provides more meaningful insight into interventions and policymaking.

II. Experimental Design and Procedures

All of the subjects participate in a lottery-choice experiment for a total of 12 periods. In each period, the subjects are presented with a menu of 13 choices (rows) between a lottery option and a sure outcome option, as illustrated in Figure 1. If the lottery option is chosen, the subject obtains either "*a*" experimental tokens or "800-*a*" tokens with equal probability.[3] The value of *a* indicates the better outcome of the lottery. It takes 12 different values (690, 700, …, 790, 800) throughout the experiment. The order is randomized to counterbalance the order effect. The subjects are paid by one randomly selected decision to control for the wealth effect.

Each option is spelled out in a short sentence to facilitate a simple manipulation of the use of the first-person pronoun "I." In the "I" treatment condition, all of the "I"s are included. In the "No I" treatment condition, all of the "I"s are omitted. Therefore, the "I" occurs 312 times in the "I" treatment and 0 times in the "No I" treatment over the 12 periods of the main task. A between-subject design is used and the subjects under one treatment condition are unaware of the other treatment condition.

Each session proceeds in the following manner. Once the subjects arrive at the computer lab, the experimenters assign them a random seat. When all of the subjects have signed the consent form, they are given computerized instructions, which the experimenter reads aloud to them. Then, the main experiment begins. A post-experiment questionnaire is given to each subject to collect information about their demographic characteristics, the rationale behind their decisions and their guesses regarding the purpose of the experiment. The outcomes of the lotteries chosen by the subject are not disclosed until the end of the experiment. The subjects are paid in cash before they leave the lab.

[3] Hence, all lotteries have an equal expected payoff of 400 tokens. The experimental earnings are converted to Singapore dollars using the 40 tokens = S$1 rate.

Please select "left" or "right" in each of the following row			
Left	Right	Decision	
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 40 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 80 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 120 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 160 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 200 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 240 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 280 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 320 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 360 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 400 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 480 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 560 for for sure	Left	Right
I choose where there is a 50% chance of winning 800 and a 50% chance of winning 0	I choose to win 640 for for sure	Left	Right

Figure 1: The lottery-choice task

Note: This illustrates a decision-making period in the "I" treatment. The subjects choose between a lottery (left) and a sure outcome (right) option in each row.

III. Results

3 sessions of each treatment (hence, 6 in total) were conducted, with a total of 108 undergraduate subjects drawn from across the range of disciplines at a research university in Singapore.[4] 59 subjects participated in the "I" treatment and 49 participated in the "No I" treatment. Each session lasted for roughly 30 minutes. The average monetary earnings were S$13.18 (roughly equivalent to US$10), including the guaranteed S$3 participation fee. The experiment was programmed using Z-tree (Fischbacher, 2007).

Following Holt and Laury (2002), I excluded "irrational" decisions and used the number of *Safe* options chosen in a period as an indicator of risk aversion.[5] The pooled average number of *Safe* options (in a period) was 7 in the "I" treatment condition and 6 in the "No I" treatment. I further broke down the treatment effect by lottery, as shown in Figure 2. For each of the 12 lottery choices, the average *Safe* options chosen were always higher in the "I" treatment than in the "No I" treatment. The treatment effect was statistically significant at the 5% or 10% levels in half of the 12 lottery choices using two-tailed Mann-

[4] 60.2% of the subjects were male, 87.0% were Chinese and 16.7% majored in economics. The decisions in periods 7-12 made by one subject in the "No I" treatment were not recorded successfully due to a technical glitch.

[5] 9.1% of the decisions had more than one switch point. Holt and Laury (2002) document around 10% multiple switching from an undergraduate student subject pool and more irrational decisions in the hypothetical treatments.

Whitney tests. This result provides support for the self-immersion hypothesis and suggests that constant exposure to "I" increases risk aversion.

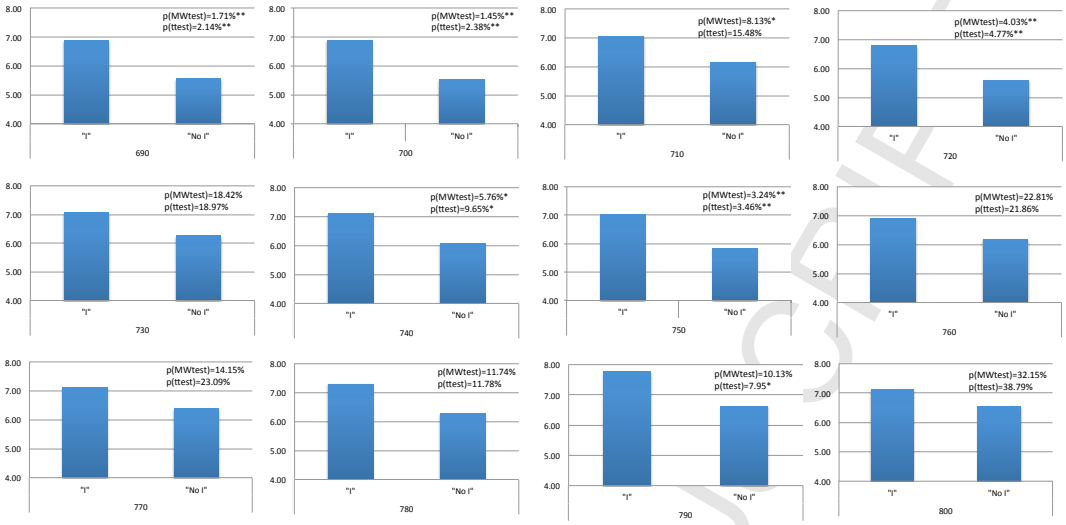

Figure 2: Treatment effect by lottery

Notes: The y-axis indicates the average number of *Safe* options chosen. The number at the bottom of each panel indicates *a*, the better outcome of the lottery. P-values are under two-sided Mann-Whitney tests. * and ** represent significance at the 10% and 5% levels, respectively.

A natural next question relates to what drives the effect. Although the data do not allow for further investigation of the exact mechanism, a possible candidate lies in the emotional reaction. In particular, I speculate that a person's stress level is more elevated in the "I" treatment. When the subjects adopted a self-immersed perspective, they thought more deeply about the ensuing outcomes of their decisions, which generated significant stress in the decision-making process.[6] The elevated stress level in the "I" treatment could therefore drive the subjects to be more risk-averse, as emotions such as stress (Kandasamy et al., 2014) and fear (Cohn et al., 2015) increased their risk-aversion.

Interestingly, the treatment effects were more pronounced among the lottery items with lower risk (lower values of "*a*"). As Figure 2 shows, the average number of *Safe* options in the "I" treatment is in the small neighborhood

[6] This view is also supported by a few self-distancing studies, which suggest that self-distanced subjects exhibit better stress control and emotion regulation than self-immersed subjects (Ayduk and Kross, 2008; Kross et al., 2014).

of 7 for nearly all of the lottery decisions, whereas the average number in the "No I" treatment exhibits an increasing trend with the value of "*a*." The possible mechanism discussed previously can be reconciled with this pattern. In the "I" treatment, because the stress level was elevated by repeated exposure to the pronoun "I," the subjects became more risk-averse and thus the average number of *Safe* options unanimously remained at 7 among all of the lottery items. In contrast, the subjects in the "No I" treatment were less stressed in the low-*a* lottery items, and thus chose fewer *Safe* options. However, when the lottery items became riskier, the stress level also increased to a degree closer to that in the "I" treatment.[7] As a result, although the qualitative results remain similar, the treatment effects are less pronounced for the high-*a* lottery items.

To further control for demographics and potential individual effects, various regressions were conducted to estimate the marginal treatment effect. Table 1 displays the regression results. The dependent variable is the number of *Safe* options chosen in a period. In column (1), I regress it on *Treatment "I"* and the *a* of the lottery. Column (2) controls for *period,* which captures an upward or downward trend. Column (3) further controls for demographic variables including gender (*Male* equals 1 if the subject is male and 0 otherwise), ethnicity (*Chinese* equals 1 if the subject is Chinese, the main ethnic group in Singapore, and 0 otherwise), the number of Economics courses taken (*EconCourses*), and English proficiency (*EnglishProficiency* equals 1 if the subject self-reported his/her level of English proficiency as good or better and 0 otherwise). Column (4) reports the Tobit estimates of the "I" treatment effect, as the number of *Safe* options is censored at 0 and 13. Column (5) is the same as Column (3), except that standard errors are clustered at the individual level.

The regression results corroborate the main finding. The coefficients of *"I" Treatment* are positive and statistically significant at conventional levels in all of the regression models. The coefficients range between 0.94 and 1.01, indicating that repeated exposure to "I" reduces individuals' willingness to take risks by choosing nearly one additional *Safe* option in the lottery-choice task. The coefficient of *a* is significantly positive, meaning that more *Safe* options are

[7] He and Hong (2015) demonstrate that exposure to high-risk lotteries increases risk-aversion.

chosen when the lottery is relatively riskier. Not surprisingly, female subjects are more risk-averse than their male counterparts. The coefficients of other control variables are either insignificant or not consistently significant in all of the regression models.

Table 1: Regression results

	Dependent variable: the number of *Safe* options chosen				
	(1)	(2)	(3)	(4)	(5)
"I" Treatment	1.01***	1.01***	0.94***	0.94***	0.94*
	(0.18)	(0.18)	(0.17)	(0.18)	(0.52)
a	0.01***	0.01***	0.01***	0.01***	0.01***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Period		0.04	0.04	0.04	0.04*
		(0.03)	(0.02)	(0.03)	(0.02)
Male			-1.39***	-1.44***	-1.39**
			(0.18)	(0.19)	(0.58)
Chinese			-0.45	-0.59**	-0.45
			(0.28)	(0.30)	(0.98)
EconCourses			0.04	0.04	0.04
			(0.04)	(0.04)	(0.10)
EnglishProficiency			-0.47	-0.48**	-0.47
			(0.19)	(0.20)	(0.53)
Constant	1.26	0.84	2.40	2.20	2.40
	(1.88)	(1.90)	(1.87)	(2.01)	(1.88)
R^2-adjusted/Pseudo R^2	0.03	0.03	0.09	0.02	0.09
No. of observations	1174	1174	1174	1174	1174

Notes: Observations that have, at most, one switch point are included. In columns (1)-(4), robust standard errors are reported in parentheses. Column (5) reports standard errors clustered at the individual level in parentheses. *, ** and *** represent significance at the 10%, 5% and 1% levels, respectively.

One may argue that the treatment effect was driven by those who noticed the subtle pronoun change in the lottery-choice task. However, it seems unlikely that the subjects were able to perceive the deliberate inclusion or omission of "I" under the between-subject design. In fact, based on their responses to the survey item asking them to guess the intention of this study, none of the subjects appeared to notice the pronoun manipulation.

IV. Discussion and Conclusions

Overall, this paper presents an experimental investigation of the effect of using the first-person pronoun "I" on risk attitudes. The results support the self-immersion hypothesis, which states that repetitive exposure to the pronoun "I"

induces a self-immersed perspective that leads subjects to be more risk-averse in their decision making. The evidence provided here sheds light on a novel, easy-to-administer intervention; specifically, that policymakers and practitioners can influence people's risk attitudes (increase or decrease risk aversion) by including or omitting the pronoun "I" in oral or written communications. For example, if policymakers aim to encourage the use of protective equipment, they can strategically use more "I"s in warning signs and labels. If financial advisors wish to persuade clients to adopt more risky assets in their portfolios, it may be effective to drop some first-person pronouns into their conversations to distance their clients from the potential losses. Gathering evidence in a field setting would be an interesting avenue for future research, as would studying how other personal pronouns influence economic decision making.

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