DISCUSSION PAPER SERIES

Self-Esteem, Confidence, and Redistributive Preferences

Yoshio IIDA

No.2019-02

京都産業大学大学院経済学研究科
〒603-8555　京都市北区上賀茂本山

Graduate School of Economics
Kyoto Sangyo University
Motoyama-Kamigamo, Kita-ku, Kyoto,
603-8555, Japan

2019/04/3

Self-Esteem, Confidence, and Redistributive Preferences

Yoshio IIDA*

*Professor, Faculty of Economics, Kyoto Sangyo University,

Motoyama, Kamigamo, Kita, Kyoto, 603-8555, Japan

e-mail: iida01@cc.kyoto-su.ac.jp

phone:+81-75-705-1917

This work was supported by JSPS KAKENHI Grant Numbers 16K03720

Self-Esteem, Confidence, and Distributive Preferences

Abstract

This study investigated how the self-esteem of individuals and their expectations of future positions are correlated and how these factors affect redistribution preferences in the dictator game. In this study, subjects who performed better in a task were awarded the dictator position. High self-esteem as measured by the Rosenberg Self-esteem Scales (RSES) tended to predict better performance and therefore attaining the dictator position. The tendency was the same regardless of whether the task was an intelligence test or a lottery. Such confident subjects allocated the initial income primarily to themselves when they gained the dictator positon. That is, individuals with high self-esteem were optimistic regarding their future and readily distributed most reward to themselves, even if they understood that their superior position was completely the result of chance. This research shows that individuals' self-esteem and resulting confidence has extremely strong explanatory power regarding their redistribution preferences, which overwhelms other possible explanatory factors.

Keywords: distributive justice; self-confidence; self-esteem; game; experimental methods

JEL Classification: C92, D63, H24

1. Introduction

Psychological experimental studies have revealed individuals' income redistribution preferences and their self-evaluated psychological traits are highly correlated (e.g., Tennessee Self Concept Scale: Brockner, et al., 1987, Interpersonal Orientation (IO): Major and Adams, 1983; Private/Public-self-consciousness: Greenberg, 1983). That is, subjects who tend to evaluate themselves positively redistribute their initial income generously to themselves in the dictator game.

Iida (2015) found that in a dictator game, subjects who expected to initially obtain donor positions redistributed their initial income to themselves to a significantly higher extent than subjects who did not have that expectation. Subjects who do not hesitate to redistribute selfishly are considered to have highly positive self-evaluations. The results of Iida (2015) suggest that individuals who expect to acquire a superior position are those with high self-esteem who do not like distributing generously to others.

Several studies have concluded that individuals with high self-esteem are unafraid of taking risks in various situations (e.g., Wray and Stone, 2005, Josephs, Larrick, Steele, and Nisbett, 1992, Joinson, 2004). Such individuals would have more optimistic expectations and therefore have a greater tendency to make risky choices. For example, individuals with the ambition to become company executives in the business world should have high self-esteem and expect their own success. Similarly, political candidates require high self-esteem and likely expect to win elections. After succeeding in business, company executives have the power to decide the wages of their employees, and after being elected, politicians are authorized to decide plans for taxes, subsidies, and income redistribution. Pirinsky (2013) shows that confident individuals are more risk-taking and entrepreneurial by utilizing data from the World Values Survey. The results of Pirinsky

(2013) and Iida (2015) suggest that individuals with high self-esteem and personal optimism are likely to maintain income disparities by treating themselves generously when they actually gain a superior position. If this is a general fact, it would be a structural factor in the income disparities that exist in the real world.

Can we actually confirm the relationships among self-esteem, positive future expectations, and redistribution preferences? This is the main research question of this study. To answer the question, the self-esteem of subjects was first assessed using the Rosenberg Self-esteem Scale (RSES), after which they played the dictator game in a laboratory. Each subject's role as donor (dictator) or recipient was determined by the subject's performance on an intelligence test or via a lottery. After the task was completed, subjects predicted whether or not they had performed better than their opponent. Then, the subjects were informed whether they were donors or recipients, and donors decided how much of their initial income to redistribute to their recipients. Experimental results revealed that subjects with high self-esteem predicted that they would gain the donor position significantly more frequently than subjects with low self-esteem, and the higher the donors' self-esteem, the lower their redistribution amount.

The next section details the procedure of the experiment, including the psychological instruments and tasks used in this study. The third section reports the results of the experiment, after which the final section provides conclusions.

2. Experimental Methods

2.1. Outline of the experiment

Subjects were recruited from the undergraduate students of Kyoto Sangyo University through the internet. Applicants who had not participated in the same kind of

experiment previously were provided a link to a web page on which they completed the Rosenberg Self-esteem Scale (RSES).

On the day of the experiment, subjects were seated at individually partitioned computers in an experimental laboratory of the University. It was explained that they were paired randomly with anonymous partners, and would participate in the dictator game. No communication was allowed during the experiment. The experimenter distributed instructions and read these instructions to the participants.[1]

All processes that took place on the PC as explained below were executed by z-Tree (Fischbacher, 2007). First, the subjects either answered 12 intelligence-test problems (Raven Progressive Matrices test) or drew lots 12 times. In the intelligence test, subjects were allowed 12 minutes to solve 12 questions. In the lottery task, subjects were shown four choices and were allowed to select one choice per minute, for 12 minutes. Therefore the time required to complete the lottery task and the intelligence test was nearly identical. In either case, the subject of a pair who received the higher score was assigned the dictator role. In the case of tie, the winner was the subject who attained that score in a shorter time. After completing the task, subjects were asked whether they received a higher score than their opponent and how important each of *ability*, *luck,* and *effort* was in obtaining the score. Subsequently, they were asked how much they would like to redistribute if they were assigned as donors (i.e., dictators), and how much they would like to receive from their donors if they were assigned as recipients. Then, subjects were informed of their role as donor or recipient in the dictator game. The donors declared how much of the initial income of ¥500 (approximately 4.5 U.S. dollars) they would redistribute to their recipients and the recipients declared how much they would like to

[1] Instructions appear in Appendix A.

receive from their donors (in each case, the upper limit was 1/2X). The donor was the dictator so that the redistribution was implemented as the donor wished. The final monetary rewards received by the subjects in a pair were the amount donors allocated plus a participation fee (¥500). [2]The procedure took approximately 40 min. Over a period of 8 days, 208 undergraduate students (140 males and 68 females) participated. Four of the participants attended the experimental session without having answered the web RSES questionnaire. These participants were accepted only as necessary to obtain an even number of participants and their data were excluded from subsequent analyses.[3]

2.2 Self-esteem scale

The Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965) is a self-report instrument for evaluating individual self-esteem. The RSES consists of 10 questions, each of which is rated from strongly disagree (1) to strongly agree (4). The total possible score ranges from 10 to 40; higher scores indicate greater self-esteem. The RSES was adopted here because it is the most popular such instrument among researchers of self-esteem (Baumeister, Campbell, Krueger, and Vohs, 2003) and has been used in many social studies in Japan. Mimura and Griffiths (2007) produced a Japanese translation of the scale (RSES-J) through a forward–backward translation procedure. The study administered both the original English version to native English speakers and the translated Japanese version to Japanese speakers, and confirmed identical factor structures and structural coefficients of the items in both datasets. The current study adopted the RSES-J.

---

[2] Most of the experimental procedures of the present study were identical to those of Iida (2015), except for a) the preliminary survey of Rosenberg Self-esteem Scale and b) donors' exclusive possession of power to redistribute their initial income.

[3] One of four participants obtained the dictator role in the intelligence test condition. The remaining three were assigned recipient roles. Two of the recipients participated in the lottery condition and one participated in the intelligence test condition.

The most likely causal factor underlying individual self-esteem is the psychological traits of each individual; however, international comparison studies (e.g., Heine, Lehman, Markus, and Kitayama, 1999) have indicated a role of individuals' cultural backgrounds.[4] Individual circumstances and experience are also possible causal factors. Longitudinal studies have suggested that possible causal factors underlying self-esteem in young individuals are family background, social class, ability (IQ), school performance, obtaining higher education, and occupational success (Bachman and O'Malley, 1977, Maruyama, Rubin, and Kingsbury, 1981, Bachman and O'Malley, 1986).

2.3 Tasks

The study used two tasks. First, Raven's Progressive Matrices (RPM) test was used to measure the subjects' non-verbal, abstract, and cognitive functioning. In the RPM test, nine figures are arranged according to a certain rule in three rows and three columns, one of which is blank. The respondent must select an appropriate figure to replace the blank from four candidates. For the current study, 12 questions from relatively low difficulty to high difficulty were selected from the 48 questions of the Advanced Progressive Matrix, which is a part of RPM test that is considered to be suitable for adolescents and adults.

The second task was a simple lottery. Subjects were shown four radio buttons on their PC and were told that one button was the target. Subjects played the lottery twelve times. As neither the lottery nor the RPM test requires specific knowledge and training, unfairness due to such factors is not a concern.

[4] International comparisons of the RSES often note that Japanese individuals produce relatively low scores (e.g., Schmitt and Allik, 2005).

To obtain a good score on the RPM test, subjects are required to have good reasoning and cognition. Therefore, when subjects won against their opponents, this would likely be attributed to their own abilities. In contrast, to win or lose on a lottery is simply a matter of luck. In order to confirm whether the subject recognized the features of tasks as the experimental design intended, after completion of the task, subjects were asked to rate how important each of ability, luck, and effort were to obtain good results on the task.[5]

3. Results

3.1 General results

Donors redistributed 26% of the maximum possible redistribution amount on average in the RPM test condition and redistributed 28.5% in the lottery condition. Many studies (e.g., Hoffman et al., 1994, Cherry et al., 2002, Oxoby and Spraggon, 2008, Rousu and Baublitz, 2011) have reported that causes of income disparity influences individuals' redistribution preferences, but a statistically significant difference in this respect was not found in the current results (Wilcoxon test; $z = 0.33$, $p = 0.74$, $n = 104$). In contrast, females redistributed significantly more than males (male: 22.3%, female: 36.8%, $z = 2.2$, $p = 0.03$).

The average RSES score of the subjects in this study was 23.9. Males scored somewhat higher than females (male: 24.04, female: 22.65), although the difference was not statistically significant ($z = 1.67$, $p = 0.09$, $n = 204$). The internal consistency of the questions was sufficient (Cronbach's alpha = 0.85). Rosenberg (1965) stated that self-

[5] The choice made via a 7-point scale: 1, not important at all; 2, not important; 3, not very important; 4, neither important nor not important; 5, slightly important; 6, important; and 7, very important.

esteem has two different aspects. One is that the individual feels that he/she is "very good" and the other is that he/she feels "good enough" for him/herself. Self-esteem measured by RSES represents the latter aspect. Therefore, RSES scores would not necessarily correlate with subjects' predictions of whether would perform better than others, i.e. whether they were confident in their relative performance or not. However, a logistic regression revealed that higher RSES scores were associated with a higher probability of making a confident prediction (Table 1a). Additionally, the relationship between the donors' RSES scores and redistribution preferences was also significant. That is, donors with higher RSES scores redistributed proportionally lower amounts (Table 1b).

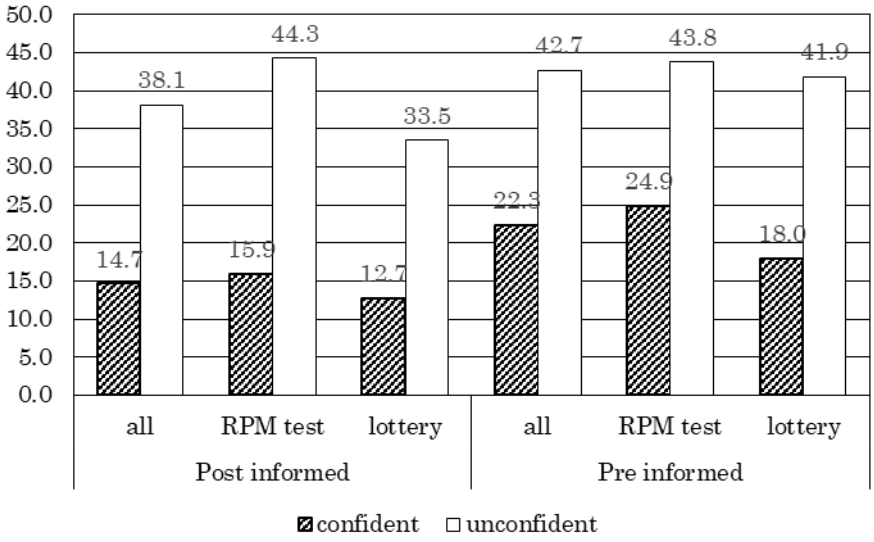
Table 1: Relationship between RSES and redistribution preferences/expectations

	objective variable							
	a. confident expectation				b. redistribution preference			
	estimate	s.d.	t-value		estimate	s.d.	χ-	
intercept	-3.51	(1.06)	11.06	**	57.2	(14.5)	3.92	**
RSES	0.14	(0.04)	10.63	**	-1.3	(0.60)	-2.13	*
r-square	0.09				0.04			
n	103				103			

Note: RSES: score of Rosenberg self-esteem scale, redistribution preference: ratio of redistribution amount to maximum possible redistribution amount. optimistic expectation: expected to win=1, to lose=0. The numbers in parenthesis are standard deviations. ^: p< 0.1, *: p< 0.05, **: p< 0.01.

An extremely strong correlation was observed between subjects' predictions of whether they would gain the dictator position and their redistribution preferences. Among the 104 donors, 48 of them expected to perform better than their opponent on the initial task, and 56 of them expected to perform worse. Hereafter, those who made optimistic predictions are called "confident donors" and the others are called "unconfident donors." The differences between donor types are shown in Figure 1. Confident donors redistributed 14.7% of the maximum possible allotment on average, whereas unconfident donors redistributed 38.1%. ($z = 3.68$, $p = 0.0004$).

Figure 1: Redistribution preferences of confident and unconfident donors



Similar significant differences between confident and unconfident donors were found when the data were divided into the RPM test condition and the lottery condition. The significances of the differences are shown in "post-informed" section of Table 2.

Table 3 shows the average and standard deviation of subjects' ratings of how important each of ability, luck, and effort were to obtain good results on the tasks. Statistically significant differences were clear: for the RPM task, subjects considered ability more important than luck, while on the lottery task, subjects considered luck more important than ability. The average values for effort were somewhat lower than those for ability and luck, but RPM task subjects considered effort more important than the subjects who took part in the lottery task. Individual's subjective recognition of whether ability or luck was more important to win on a task did not influence the redistribution preferences of donors. This result suggests that the selfish choice of a confident donor is not based on the *equity standard*.

Table 2: Expectation and redistribution preferences

		a. all			b. RPM test			c. lottery		
	expectation	n	average		n	average		n	average	
post informed	confident	48	14.7	(28.1)	30	15.9	(26.0)	18	12.7	(32.0)
	unconfident	56	38.1	(35.6)	24	44.3	(37.4)	32	33.5	(34.1)
	p		0.0002			0.003			0.02	
	z		3.67**			2.95**			2.35*	
pre informed	confident	48	22.3	(31.8)	30	24.9	(31.6)	18	18.0	(32.6)
	unconfident	56	42.7	(34.9)	24	43.8	(35.3)	32	41.9	(35.3)
	p		0.002			0.06			0.02	
	z		3.05**			1.89^			2.42*	

Note: The numbers in parenthesis are standard deviations. ^: p< 0.1, *: p< 0.05, **: p< 0.01.

Table 3: Evaluation of factors related to better task performance

		factors		
		ability	luck	effort
RPM test	average	6.38	5.16	4.95
	s.d.	(0.89)	(1.64)	(1.73)
Lottery	average	5.27	6.05	3.92
	s.d.	(1.94)	(1.26)	(2.26)
	t-value	5.25**	4.39**	3.7**

Note: ^ p< 0.1, * p< 0.05, ** p< 0.01.

Did confident donors originally prefer selfish redistribution, or did recognition of their superior position make them selfish? In this study, before being told whether or not they were assigned as donors, subjects stated how much they would redistribute if they became donors. The results shown in right half of Figure 1 and the “pre-informed” section of Table 2 reveal that confident donors were selfish from the outset; significant differences between the confident and unconfident donors were also found before they were informed of their role as donor or recipient.

Although this study focused on the subjects’ psychological characteristics and future expectations regarding redistribution preferences, detailed examination of the data revealed that the past experiences of the subjects considerably influenced the results. All

subjects in this study were students of Kyoto Sangyo University, and their participation history in economic experiments is recorded by the experimental laboratory of the University. Students cannot participate in the same experiment more than once, but they can participate in different kinds of experiments. In this study, 56 of 104 donors had participated in different types of experiments in the past. Their average redistribution ratio was 22.1%, which is significantly lower than that of the 48 donors who participated for the first time, namely 33.3% ($z = 2.3$, $p = 0.02$). In addition, a significant negative correlation was between the number of times a subject had participated in previous experiments (0 to 6 times) and their redistribution ratio (Table 4a). More experienced subjects may be more selfish because, as noted by Matthey and Regner (2013), such subjects will have experienced the selfish behavior of others in past study participation and likely revised their strategies in the current study accordingly.

Table 4: Relationship between experience and redistribution preferences/RSES

	objective variable							
	a. redistribution preference				b. RSES			
	estimate	s.d.	t-value		estimate	s.d.	t-value	
intercept	33.6	(4.15)	8.09	**	23.6	(0.69)	33.95	**
experience	-6.4	(2.58)	-2.47	*	-0.1	(0.43)	-0.15	
r-square	0.057				0.0002			
n	104				103			

Note: experience: number of experiment subjects had participated, redistribution preference: ratio of redistribution amount to maximum possible redistribution amount. RSES: score of Rosenberg self-esteem scale. The numbers in parenthesis are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$

That both experienced subjects and those with high RSES scores exhibited low redistribution preferences raises the question as to whether the individual's experience of participating in experiments affects his/her RSES score. The applicable regression analysis (Table 4b) reveals that there was no significant relationship between these variables.

3.2 Regression analysis

Table 5 and Table 6 show multiple regression analyses that accounted for and verify the factors noted in the previous subsection. Table 5 presents whether or not a subject was confident in obtaining the donor position as an explanatory variable ("confident"), and Table 6 adopts the RSES score instead of the confidence variable. In each case, the significant explanatory factors were RSES or confidence and the number of experimental experiences.[6] The interaction between gender and task approached significance. Confidence very strongly influenced the redistribution preferences, to a far greater extent than the other explanatory variables other than experimental experience. RSES scores showed a similar pattern, albeit not as strongly.[7] The previous subsection noted that RSES scores were significantly related to making a confident prediction of obtaining the donor role, but the regression analysis shown in Table 7 shows that the confidence was affected not only by RSES, but also by sex, task, and experience to some extent. Confidence was highly significant in the analysis detailed in Table 5 probably because confidence reflects various other explanatory variables. Nevertheless, the importance of RSES score is noteworthy.

---

[6] Although significances values are smaller, similar results were also obtained in a regression analysis of redistribution preferences declared before the donors were informed of their roles (Table B 2 in Appendix B).

[7] In this experiment, recipients also declare how much they would like to receive from the donor. Contrary to the preferences of donors, neither recipients' RSES scores nor confidences correlated significantly with their redistribution preferences. Other possible factors (i.e., gender, prior experimental experiences, and task types) also did not correlate significantly with their preferences (Table B 3 in Appendix B). Focusing on the pre-informed preferences (preferences that recipients declared before they were informed of their roles), although confident recipients (recipients who expected to be donors) requested to receive significantly higher allocations than unconfident recipients, no significant correlation between their requests and RSES scores was found (Table B 4 in Appendix B). This is probably because subjects knew that the declarations of recipients did not affect the actual redistribution and there was therefore little incentive to declare their preferences seriously.

Table 5: Regression analysis of redistribution preferences including confidence as an explanatory variable

	estimate	t		estimate	t		estimate	t		estimate	t		estimate	t	
intercept	35.95	6.4	**	35.18	7.65	**	33.52	7.86	**	32.91	7.8	**	31.50	7.88	**
	(5.62)			(4.60)			(4.27)			(4.22)			(4.00)		
confidence	-9.69	-2.2	*	-10.36	-3	**	-11.09	-3.3	**	-11.17	-3.3	**	-10.76	-3.4	**
	(4.38)			(3.45)			(3.34)			(3.34)			(3.17)		
experience	-6.56	-1.9	^	-6.31	-2.1	*	-5.25	-2.1	*	-5.21	-2.1	*	-5.12	-2.1	*
	(3.40)			(3.06)			(2.47)			(2.47)			(2.49)		
sex	-3.91	-1		-3.45	-1		-2.94	-0.8		-3.22	-0.9				
	(4.01)			(3.65)			(3.55)			(3.54)					
task	-0.05	-0		-0.14	-0		-0.77	-0.2		-1.45	-0.4				
	(3.62)			(3.57)			(3.51)			(3.45)					
confidence*experience	-2.36	-0.8		-2.12	-0.8										
	(2.87)			(2.64)											
confidence*sex	-1.14	-0.3													
	(4.46)														
confidence*task	4.29	1.2		4.01	1.17		3.33	1							
	(3.58)			(3.41)			(3.32)								
experience*sex	2.90	0.84		2.58	0.84										
	(3.45)			(3.08)											
experience*task	-0.54	-0.2													
	(2.76)														
sex*task	-7.30	-1.9	^	-7.06	-1.9	^	-6.37	-1.8	^	-5.41	-1.6				
	(3.77)			(3.64)			(3.55)			(3.42)					
r-square	0.21			0.21			0.20			0.19			0.15		
n	104			104			104			104			104		

Note: confidence: expected to win=1, to lose=0, experience: number of experiment subjects had participated, Sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ p< 0.1, * p< 0.05, ** p< 0.01.

Table 6: Regression analysis of redistribution preferences including RSES score as an explanatory variable

	estimate	t		estimate	t		estimate	t		estimate	t		estimate	t	
intercept	69.55	3.98	**	66.92	3.94	**	71.94	4.36	**	72.63	4.45	**	62.00	4.29	**
	(17.46)			(16.98)			(16.51)			(16.32)			(14.44)		
RSES	-1.41	-1.8	^	-1.31	-1.8	^	-1.63	-2.3	*	-1.68	-2.4	*	-1.23	-2.1	*
	(0.77)			(0.75)			(0.71)			(0.70)			(0.59)		
experience	-8.73	-2.8	**	-8.35	-2.7	**	-5.90	-2.3	*	-5.72	-2.3	*	-6.30	-2.5	*
	(3.16)			(3.09)			(2.55)			(2.54)			(2.56)		
sex	-4.47	-1.2		-4.70	-1.3		-4.41	-1.2		-4.18	-1.2				
	(3.75)			(3.69)			(3.66)			(3.63)					
task	-0.26	-0.1		-0.41	-0.1		-1.04	-0.3							
	(3.69)			(3.58)			(3.56)								
RSES*experience	-0.07	-0.1													
	(0.48)														
RSES*sex	0.94	1.3		0.91	1.27		1.05	1.47		1.11	1.58				
	(0.73)			(0.72)			(0.72)			(0.70)					
RSES*task	0.74	1.13		0.72	1.14										
	(0.65)			(0.64)											
experience*sex	3.78	1.23		3.43	1.13										
	(3.09)			(3.03)											
experience*task	2.20	0.81													
	(2.73)														
sex*task	-4.74	-1.3		-4.52	-1.2		-3.53	-1							
	(3.71)			(3.66)			(3.57)								
r-square	0.18			0.17			0.15			0.13			0.09		
n	103			103			103			103			103		

Note: RSES: score of Rosenberg self-esteem scale, experience: number of experiment subjects had participated, sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$.

Table 7: Regression of confidence of expectations

	estimate	χ-square		estimate	χ-square		estimate	χ-square	
intercept	-9.69	7.15	**	-10.09	7.19	*	-9.71	7.15	**
	(3.62)			(3.76)			(3.63)		
RSES	0.36	6.35	*	0.37	6.52	*	0.35	6.48	**
	(0.14)			(0.14)			(0.14)		
experience	0.98	4.69	*	0.97	4.56	*	0.96	4.49	*
	(0.45)			(0.46)			(0.45)		
sex	0.54	1.99		0.67	3.34	^	0.68	3.55	^
	(0.39)			(0.36)			(0.36)		
task	-0.37	0.88		-0.47	3.79	^	-0.49	4.09	*
	(0.39)			(0.24)			(0.24)		
RSES*experience	0.05	1.47							
	(0.04)								
RSES*sex	-0.27	3.59		-0.28	3.73	^	-0.26	3.63	^
	(0.14)			(0.14)			(0.14)		
RSES*task	-0.04	0.63		-0.03	0.31				
	(0.05)			(0.05)					
experience*sex	-0.88	3.92	*	-0.92	4.12	*	-0.93	4.24	*
	(0.45)			(0.45)			(0.45)		
experience*task	-0.32	1.91		-0.21	1.08				
	(0.23)			(0.20)					
sex*task	-0.21	0.3							
	(0.39)								
entropy r-square	0.28			0.26			0.25		
r-suare	0.43			0.41			0.40		
n	103			103			103		

Note: RSES: score of Rosenberg self-esteem scale, experience: number of experiment subjects had participated, sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$.

3.3 Overconfidence of confident donors

In this research, subjects who performed better than their opponents on tasks gained the donor (dictator) positions. Confident donors who conjectured that their performance would be better than that of their opponent might also evaluate their performance as better than it actually was. Such overconfidence might be the cause of the selfish distribution of confident donors. Did the confident subjects rate their performance as higher than their actual achievement? Subjects were asked to anticipate their task scores before being informed of their actual scores. Table 8 shows a regression analysis using RSES as the dependent variable and the conjectured and actual scores on the RMS test and lottery as independent variables. For the RMS task, subjects with higher self-esteem conjectured their test score was higher (Table 8, 1a). However, their actual test scores did not correlate with their RSES score (1b)[8]. Therefore, individuals with high (low) self-esteem evaluated their abilities as beyond (below) their actual performance. It is interesting that such a trend was not found for the lottery task (Table 8, 2a). Subjects with high (low) self-esteem did not anticipate that their luck was better (worse). Indeed, there was no significant correlation between RSES scores and actual lottery scores (2b).

Investigation of the relationship between whether or not subjects were confident of becoming donors and their conjectured scores provided similar results. For the RPM test task, confident donors predicted their scores as significantly higher than unconfident donors (Table 9, 1a). However, there was no significant difference between the actual scores of confident and unconfident donors (1b). For the lottery task, there was no significant difference between the conjectures (and, naturally, the actual scores) of

[8] Previous studies have verified that subjects' self-esteem and their arithmetic or intelligence test performances are not correlated (Wallace and Baumeister, 2002, Baumeister, Heatherton, and Tice, 1993).

confident and unconfident donors. Interestingly, for the lottery task, both confident and unconfident donors overestimated their scores: Both confident and unconfident donors were overconfident regarding their luck.

For the RPM test condition, confident (unconfident) or high (low) RSES donors conjectured that their performance was higher (lower) than their actual performance. Based on the equity standard, it is expected that such subjects would take a larger (smaller) share of the reward as their own. However, in the lottery condition, there was no significant difference between confident and unconfident donors in the extent to which own performance was overestimated. Although there was no significant difference in degree of overconfidence, there was a clear difference in redistribution preferences between confident and unconfident donors. That is, the reason for the difference in redistribution preferences of confident and unconfident donors is not the difference in the level of absolute overconfidence. Since the performance of each subject was completely the result of luck in the lottery task, there was no reason by which confident donors could justify redistribution weighted heavily toward themselves. This suggests that donors used their extant standards of distributive justice that had been derived outside of the experimental framework of this study.

Table 8: Relationship between RSES scores and task performances

	1. RMS test score				2. lottery score			
	a. conjecture		b. actual		a. conjecture		b. actual	
	estimate	t-value	estimate	t-value	estimate	t-value	estimate	t-value
intercept	3.65	2.79**	7.30	5.23**	4.66	3.24**	4.12	5.52**
	(1.31)		(1.4)		(1.43)		(0.74)	
RSES	0.16	2.96**	0.01	0.2	0.01	0.23	0.01	0.48
	(0.06)		(0.06)		(0.06)		(0.03)	
r-square	0.16		0.00		0.001		0.004	
n	49		49		54		54	

The numbers in parenthesis under estimated coefficients are standard deviations. ^ p< 0.1, * p< 0.05, ** p< 0.01.

Table 9: The expectation of relative performance and conjectured/actual absolute task performance

	1. RMS test score				2. lottery score			
		a. conjecture	b. actual			a. conjecture	b. actual	
expectation	n	average	average	t-value	n	average	average	t-value
confident	18	8.50	7.39	2.15*	30	5.43	4.00	2.67*
		(1.75)	(1.72)			(2.96)	(1.53)	
unconfident	32	6.78	7.59	1.92^	24	4.41	3.50	2.01^
		(1.93)	(2.15)			(1.91)	(1.02)	
z-value		2.93**	0.48			1.18	0.61	

The numbers in parenthesis under estimated coefficients are standard deviations. ^ p< 0.1, * p< 0.05, ** p< 0.01.

4. Conclusion

The main research question of this study was clearly answered. The results of this research suggest that individuals with high self-esteem are optimistic regarding their future and are likely to increase income disparities by distributing excessively to themselves when they have the power to decide the allocation of incomes. Are people with redistributive power, such as business executives and politicians, actually individuals who are high in self-esteem and optimistic regarding their future prospects — and are they actually selfish? It seems feasible that these characteristics are present in such groups, but few studies have focused on differences in psychological traits by occupation, especially with respect to the redistributive preferences of individuals. Therefore, future research could usefully clarify tendencies toward self-esteem and redistribution preferences by occupation or social position. Additionally, various studies show that sociocultural differences between countries and intercultural differences in psychological traits may affect the greediness of donors. Multinational studies are needed to discover whether confident donors are generally greedy across countries.

Another finding of this research is that there was little difference in the results between the intelligent test and lottery task conditions. This indicates that the equity standard has little effect compared to the individual's self-esteem and confidence. In addition, individuals of high social status can be selfish, even if they think their positions are entirely the result of chance.

The findings further indicate that even in the same experiment, the results can differ depending on the distribution of the psychological traits of subjects. Therefore, it would be desirable for the experimenter to measure the psychological traits of participants in advance, in order to control for such effects in the experimental design. In addition, this study found that subjects' participation histories considerably affected the results. It would also be desirable for experimenters to check the history of subjects and include history variables as potential causal factors in the decisions of individuals.

Acknowledgements

This study was supported by JSPS KAKENHI Grant Numbers 16K03720. I thank Sobei H. Oda, Tsuyoshi Takahara, and Byu Rai for their assistance in conducting the experiments. I am indebted to Sebastian Schäfer for coding the intelligence test on z-Tree.

References

Bachman, J. G., & O'malley, P. M., 1977. "Self-esteem in young men: A longitudinal analysis of the impact of educational and occupational attainment." *Journal of personality and social psychology*, 35(6), 365.

Bachman, J. G., & O'malley, P. M., 1986. "Self-concepts, self-esteem, and educational experiences: The frog pond revisited (again)." *Journal of Personality and Social Psychology*, 50(1), 35.

Baumeister, R.F., Heatherton, T.F., & Tice, D.M., 1993. "When ego threats lead to self-regulation failure: Negative consequences of high self-esteem." *Journal of Personality and Social Psychology*, 64, 141–156.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D., 2003. "Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles?". *Psychological Science in the Public Interest*, 4(1), 1-44.

Brockner, J., O'Malley, M. N., Hite, T., and Davies, D. K., 1987. "Reward allocation and self-esteem: The roles of modeling and equity restoration." *Journal of Personality and Social Psychology* 52(4), 844-850.

Cherry, T. L., Frykblom, P. and Shogren, J. F., 2002. "Hardnose the Dictator." *American Economic Review* 92(4), 1218-1221.

Greenberg, J., 1983. "Self-image versus impressional management in adherence to distributive justice standards: The influence of self-awareness and self-consciousness." *Journal of Personality and Social Psychology*, *44*(1), 5-19.

Iida, Y., 2015. "Task-based Income Inequalities and Redistribution Preferences: a Comparison of China and Japan." *Journal of Behavioral and Experimental Economics*, 55, 91-102

Fischbacher, U. 2007. "z-Tree: Zurich toolbox for ready-made economic experiments." *Experimental Economics*, 10(2), 171-178.

Heine, S.H., Lehman, D.R., Markus, H.R., & Kitayama, S. 1999. "Is there a universal need for positive self-regard?" *Psychological Review*, 106, 766–794.

Hoffman, E., McCabe, K., Shachat, K. and Smith, V., 1994. "Preferences, property rights, and anonymity in bargaining games." Games and Economic Behavior, 7(3), 346-380.

Joinson, A. N. 2004. "Self-esteem, interpersonal risk, and preference for e-mail to face-to-face communication." *CyberPsychology & Behavior,* 7(4), 472-478.

Josephs, R. A., Larrick, R. P., Steele, C. M., & Nisbett, R. E. 1992. "Protecting the self from the negative consequences of risky decisions." *Journal of Personality and Social Psychology*, 62(1), 26.

Major, B., & Adams, J. B., 1983. "Role of gender, interpersonal orientation, and self-presentation in distributive-justice behavior." *Journal of Personality and Social Psychology*, 45(3), 598.

Maruyama, G., Rubin, R.A., & Kingsbury, G.G., 1981. "Self-esteem and educational achievement: Independent constructs with a common cause?" *Journal of Personality and Social Psychology*, 40, 962–975.

Matthey, A., & Regner, T., 2013. "On the independence of history: experience spill-overs between experiments." *Theory and decision*, 75(3), 403-419.

Mimura, C., and Peter G. A., 2007, "Japanese version of the Rosenberg Self-Esteem Scale: Translation and equivalence assessment." *Journal of Psychosomatic Research* 62. 5: 589-594.

Oxoby, R. J., Spraggon, J., 2008. "Mine and Yours: Property Rights in Dictator Games." *Journal of Economic Behavior and Organization* 65 (3-4), 703-13.

Pirinsky, C., 2013. "Confidence and economic attitudes." *Journal of Economic Behavior & Organization*, 91, 139-158.

Rosenberg, M. 1965. Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Rousu, M. C. and Baublitz, S. J., 2011. "Does Perceived Unfairness Affect Charitable Giving? Evidence from the Dictator Game." *Journal of Socio-Economics* 40 (4), 364-367.

Schmitt, D. P., & Allik, J., 2005. "Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: exploring the universal and culture-specific features of global self-esteem." *Journal of Personality and Social Psychology*, 89(4), 623.

Wallace, H.M., & Baumeister, R.F., 2002. "The performance of narcissists rises and falls with perceived opportunity for glory." *Journal of Personality and Social Psychology*, 82, 819–834.

Wray, L. D., & Stone, E. R., 2005. "The role of self‐esteem and anxiety in decision making for self versus others in relationships." *Journal of Behavioral Decision Making*, 18(2), 125-144.

Appendix A: Instructions translated into English

Instruction

Thank you for participating in this experiment. Please switch off your cellphone and keep it in your bag. Do not speak with each other until the experiment is finished. Read the following instructions carefully and raise your hand if you cannot understand anything. We will attend to your question promptly.

Outline of the experiment

The outline of the experiment is as follows: first, you are made a member of a group of two. Members of both the groups take the procedure independently. The result of the procedure decides the amount of your reward. Next, you answer a question about how you want to change the distribution of rewards. Finally, the demand of the better result in the procedure is accepted.

First stage

In the first stage, you take a procedure. Your result in the procedure becomes the source of your reward. You will be given instructions for the procedure when the experiment starts. Please follow the instructions on your PC screen. The person with the higher score receives a reward of 500 yen, and the lower-scoring one receives 0 yen. If the result is a tie, the quickest person to get the last single score gains 500 yen.

After the procedure is finished, please answer some questions regarding how you feel about the procedure. Finally, your score along with the result is displayed on the screen.

Second stage

In the second stage, you have a question regarding redistribution. If you are the person to have received a higher reward, you are questioned about what amount of your own reward you will give to your group member.

The maximum amount you can answer is ¥250. The actual transfer will be the amount you determine. If you have received the lower reward, you will be asked what amount you wish to receive from your partner. Although your requested sum will not be paid to you, please assume it will be.

Your final profit is the amount of the reward decided from the experiment plus 500 yen as the participation fee.

Please feel free to ask in case you have any questions.

Appendix B

Table B 1 Average rating for each question item of RSES

statements	average	s.d.
1. On the whole, I am satisfied with myself.	2.38	0.76
2. At times I think I am no good at all. *	1.84	0.78
3. I feel that I have a number of good qualities.	2.63	0.86
4. I am able to do things as well as most other people.	2.66	0.75
5. I feel I do not have much to be proud of. *	2.39	0.90
6. I certainly feel useless at times. *	2.08	0.82
7. I feel that I'm a person of worth, at least on an equal plane with others.	2.62	0.82
8. I wish I could have more respect for myself. *	1.99	0.81
9. All in all, I am inclined to feel that I am a failure. *	2.37	0.86
10. I take a positive attitude toward myself.	2.71	0.85
average	23.67	5.34

Note: *: reversal item

Table B 2 Regression analysis of pre-informed preferences of donors

	1.a.		1.b.			2.a		2.b	
	estimate	t-value	estimate	t-value		estimate	t-value	estimate	t-value
intercept	37.79	6.4**	36.11	8.63**	intercept	80.07	4.42**	62.49	4.14**
	(5.90)		(4.19)			(18.10)		(15.09)	
confidence	-10.42	-2.27*	-9.50	-2.86**	RSES	-1.71	-2.15*	-1.06	-1.72^
	(4.60)		(3.32)			(0.80)		(0.61)	
experience	-5.04	-1.41	-3.60	-1.38	experience	-7.83	-2.4*	-4.66	-1.75^
	(3.57)		(2.61)			(3.27)		(2.66)	
sex	-1.29	-0.31			sex	-1.52	-0.39		
	(4.22)					(3.89)			
task	0.54	0.14			task	0.46	0.12		
	(3.80)					(3.81)			
confidence*experience	-2.49	-0.83			RSES*experience	-0.08	-0.16		
	(3.01)					(0.50)			
confidence*sex	2.93	0.62			RSES*sex	1.39	1.85^		
	(4.69)					(0.75)			
confidence*task	0.09	0.02			RSES*task	0.23	0.34		
	(3.76)					(0.68)			
experience*sex	3.58	0.99			experience*sex	5.75	1.81^		
	(3.62)					(3.18)			
experience*task	2.28	0.79			experience*task	4.38	1.56		
	(2.90)					(2.82)			
sex*task	-5.14	-1.3			sex*task	-3.41	-0.89		
	(3.97)					(3.84)			
r-square	0.16		0.10			0.15		0.06	
n	104		104			103		103	

Note: confidence: expected to win=1, to lose=0, RSES: score of Rosenberg self-esteem scale, experience: number of experiment subjects had participated, Sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$.

Table B 3 Regression analysis of post-informed preferences of recipients

	1.a.		1.b.			2.a		2.b	
	estimate	t-value	estimate	t-value		estimate	t-value	estimate	t-value
intercept	58.79	10.42**	57.21	11.55**	intercept	46.71	2.43**	49.88	2.88**
	(5.64)		(4.96)			(19.21)		(17.32)	
confidence	-0.37	-0.09	0.42	0.12	RSES	0.48	0.63	0.32	0.45
	(4.16)		(3.59)			(0.76)		(0.70)	
experience	2.34	0.73	2.77	1	experience	2.89	0.92	2.71	0.98
	(3.19)		(2.77)			(3.14)			
sex	0.10	0.02			sex	-0.12	-0.03		
	(3.94)					(4.00)			
task	1.10	0.26			task	(0.86)	0.22		
	(4.17)					(3.94)			
confidence*experience	1.37	0.45			RSES*experience	-0.02	-0.03		
	(3.05)					(0.64)			
confidence*sex	2.23	0.55			RSES*sex	-0.90	-1.15		
	(4.05)					(0.78)			
confidence*task	1.21	0.31			RSES*task	-0.04	-0.05		
	(3.95)					(0.77)			
experience*sex	4.54	1.42			experience*sex	3.79	1.16		
	(3.19)					(3.27)			
experience*task	1.25	0.38			experience*task	1.26	0.4		
	(3.28)					(3.12)			
sex*task	4.88	1.2			sex*task	3.64	0.93		
	(4.08)					(3.93)			
r-square	0.05		0.01			0.05		0.01	
n	104		104			101		101	

Note: confidence: expected to win=1, to lose=0, RSES: score of Rosenberg self-esteem scale, experience: number of experiment subjects had participated, Sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$.

Table B 4 Regression analysis of pre-informed preferences of recipients

	1.a.		1.b.			2.a		2.b	
	estimate	t-value	estimate	t-value		estimate	t-value	estimate	t-value
intercept	64.92	12.2**	62.68	13.22**	intercept	65.01	3.51**	60.82	3.61**
	(5.32)		(4.74)			(18.50)		(16.86)	
confidence	7.66	1.95^	7.08	2.06*	RSES	0.00	0.01	0.08	0.11
	(3.92)		(3.43)			(0.74)		(0.68)	
experience	1.25	0.41	2.53	0.96	experience	1.04	0.34	2.42	0.9
	(3.01)		(2.65)			(3.03)		(2.70)	
sex	-0.14	-0.04			sex	0.96	0.25		
	(3.72)					(3.85)			
task	2.34	0.6			task	0.22	0.06		
	(3.93)					(3.79)			
confidence*experience	-1.11	-0.39			RSES*experience	-0.37	-0.61		
	(2.88)					(0.61)			
confidence*sex	0.71	0.18			RSES*sex	-0.15	-0.2		
	(3.82)					(0.75)			
confidence*task	-0.70	-0.19			RSES*task	0.52	0.7		
	(3.73)					(0.74)			
experience*sex	5.44	1.81			experience*sex	5.82	1.85		
	(3.01)					(3.15)			
experience*task	-0.93	-0.3			experience*task	0.83	0.28		
	(3.09)					(3.01)			
sex*task	4.21	1.1			sex*task	4.29	1.14		
	(3.85)					(3.78)			
r-square	0.11		0.05			0.07		0.01	
n	104		104			101		101	

Note: confidence: expected to win=1, to lose=0, RSES: score of Rosenberg self-esteem scale, experience: number of experiment subjects had participated, Sex: male=1, female=0, task: Lottery=1, RPM test=0. The numbers in parenthesis under estimated coefficients are standard deviations. ^ $p< 0.1$, * $p< 0.05$, ** $p< 0.01$.