國立臺灣大學理學院心理學研究所

碩士論文

Graduate Institute of Psychology

College of Science

National Taiwan University

Master Thesis

金錢預示效果對能力知覺的影響

The Effect of Money Priming on Perceived Competence

翁若珊

Jennifer Weng

指導教授：林以正 博士

Advisor: Yi-Cheng Lin, Ph.D.

中華民國 103 年 6 月

June, 2014

摘要

自我充足假設(Self-sufficiency hypothesis)指出金錢概念的觸發會造成個體的獨立以及與他人拉開距離的傾向(Vohs, Mead, & Goode, 2006)。儘管過去很多研究探討引發金錢概念的行為後果，卻沒有研究探討到金錢概念對社會知覺的影響，特別是金錢是如何影響人如何知覺他人。刻板內容模型(stereotype content model; Fiske, Cuddy, Glick, & Xu, 2002)指出有兩個基本的社會知覺向度—溫暖與能力—或許可以作為金錢概念如何引發行為後果的解釋機制。此外，本研究也檢驗以不同方法觸發金錢概念是否會影響金錢對社會知覺影響的效果。在接下來的三個研究中，我們會將觸發金錢概念的操弄方法由外顯到內隱做程度上的改變。受試者將被隨機分派到金錢觸發組或是控制組，在操弄之後會評估對不同目標(有錢人、窮人、老人、中產階級)的溫暖和能力知覺。結果顯示，與控制組相比，金錢觸發組傾向知覺這四個知覺目標是比較沒有能力的，但在溫暖知覺向度上沒有差異。結果也顯示，越內隱的金錢觸發方式，得到的效果越穩定。最後，我們也看到能力知覺能夠中介金錢觸發到利社會行為的效果。根據 BIAS map(Cuddy, Fiske, Glick., 2008), 低能力知覺會引發被動傷害行為，而這也能解釋為什麼金錢觸發後的個體傾向忽略他人。金錢觸發只對能力知覺產生影響而非溫暖知覺的結果意涵將在最後進行討論。

關鍵詞: 金錢觸發、社會知覺、利社會行為

The Effect of Money Priming on Perceived Competence

Jennifer Weng

Abstract

Self-sufficiency hypotheses suggest that the priming with money induces independence and distance from others (Vohs et al., 2006). Although there has been a great deal of research on the behavioral consequences of money, there is no research about the effect of money on social perception, especially how money may shape the ways people perceive others. The stereotype content model (Fiske et al., 2002), which distinguishes two basic dimensions of social perception -- warmth and competence-- provides an explanatory mechanism for the money priming effect on behavioral consequences. In addition, we test whether different ways to activate the concept of money changes its effect on social perception. In three studies, we change the ways to prime money from explicit to implicit. Participants were assigned to either the money-primed or the control group, and rate their perceptions of different targets (the rich, poor, elderly, and middle class) as competent and warm. First, results showed that compared to the control group, the money primed group tended to perceive all the four targets as less competent, but there was no difference on warmth dimension.

Second, results showed that the more implicit money priming is, the more stable its effect. Third, there is an indirect effect of money on prosociality through perceived competence. According to BIAS map model (Cuddy et al., 2008) low competence judgment elicits passive-harming behaviors, which might explain why people primed with money tend to neglect others. Implications of the dissociation of money priming effect on competence dimension but not warmth dimension are discussed.

Keywords: Money priming, social perception, prosociality

Contents

1 Introduction 1

1.1 Money Priming and Behavioral Consequences 1

1.2 Stereotype Content Model and BIAS map 4

1.3 Money Priming and Social Perception 5

1.4 Money Priming and Perceived Competence 7

1.5 Money Priming and Perceived Warmth 9

1.6 From Explicit to Implicit 9

1.7 Overview of the Studies 12

2 Experiment 1 12

2.1 Method 13

2.2 Results and Discussion 15

3 Experiment 2 17

3.1 Method 18

3.2 Results and Discussion 19

4 Experiment 3 21

4.1 Method 22

4.2 Results and Discussion 23

5 General Discussion 28

References **32**

Appendix **37**

List of Tables

Table 1 Perceived Competence and Warmth Ratings for High vs. Low Competent and Warm Group in Three Experiments. 16

Table 2 Experiment 1: Influence of Primes on Social Perception Ratings of Four Targets 17

Table 3 Experiment 2: Influence of Primes on Social Perception Ratings of Four Targets 21

Table 4 Experiment 3: Influence of Primes on Social Perception Ratings of Four Targets 24

Table 5 Descriptive Statistics and Correlation Matrix in Experiment 3 25

Table 6 Meta-analysis: Influence of Primes on Social Perception Ratings of Four Targets 27

Table 7 The effect Sizes in Experiment 1, 2, and 3 28

List of Figures

Figure 1 The indirect effect of money priming on helping tendency through perceived competence.. 26

1. Introduction

Money is a complicated topic, and the effects of money on well-being are mixed. On one hand, people with money generally live better than people without money. People in wealthy nations are happier than those in poor nations, and there is a small but positive correlation between well-being and income (Diener & Biswas-Diener, 2002). In socioeconomic status research, financial strain is associated with higher mortality (Adler & Snibbe, 2003), greater depression, poorer physical health, and lower sense of control (Price, Choi, & Vinokur, 2002). On the other hand, money has negative effects on interpersonal area. The love of money leads to poor relationship (Kasser & Ryan, 1993). In social class research, results show that rich people are less prosocial (Piff, Stancato, Cote, Mendoza-Denton, & Keltner, 2012), and more likely to take part in unethical behaviors (Piff, Kraus, Cote, Cheng, & Keltner, 2010). Furthermore, the presence of abundant money can lead to unethical behaviors (Gino & Pierce, 2009). In the present research, we want to explore why money seems to result in negative interpersonal behavior, such as having less helping behaviors, and how money changes the way people perceive others, which may lead to different behaviors toward others.

1.1 Money Priming and Behavioral Consequences

Money changes people's motivation and behaviors. Some recent research

suggested that mere exposure to money results in divergent effects on personal and interpersonal behaviors (Vohs, Mead, & Goode, 2008). In these money-priming studies, the researchers use money terms to represent the general idea of money instead of property or possessions. In their experiments, they activated the concept of money through mental priming techniques in which money priming increases individuals' accessibility to the idea of money without conscious awareness of the participants. Vohs and her colleagues (2006) suggested that reminders of money tend to induce the feeling of self-sufficiency, and make people more independent and distant from others. Lea and Webley(2006) also proposed that money is both drug and tool and emphasize its instrumentality to obtain other incentives. Money enables people to do things independently without aid from others.

In one of the studies done by Vohs and her colleagues (2006), the results indicated that as participants were asked to solve difficult puzzles, those primed with money tended to be persistent in problem solving rather than request help compared to those in the control group. In another study, results showed that money primed people tend to choose to work on the problem alone rather than to work with a peer. They were also more likely to choose activities they could do alone without company. As the experimenter told participants to place two chairs for themselves and the other person they were going to interact with, people primed with money tended to place

the two chairs farther apart from each other, which may indicate their psychological and physical distances from others are greater. Money also decreases prosocial behaviors. Research showed that people primed with money spent less time on helping others, and made less donations compared to people in control group.

Despite much research on the behavioral consequences of money, there is no research about the effect of money on social perception, such as how money may shape the ways people perceive others. The effect of money on social perception may be important because social perception can directly influence people's behaviors. That is, social perception can be the mechanism underlying the previous interpersonal distancing behaviors induced by the exposure to money. Although Vohs and her colleagues proposed a self-sufficiency hypothesis to explain the effect of money on distancing behaviors, they didn't test if self-sufficiency is the mediator between mere exposure to money and its behavioral consequences. We think compared to self-sufficiency, social perception may a better explanation for the effect of money on negative interpersonal behaviors toward others, because social perception can directly predict behaviors toward others. In this study, we proposethat social perception is an alternative mechanism underlying the money priming effect on distancing behaviors toward others.

1.2 Stereotype Content Model and BIAS map

The stereotype content model (SCM) distinguishes two basic dimensions of social perception--warmth and competence (Fiske, Cuddy, Glick, & Xu et al., 2002). The origins of perceived warmth and competence comes from social structural variables — competition and status. Competitive others are perceived as less warm compared to non-competitive ones, while high-status people are perceived as more competent compared to low-status persons. According to SCM, humans, as social animals, need to determine immediately whether someone they just encountered has good or bad intentions, and whether he or she is able to act on those intentions. Therefore, it is necessary for people to judge others with these two social perception dimensions. Cross cultural SCM studies based on 17 nations revealed that in all samples, individuals use both competence and warmth dimensions to distinguish groups (Cuddy et al., 2009). Combining these two universal dimensions, there are four distinctive emotions toward intergroups: pity, envy, admiration, and contempt. Previous research showed that people who are perceived as both warm and competent elicit positive emotions and behaviors, while people who are perceived as neither warm nor competent elicit negative emotions and behaviors. For people who are perceived as high on one dimension but low on the other, they elicit ambivalent emotions and behaviors (Fiske, Cuddy, & Glick, 2007).

According to the behavior from intergroup affect and stereotypes (BIAS) map, social perception elicits distinctive emotion and results in different behaviors toward intergroups. The BIAS map predicts active/passive, and facilitative/harmful behavioral tendencies(Cuddy, Fiske, & Glick, 2008). Furthermore, it suggests that low competence judgment can elicit passive-harming behaviors toward others, such as distancing, ignoring and neglecting behaviors. We think these passive-harming behaviors are similar to certain behavioral consequences of money priming, such as greater psychological distance from others, less likely to help, less likely to seek help, more likely to work alone. Thus, we suggest that stereotype content model and BIAS map provide an explanatory mechanism for the money priming effect on distancing behaviors.

1.3 Money and Social Perception

Although there is no direct research about the effect of money priming on social perception, some indirect evidence may support this hypothesis. Material resources shape the self and result in the ways people perceive others. For instance, material conditions induce independence, increase social distance between people, and make people more likely to focus on individual self (Lareau, 2003). Middle class parents tend to tell their children to do things on their own, and put more emphasis on their own interests (Kusserow, 1999; Wiley, Rose, Burger, & Miller, 1998). In the review

article by Kraus and his colleagues (2012), the authors examined how social class influences behaviors, and demonstrated why and how the rich are different from the poor. Upper social class individuals with more resources have more sense of control and are more self-focused, while lower social class individuals with more constraints develop tendencies to focus on external and contextual social forces. These tendencies shape social perception and relationships with others. For instance, lower-class individuals show better empathic accuracy (Kraus, Côté, & Keltner, 2010). Piff and his colleagues (2010) indicated that lower social class people tend to be more generous, more supportive of charity, display more prosocial trusting behaviors and helping behaviors compared to their upper-class counterparts. Wealth is related to their perception toward the outgroup. The wealth of the raters' country is correlated with how they perceive other countries' competence and warmth (Chan et al., 2011). In their first study, the results showed that people from wealthy countries tended to perceive Americans as less competent but warmer. In their next study, they had Mexican Americans rate Anglo Americans' competence and warmth. The results showed that the raters' family income was negatively correlated with perceived competence of Anglo Americans instead of perceived warmth. These studies about social class and wealth provide indirect but supportive evidence of how social perception, especially perceived competence, can be influenced by mere exposure to

money.

1.4 Money and Perceived Competence

In general, money reflects people's ability, status, and power. In the review article by Lea and Webley (2006), they suggest that money is an indicator of power and freedom, and an important marker of status in modern society. Tang (1995) developed a 30-item Money Ethic Scale to measure the attitudes toward money as categorized by three components: affective (good and evil), cognitive (achievement, and freedom/power), and behavioral (budget). The results showed that money was seen as an indicator of freedom and power. In SCM, it suggests that status is the social structure origin of perceived competence (Cuddy et al., 2008). Fiske and her colleagues (2002) indicated that while competition predicts perceived warmth, status predicts perceived competence. Therefore, we hypothesize that the exposure to money is more likely to affect the competence than the warmth dimension.

In addition, we think the activation of money may also induce some concepts or experiences related to money: namely, self-sufficiency and the feeling of strength. All people have experiences about using money to get what they need. We think through these everyday experiences people may automatically link money to self-sufficiency, and to the feeling of strength. As the concept of money is activated, it simultaneously activates the feeling of strength and self-sufficiency such as, "I can do it myself" or "I

don't have to rely on others" which affects how people perceive others. Money primed people think they don't need others, and other people won't be able to influence them. Research has shown that the activation of abstract social constructs can change social perception and behaviors (Dijksterhuis, Chartrand, & Aarts, 2007). The activation of money will also activate self-sufficiency and the feeling of strength, and influence social perception. According to self-sufficient hypothesis, money may make people feel self-sufficient (Vohs et al., 2006). Money also induces a feeling of strength. For instance, money can buffer the threat of death (Zaleskiewicz, Gasiorowska, Kesebir, Luszczynska, & Pyszczynski, 2013), reduce the distress of social exclusion, and ease physical pains (Zhou, Vohs, & Baumeister, 2009). Based on the association between money and self-sufficiency or the feeling of strength, we hypothesize that money tends to affect the perception of competence. Recent research on money priming showed that mere exposure to money increased the endorsement of social inequality, and showed higher social dominance orientation (Caruso, Vohs, Baxter, & Waytz, 2012). Therefore, it is possible that people primed with money may perceive others differently especially on competence dimension, and may derogate others.

1.5 Money and Perceived Warmth

Based on previous research that showed that money makes people feel distant from others (Vohs et al., 2006), we can predict that money may induce low warmth judgment. Low warmth judgment makes people feel distant from others and even elicits active harming behaviors (Cuddy et al., 2008). Therefore, money primed people may tend to perceive others as less warm and with bad intentions, and activate distancing behaviors.

We didn't make a strong hypothesis for the effect of money on perceived warmth. One of the reasons is that previous research by Chan and his colleagues (2011) showed the stable effect of wealth on perceived competence but not perceived warmth. Second, we think money is more related to competence than warmth. However, we were not so sure that money would not influence perceived warmth. Both warmth and competence are basic dimensions under the SCM, so we tested the effect of money on both competence and warmth dimension.

1.6 From Explicit to Implicit

Previous studies about money use many different methods to manipulate and activate the concept of money. In the studies done by Vohs and her colleagues (2006), most of their manipulations seem implicit. For instance, participants were asked to do descrambling tasks. For the money-primed group, half of the sentences in the task

contained words related to money, while for the control group all sentences in the task did not contain words related to money. Another manipulation used screensavers with money pictures or posters of money to prime. In these studies, implicit money primed participants were not aware that they were exposed to the concept of money. While in the studies by Zhou and her colleagues (2009), participants in the money primed condition were asked to count money, and in the control group, participants are asked to count papers. This kind of manipulation is more explicit, because participants in money condition are relatively more aware that they are touching and exposed to money. Tong and her colleagues (2013) used another more explicit money priming technique in which participants were asked to do currency identification tasks. Participants not only paid attention to the picture of money, they also needed to process and recognize which countries the currency belonged to. The currency identification task is more explicit than simply letting participants be exposed to posters of money on the wall or real money. Therefore, the concept of money is more salient in this explicit manipulation.

Though Vohs and her colleagues (2006) mentioned that the money priming techniques induced individuals' accessibility to the idea of money without their conscious awareness, they didn't test whether different money priming manipulation resulted in different individual awareness of the idea of money. The level of

awareness to the concept of money may influence the money priming effect. No research tried to determine if different ways of priming money would have differential impact on the size of the effects. We think it is an interesting question. For instance, the ways to prime is important for experiments about terror management theory (TMT). TMT contends that the death defense would show only when the concept of death is beneath consciousness. Therefore, in practice, there is usually a delay between the death prime and the dependent measures in order to let death fade from consciousness (Pyszczynski, Greenberg, & Solomon, 1999). We also want to examine whether different ways to prime money have different effects on social perception of competence and warmth dimension. Our ways to prime money changed from explicit to more implicit manipulations. Our hypothesis is that more implicit ways to prime may be better. In general, we think there is a fundamental association between money and the feeling of self-sufficiency or strength. It is more likely to be purely activated, when we use an implicit ways to prime. However, as the money priming becomes more salient, people will consciously process the concept of money. The activation of money will induce not only the feeling of self-sufficiency but also other concepts associated with it that may differ among individuals. Therefore, the effect of money on social perception may become unstable.

1.7 Overview of the studies

The purposes of this study concerns the effect of money priming on social perception, especially on competence dimension, as well as investigates whether perceived competence can explain why money priming makes people tend to be distant from others. We first replicate the results of Vohs and her colleagues to see if money primed people tend to show more distancing behaviors, such as being more likely to choose to be alone or less likely to help others. Then, we test if perceived competence is the mediator between money and its behavioral consequences. Our prediction is that individuals who are exposed to money will perceive others as less competent, and distancing behaviors will be a result. In addition, we test whether the different ways of money priming change its effect on social perception. In the following three studies, we used different money priming methods ranging from explicit to implicit. Through different ways of money priming, we can demonstrate that the difference on social perception for control vs. experimental group is due to the activation of money.

2. Experiment 1

In the first experiment, we tested whether mere exposure to money changed people's social perception on competence and warmth dimension**.** We used an explicit way to prime money by asking participants to identify currency from different

countries. We also tested whether money priming made individuals prefer to be alone rather than to be with family or friends. In previous research, Vohs and her colleagues (2006) used the tendency of choosing to be alone to indicate distancing behavior, the consequences of money priming.

2.1 Method

Participants. 86 participants (52% male, M_{age} = 19.9) recruited from a pool of Introductory Psychology students at the National Taiwan University.

Materials.

Manipulation of money priming. Participants were randomly assigned to one of two conditions: money condition (currency identification task) or control condition (language identification task) (adapted from Tong, Zheng, and Zhao, 2013). People in both conditions completed the survey on the computer. In this survey, participants in money condition would see pictures of three different foreign currencies (Japanese Yen, Korean Won, and Thai Baht). Then, participants were asked to identify these three countries to which the currencies belong. Participants in control condition saw pictures of different alphabet characters for three foreign languages (Japanese, Korean, and Thai), and then were asked to identify the foreign language to which the characters belonged.

Social perception. Previous research showed that two dimensions of social

perception—warmth and competence—depicted four kinds of groups (Fiske, Cuddy, & Glick, 2007). One kind of group was rated as high on both competence and warmth dimensions, such as middle-class people, Christian people, and heterosexual people. One kind of group was rated as high on competence while low on warmth, like Asians, rich people, and whites. In contrast, some groups are rated as high on warmth but low on competence dimension, like elderly people, and disabled people. Some groups are rated as low on both dimensions, such as poor people, welfare recipients, and blacks. In the study, in order to test how money may influence social perception, we chose targets from each of these groups. In the social perception measures, participants had to rate their perceptions of different targets (the rich, poor, elderly, and middleclass) as competent (e.g., how competent you think the target is) and warm (e.g., how warm you think the target is), and rate each item on a five-point scale(1 = *not at all*, 5 = *very*).

Distancing behaviors. There were 6 items that asked participants to choose between two activities. In each item, there was an activity, and one of the options was to do it alone, while the other option was to do it with other people (e.g., watching movie alone or with friends). The number of individual activities chosen by the participants indicated participants' tendency to be distant from others.

Procedures. Participants were randomly assigned to either (currency identification task) or control condition (language identification task). After the manipulation, they rated their social perception of four targets on competence and warmth dimension, and completed a six-item questionnaire about individual or group activities.

2.2 Results and Discussion

Based on previous research, these four targets were categorized as a high competent vs. low competent group, and high warm and low warm group. So, on the competence dimension, we pooled the rich and the middle class as a high competent group, and the elderly and the poor as low competent group. One warmth dimension, we pooled the elderly and the middle class as high warm group, while the rich and the poor were pooled as low warm group. As expected, the high competent group was perceived as more competent compared to the low competent group, and high warm group was perceived as warmer than low warm group(Table 1).

There was no significant difference in perceived competence between control and money conditions, $t(84) = 1.11$, $p = .27$, $d = 0.24$, and there was no significant difference in perceived warmth, $t(84) = 0.78$, $p = .44$(Table 2). However, we can see a stable pattern in the way that people in the money condition tended to rate these four targets as slightly less competent compared to people in control condition.

For the effect of money on distancing behaviors, there was no significant difference on the tendency of choosing to be alone or with others, $M_{control} = 1.84$, $SD_{control} = 1.45$, $M_{money} = 1.63$, $SD_{money} = 1.35$; $t(84) = 0.70$, $p = .49$. We think the reason that the money priming effect on distancing behavior was not significant is that the money priming manipulation is too salient. In the next study, we would use a less salient way to prime money.

Table 1.

Perceived Competence and Warmth Ratings for High vs. Low Competent and Warm Group in Three Experiments

	Experiment	High competent group	Low competent group	*t*	*Df*
Competence	1	3.90(0.67)	2.71(0.76)	10.98**	85
	2	3.84(0.67)	2.71(0.70)	9.08**	59
	3	3.98(0.53)	2.82(0.72)	10.52**	58
		High warm Group	Low warm group		
warmth	1	3.49(0.64)	2.52(0.63)	12.49**	85
	2	3.57(0.57)	2.62(0.62)	10.39**	59
	3	3.56(0.60)	2.53(0.59)	13.02**	58

**$p < .01$

Table 2.

Experiment 1: Influence of Primes on Social Perception Ratings of Four Targets

	Condition		
Dimension	Control(n = 43)	Money(n = 43)	*t*(84)
Competence			
Elderly	2.98(0.89)	2.88(0.98)	0.46
Middle class	3.91(0.78)	3.77(0.65)	0.90
Rich	4.00(0.85)	3.93(1.01)	0.35
Poor	2.58(0.85)	2.40(0.85)	1.01
High Comp	3.95(0.65)	3.85(0.69)	0.72
Low Comp	2.78(0.73)	2.64(0.79)	0.85
Mean	3.37(0.54)	3.24(0.47)	1.11
Warmth			
Elderly	3.70(0.80)	3.77(0.72)	-0.43
Middle class	3.28(0.85)	3.23(0.87)	0.25
Rich	2.14(0.71)	2.05(0.72)	0.60
Poor	3.09(0.84)	2.81(0.96)	1.44
High warm	3.49(0.70)	3.50(0.58)	-0.08
Low warm	2.62(0.52)	2.43(0.71)	1.38
Mean	3.05(0.49)	2.97(0.55)	0.78

$^{+}p < .1$, $^{*}p < .05$.

3. Experiment 2

In experiment 2, we used another way to prime the concept of money by asking participants to count coins--a less salient way compared to experiment1--because in this manipulation participants were exposed to real money, but didn't have to consciously process the concept of money by recognizing or identifying money as in experiment 1. We also measured individuals' state of affect after the manipulation in order to assure that the manipulation didn't induce different emotional states, and to rule out the possibility that the money priming effect is caused by the emotional states induced by different manipulations.

3.1 Method

Participants. 62 participants (42.9% male, M_{age} = 20.1) from the same pool as Experiment 1 were recruited. The data of 2 participants were dropped out, because they saw the manipulation of the previous participants.

Materials.

Manipulation of money priming. Participants were randomly assigned to money condition or control condition. In the money condition, they were asked to categorize and count 2 bags of coins with 3 kinds of Taiwanese coins in 1, 5, and 10 TWD together. In control condition, they were asked to categorize and count bags of buttons with three kinds of buttons different in sizes and colors. The cover story was to measure their ability to calculate and categorize under time pressure.

Positive and Negative Affect Schedule. The state version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) measures each participant's state of emotion after the manipulation in order to make sure the manipulation didn't induce different emotions between control and money primed group. Participants rated each item on a five-point scale(1 = *not at all*, 5 = *very*).

Social perception. As in experiment 1, participants rated their perceptions of different targets on competence and warmth dimension.

Distancing behaviors. As in experiment 1, participants were asked to choose

between individual or group activities. This measure indicates distancing behaviors.

Procedures. Participants were randomly assigned to either money condition (counting coins) or control condition (counting buttons). Next, they finished the short version of positive and negative affect scales (Watson, Clark, & Tellegen, 1988), their social perception to four targets rating on competence and warmth dimension, and six-item questionnaire asking them to choose between individual or group activities as Experiment 1.

3.2 Results and Discussion

We first tested whether counting money or buttons induced different emotions, and there was no significant difference in positive emotion and negative emotion for people in two conditions. (For positive emotion, $M_{control} = 3.39$, $SD_{control} = .43$, $M_{money} = 3.29$, $SD_{money} = .67$; $t(58) = 0.70$, $p = .48$; For negative emotion, $M_{control} = 2.20$, $SD_{control} = .78$, $M_{money} = 2.25$, $SD_{money} = .80$; $t(58) = -0.25$, $p = .80$) The different manipulations in two conditions didn't induce different positive or negative emotions.

In general, there was no significant difference on overall perceived competence between control and money condition, $t(58) = 1.26$, $p = .21$, $d = 0.33$ (Table 3), but the effect size seemed greater than in experiment 1. While on the warmth dimension, though there was no significant difference on overall perceived warmth between control and money condition, $t(58) = 1.77$, $p = .08$, $d = 0.46$, it seemed that people

primed with money tended to perceive others as less warm.

Results show that people in the money condition rated the low competence group as less competent compared to people in the control condition, $t(58) = 2.37$, $p = .02$, $d = 0.62$. While on the warmth dimension, unexpectedly, people primed with money seemed to perceive high warm group as less warm, $t(58) = 2.25$, $p = 0.03$, $d = 0.59$. On competence dimension, except the rich, all three targets were perceived as less competent in money-primed condition compared to control condition. However, perceived competence of the rich was against our hypothesis.

For the effect of money on distancing behaviors, although the pattern was against our hypothesis, there was no significant difference on the tendency of choosing to be alone or with others, $M_{control} = 2.14$, $SD_{control} = 1.36$, $M_{money} = 1.65$, $SD_{money} = 0.91$; $t(58) = 1.66$, $p > .1$.

We think one possible reason that the perceived competence of the rich contradicted our hypothesis is that the material of money priming manipulation was coin. Previous research usually used bills to prime the concept of money instead of coins, and maybe coins induce the feeling of strained finances rather than abundant finances, which might make participants in the money condition perceive the rich people as more competent. Vohs and her colleagues (2006) suggest that reminding people of strained finance will not lead to the same effects as reminding them of

abundant finances. For the measure of distancing behaviors, we think maybe choosing between individual or group activities is not a sensitive indicator, because in four of six items above 80% participants choose to do an activity with other people than do it alone. Therefore, in the next experiment, we used another measure to indicate distancing behaviors.

Table 3.

Experiment 2: Influence of Primes on Social Perception Ratings of Four Targets

	Condition		
Dimension	Control(n = 29)	Money(n = 31)	*t*(58)
Competence			
Elderly	3.14(1.03)	2.65(0.88)	2.00*
Middle class	3.72(0.70)	3.58(0.62)	0.84
Rich	3.86(0.92)	4.19(0.98)	-1.35
Poor	2.72(0.75)	2.39(0.72)	1.78+
High Comp	3.79(0.68)	3.89(0.68)	-0.54
Low Comp	2.93(0.70)	2.52(0.65)	2.37*
Mean	3.36(0.51)	3.20(0.48)	1.26
Warmth			
Elderly	4.07(0.88)	3.71(0.69)	1.76+
Middle class	3.41(0.63)	3.13(0.81)	1.52
Rich	2.45(0.83)	2.26(0.77)	0.92
Poor	2.90(0.72)	2.87(0.81)	0.13
High warm	3.74(0.61)	3.42(0.50)	2.25*
Low warm	2.67(0.59)	2.56(0.66)	0.67
Mean	3.21(0.47)	2.99(0.47)	1.77+

Note. The table presents mean of social perception rating, with standard deviation in parentheses. $^{+}p < .1$, $^{*}p < .05$.

4. Experiment 3

By using a less salient way to prime money, we expected the effect would be greater. In this experiment, participants in money condition were exposed to a screensaver of a picture of money. Unlike previous experiments, we used another

measure to indicate distancing behaviors. Vohs and her colleagues(2006) suggest prosociality as an opposite indicator of distancing behaviors. We also wanted to test if perceived competence mediates the effect of money on prosocial tendency.

4.1 Method

Participants. 59 participants (47% male, M_{age} = 20.3) from the same pool as Experiment 1 were recruited.

Materials and Procedures. Participants were randomly assigned to either money condition or control condition. They were first asked to complete filler questionnaires on the computer. After the survey, the experimenter asked them to close the window of the survey and then a screen picture was shown as screensaver. For people in control condition, they would see the picture of tulips, while people in money condition would see a picture of money. Then, they rated positive and negative affect scale (Watson, Clark, & Tellegen, 1988), and their social perception toward 4 targets the same as in Experiment 2. We also measured their prosocial tendency by asking them to report how willing they would be to voluntarily help children from minority groups, and rated their responses on a seven-point scale(1 = *not at all*, 7 = *very*).

4.2 Results and Discussion

The results showed that there are no differences for control group and money-primed group in positive and negative emotion (For positive emotion, $M_{control}$ = 3.19, $SD_{control}$ = .80, M_{money} = 2.85, SD_{money} = .86; $t(57) = 1.6$, $p = .12$; For negative emotion, $M_{control}$ = 2.5, $SD_{control}$ = .61, M_{money} = 2.02, SD_{money} = .80; $t(57) = 1.3$, $p = .21$). After the manipulation, the state of affect for participants in both conditions didn't differ.

As predicted, participants in the money condition tended to perceive all the four targets as less competent than did participants in the control condition, $t(57) = 2.19$, $p = .03$, $d = 0.58$ (Table 4). For the warmth dimension, there was no difference, $t(57) = .84$, $p = .41$. Therefore, with more implicit money priming manipulations, the effect of money affects perceived competence instead of perceived warmth.

Table 4.

Experiment 3: Influence of Primes on Social Perception Ratings of Four Targets

	Condition		
Dimension	Control(n = 29)	Money(n = 30)	*t*(57)
Competence			
Elderly	3.24(0.91)	2.97(1.10)	1.04
Middle class	3.86(0.64)	3.67(0.61)	1.21
Rich	4.34(0.55)	4.07(0.91)	1.42
Poor	2.69(0.89)	2.40(0.77)	1.34
High Comp	4.10(0.51)	3.87(0.54)	1.74^{+}
Low Comp	2.97(0.69)	2.68(0.72)	1.53
Mean	3.53(0.44)	3.28(0.47)	2.19^{*}
Warmth			
Elderly	3.93(0.65)	4.10(0.85)	-0.86
Middle class	3.31(0.81)	2.90(0.85)	1.91^{+}
Rich	2.14(0.79)	2.00(0.59)	0.76
Poor	3.03(0.82)	2.97(0.81)	0.32
High warm	3.62(0.59)	3.50(0.62)	0.77
Low warm	2.59(0.68)	2.48(0.48)	0.67
Mean	3.10(0.57)	2.99(0.46)	0.84

$^{+}p < .1$, $^{*}p < .05$.

Mediation Analysis. The descriptive statistics and correlation matrix are shown in Table 5. A simple regression of prosocial tendency on money yields an insignificant effect of money, unstandardized coefficient = -0.22, *SE* = 0.44, *p* = 0.62. However, it is still possible that a mediator be causally between an independent variable and a dependent variable, even though the effect of the independent variable on the dependent variable is not significant (Hayes, 2009). So, we still tested the indirect effect, and it showed that the indirect effect of money on prosocial tendency through perceived competence is significant. Following the procedures by Hayes(2013), we computed the indirect effect using bias-corrected bootstrapping with 10000 resamples. The analyses showed that perceived competence did mediate the

effect of money (relative to control condition) on prosocial tendency, indirect coefficient = -0.30, *SE* = 0.21, 95% CI [-0.86,-0.02](see Figure 1).

Unlike previous research, which showed that money reduces prosocial behaviors, in our study, the total effect of money on prosocial tendency was insignificant. Our explanation is that the total effect is the sum of different paths of indirect effect, and there might be two opposite indirect paths carrying the effect from money to prosocial tendency. One of the indirect effects of money on prosocial tendency is through perceived competence, which is negative, but there might be another indirect path through self-efficacy, which is positive. Caprara and his colleagues (2012) indicated self-efficacy beliefs predict individuals' prosociality. Money induces self-efficacy which leads to more prosocial tendency, but at the same time it makes people derogate others, which results in less prosocial tendency.

Table 5.
Descriptive Statistics and Correlation Matrix in Experiment 3

	Mean	SD	Money	Perceived Competence	Prosocial tendency
Money Money = 1, Control = 0	0.51	0.51	1		
Perceived competence	3.40	0.47	-.28*	1	
Prosocial tendency	4.58	1.68	-.07	.31*	1

*$p < .05$

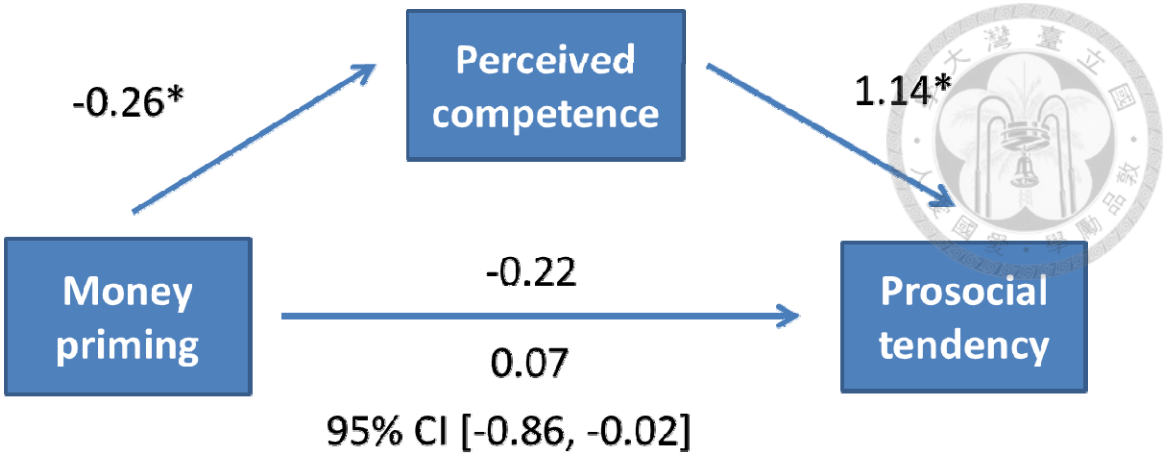


Figure 1. The indirect effect of money priming on helping tendency through perceived competence.
$^{*}p < .05$.

Meta-analysis. Combining three previous experiments, there were 205 participants in this meta-analysis. The results showed that people in money condition rated all the four targets as less competent, $t(203) = 2.54$, $p = 0.01$, $d = 0.36$. However, there was no effect on the rich(Table 6), because the effect in Experiment 2 counteracted the effect in Experiment 1 and 3. The money priming effect was more pronounced on perceived competence of low competent group. However, money didn't affect perceived warmth, $t(203) = 1.86$, $p = .06$. Therefore, the effect of money on perceived competence is more stable than on perceived warmth, though it is not significant in Experiment 1 and 2.

Table 6.

Meta-analysis: Influence of Primes on Social Perception Ratings of Four Targets

	Condition		
Dimension	Control(n = 104)	Money(n = 101)	*t*(203)
Competence			
Elderly	3.10(0.93)	2.84(0.99)	1.96^{+}
Middle class	3.84(0.72)	3.68(0.63)	1.69^{+}
Rich	4.06(0.81)	4.05(0.97)	0.09
Poor	2.65(0.83)	2.39(0.78)	2.30*
High Comp	3.95(0.63)	3.87(0.64)	0.96
Low Comp	2.88(0.64)	2.62(0.73)	2.60*
Mean	3.41(0.51)	3.24(0.47)	2.54*
Warmth			
Elderly	3.87(0.80)	3.85(0.76)	0.23
Middle class	3.33(0.78)	3.11(0.85)	1.95^{+}
Rich	2.23(0.77)	2.10(0.70)	1.28
Poor	3.02(0.80)	2.88(0.87)	1.24
High warm	3.60(0.65)	3.48(0.56)	1.45
Low warm	2.62(0.58)	2.49(0.63)	1.62
Mean	3.11(0.51)	2.98(0.50)	1.86

$^{+}p < .1$, $^{*}p < .05$.

Money Priming Manipulation and Effect Size. The effect sizes in three experiments are shown in Table 7. We tested whether the effect sizes in these three studies were significantly different. Comparing effect size of experiment 2 and 1, the two effect sizes didn't differ significantly, $Z = 0.23$, $p = .4$. Comparing effect size of study 3 and 2, neither did these two effect sizes differ significantly, $Z = 0.62$, $p = .26$. Comparing effect size of experiment 3 and 1, these two effect sizes didn't differ significantly, $Z = 0.90$, $p = .17$. However, the pattern showed that as the manipulations become more implicit, the effect sizes become greater.

Table 7.

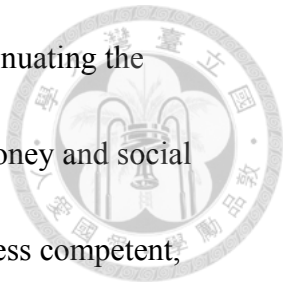
The effect Sizes in Experiment 1, 2, and 3

Experiment	Manipulation	Effect size *d*
1	Currency identification	0.24
2	Counting money	0.33
3	Money picture	0.58

5. General Discussion

The results of this study support that money changes how people perceive others, and money affects perceived competence instead of perceived warmth. The discovery of the dissociation effect of money priming on social perception is important because we have shown for the first time that money may be a tool that provides people with the ability to act out whatever their pre-existing intentions are—good or bad. If this is true, it would explain why the activation of money influences the competence dimension of social perception, but not the warmth dimension. In addition, individuals' social perception toward others influences their behaviors toward others. Social perception can be a possible mechanism underlying the effect of money on distancing behaviors.

The indirect effect of money on prosocial tendencies through social perception is interesting. Unlike previous findings, in this study the total effect of money on prosocial tendencies is insignificant. We think it might demonstrate that money is a double-edged sword. With money, people have the ability to help, but such people also tend to derogate others, which results in less willingness to help. One of the



contributions of this study is that it pointed out the possibility of attenuating the negative effect of money if we can break the association between money and social perception. Therefore, people with money don't perceive others as less competent, and the influence of self-efficacy on prosocial behaviors becomes more salient. In the future studies, we can also test whether money priming can induce self-efficacy and lead to more helping behaviors after controlling for social perception.

In three studies, we used different ways to activate the concept of money from explicit to implicit. From the present findings, it seemed that the more implicit the money priming is, the more stable its effect is. As the concept of money is activated without conscious awareness, the deep-rooted association between money and self-sufficiency or the feeling of strength comes up. When the concept of money is activated explicitly, individuals will consciously process the idea, and might activate other concepts associated with money that may differ from individual to individual. In addition, using different manipulation, we can support that the activation of money accounts for the results.

However, one of the limitations of the study is that it is not sure that these three different money-priming methods represent the level of priming from explicit to implicit. In order to compare the effects of money priming methods, it would be better to directly test both types of priming in the same experiment. In future studies, there

should be at least one explicit priming condition, one implicit condition, and a control condition in one experiment. We could also use subliminal priming techniques to induce the concept of money, and support that the money priming effect is greater with more implicit money priming manipulation.

Another limitation is that we only used one way to measure social perception, and the targets presented in the social perception measure are not randomized for every participant. We also measured prosocial tendencies with only one item. In future studies, we should use different measures of social perception and prosociality, and use some behavioral indicators like donations to measure prosocial behaviors.

We think there might be cultural differences in financial dependency that might result in different effects of money priming. Cross-cultural studies show that one of the major differences between Western and Eastern adolescents is financial connectedness. Compared to Western countries, Arab adolescents are more financially dependent on their families (Dwairy & Achoui, 2010). In Western cultures, children are encouraged to become financially independent earlier. Children do chores to get allowance, while adolescents do part-time jobs to earn money. However, in Chinese culture, parents usually give adolescents allowance and pay for their college tuition. Chinese adolescents don't have much experience earning their own money. We think culture and social context shape how people perceive the concept of money.

People who are more experienced in managing their own money may tend to have the unconscious association between money and self-sufficiency. Therefore, the effect is more stable for these financially independent people. Adolescents in Taiwan, may not have the experience of earning money themselves, so the association between money and self-sufficiency or the feeling of strength may be weaker for them. We think that is why the effect of money priming is not so stable and great as previous research for college students in Taiwan compared to those in United States.

Another recent research study compares the effect of money vs. time. The results show that thinking of time makes people socialize more, while priming with money makes people choose to work more but socialize less (Mogilner, 2010). Compared to money-primed individuals, those primed with time are less likely to cheat, because thinking of time makes individuals reflect on who they are (Gino & Mogilner, 2014). Both money and time are two important resources that influence individuals' daily behaviors. However, thinking on time and money affect ethical behaviors differently and how people choose between personal achievements and social connection. Through comparison with priming of time, we may know more about the essence of money, and how to counteract the negative effects of money.

References

Adler, N. E., & Snibbe, A. C. (2003). The Role of Psychosocial Processes in Explaining the Gradient Between Socioeconomic Status and Health. *Current Directions in Psychological Science, 12*(4), 119-123.

Caprara, G. V, Alessandri, G., & Eisenberg, N. (2012). Prosociality: The contribution of traits, values, and self-efficacy beliefs. *Journal of Personality and Social Psychology, 102*(6), 1289-1303.

Caruso, E. M., Vohs, K. D., Baxter, B., & Waytz, A. (2013). Mere Exposure to Money Increases Endorsement of Free-Market Systems and Social Inequality. *Journal of Experimental Psychology: General, 142*(2), 301-306.

Chan, W., McCrae, Robert R., Rogers, D. L., Weimer, A. A., Greenberg, D. M., & Terracciano, A. (2011). Rater Wealth Predicts Perceptions of Outgroup Competence. *Journal of Research in Personality, 45*(6), 597-603.

Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2008). Warmth and Competence as Universal Dimensions of Social Perception: The Stereotype Content Model and the BIAS Map. *Advances in Experimental Social Psychology, 40*, 61-149.

Cuddy, A. J. C., Fiske, S. T., Kwan, V. S. Y., Glick, P., Demoulin, S., Leyens, J., . . . Ziegler, R. (2009). Stereotype content model across cultures: Towards universal similarities and some differences. *British Journal of Social Psychology, 48*(1), 1-33.

Diener, E., & Biswas-Diener, R. (2002). Will Money Increase Subjective Well-Being?: A Literature Review and Guide to Needed Research. *Social Indicators Research, 57*(2), 119-169.

Dijksterhuis, A., Chartrand, T. L., & Aarts, H. (2007). Effects of priming and perception on social behavior and goal pursuit. In J. A. Bargh (Ed.), *Social psychology and the unconscious: The automaticity of higher mental processes*. New York, NY: Psychology Press.

Dwairy, M., & Achoui, M. (2010). Adolescents-Family Connectedness: A First Cross-Cultural Research on Parenting and Psychological Adjustment of Children. *Journal of Child and Family Studies, 19*(1), 8-15.

Fiske, S. T., Cuddy, A. J., & Glick, P. (2007). Universal dimensions of social cognition: warmth and competence. *Trends in Cognitive Sciences, 11*(2), 77-83.

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*(6), 878-902.

Gino, F., & Mogilner, C. (2014). Time, money, and morality. *Psychological Science*, *25*(2), 414-421.

Gino, F., & Pierce, L. (2009). The abundance effect: Unethical behavior in the

presence of wealth. *Organizational Behavior and Human Decision Processes, 109*(2), 142-155.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*(4), 408-420.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65*(2), 410-422.

Kraus, M. W., Côté, S., & Keltner, D. (2010). Social Class, Contextualism, and Empathic Accuracy. *Psychological Science, 21*(11), 1716-1723.

Kraus, M. W., Piff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D. (2012). Social Class, Solipsism, and Contextualism: How the Rich Are Different From the Poor. *Psychological Review, 119*(3), 546-572.

Kusserow, A. S. (1999). De-Homogenizing American Individualism: Socializing Hard and Soft Individualism in Manhattan and Queens. *Ethos, 27*(2), 210-234.

Lareau, A. (2003) *Unequal childhoods*. Berkeley, CA: University of California Press.

Lea, S. E. G., & Webley, P. (2006). Money as tool, money as drug: The biological psychology of a strong incentive. *Behavioral and Brain Sciences, 29*(2), 161-+.

Mogilner, C. (2010). The Pursuit of Happiness: Time, Money, and Social Connection. *Psychological Science, 21*(9), 1348-1354.

Piff, P. K., Kraus, M. W., Cote, S., Cheng, B. H., & Keltner, D. (2010). Having Less, Giving More: The Influence of Social Class on Prosocial Behavior. *Journal of Personality and Social Psychology, 99*(5), 771-784.

Piff, P. K., Stancato, D. M., Cote, S., Mendoza-Denton, R., & Keltner, D. (2012). Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences of the United States of America, 109*(11), 4086-4091.

Price, R. H., Choi, J. N., & Vinokur, A. D. (2002). Links in the chain of adversity following job loss: How financial strain and loss of personal control lead to depression, impaired functioning, and poor health. *Journal of Occupational Health Psychology, 7*(4), 302-312.

Pyszczynski, T., Greenberg, J., & Solomon, S. (1999). A dual-process model of defense against conscious and unconscious death-related thoughts: An extension of terror management theory. *Psychological Review, 106*(4), 835-845.

Tang, T. L. P. (1995). The Development of a Short Money Ethic Scale - Attitudes Toward Money and Pay Satisfaction Revisited. *Personality and Individual Differences, 19*(6), 809-816.

Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science, 314*(5802), 1154-1156.

Vohs, K. D., Mead, N. L., & Goode, M. R. (2008). Merely activating the concept of money changes personal and interpersonal behavior. *Current Directions in Psychological Science, 17*(3), 208-212.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and Validation of Brief Measures of Positive and Negative Affect - The Panas Scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070.

Wiley, A. R., Rose, A. J., Burger, L. K., & Miller, P. J. (1998). Constructing Autonomous Selves Through Narrative Practices: A Comparative Study of Working-Class and Middle-Class Families. *Child Development, 69*(3), 833-847.

Zaleskiewicz, T., Gasiorowska, A., Kesebir, P., Luszczynska, A., & Pyszczynski, T. (2013). Money and the fear of death: The symbolic power of money as an existential anxiety buffer. *Journal of Economic Psychology, 36*(0), 55-67.

Zhou, X., Vohs, K. D., & Baumeister, R. F. (2009). The Symbolic Power of Money: Reminders of Money Alter Social Distress and Physical Pain. *Psychological Science, 20*(6), 700-706.

Appendix

Money priming and control condition materials for Experiment 1

あ い う え お
か き く け こ
さ し す せ そ
た ち つ て と
な に ぬ ね の

請問這是哪一國的文字？

- 泰國
- 日本
- 韓國

백과사전

請問這是哪一國的文字？

- 泰國
- 日本
- 韓國

อักษรไทย

請問這是哪一國的文字？

- 泰國
- 日本
- 韓國

請問這是哪一國的錢幣？

- 泰國
- 日本
- 韓國

請問這是哪一國的錢幣？

- 泰國
- 日本
- 韓國

請問這是哪一國的錢幣？

- 泰國
- 日本
- 韓國

Money priming and control condition materials for Experiment 2

Money priming materials on desktop for experiment 3

Social perception measure

◎一般而言，下列團體是如何被其他人所知覺或看待的。

對你來說，這些人多有能力？

	1 很少	2	3	4	5 很多
老人	1	2	3	4	5
中產階級	1	2	3	4	5
有錢人	1	2	3	4	5
窮人	1	2	3	4	5

對你來說，這些人多溫暖？

	1 很少	2	3	4	5 很多
老人	1	2	3	4	5
中產階級	1	2	3	4	5
有錢人	1	2	3	4	5
窮人	1	2	3	4	5

Six-items questionnaire of choosing activities in experiment 1 and 2

請針對下列每一題當中的兩個描述中，選出一個你比較想參與的活動。

□ 與朋友聚餐	□ 自己外出吃飯
□ 在自習室讀書	□ 參加讀書會
□ 和朋友打球	□ 一個人去健身房運動
□ 一個人去看電影	□ 和親朋好友去看電影
□ 和朋友一起去購物	□ 自己上街買東西
□ 獨自去咖啡廳打發時間	□ 和朋友去咖啡廳聊天

Prosocial tendency measure in experiment 3

本研究同時有與兒童福利單位合作，主要是對家庭弱勢或是偏遠地區兒童進行輔導，若有這個機會擔任義工，請問您會願意嗎？

1	2	3	4	5	6	7
非常不願意						**非常願意**