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Implicit Attitudes of Chinese University Students towards Altruism: Evidence from Single Category Implicit Association Test

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Abstract

IAT measures are supposed to be able to remove the effects that come from people's natural tendency to believe that they have socially desirable traits. In the present study, the Single Category Implicit Association Test (SC-IAT) was used to explore implicit attitudes and self-images of Chinese university students with respect to altruism. Three kinds of altruism (general altruism, kin altruism and reciprocal altruism) were considered to detect the participants' implicit attitudes and self-images. Specific wording was incorporated in the SC-IAT measures to explore whether the students believed that apparent altruism in others was honest or hypocritical. The results show: 1) Chinese students generally hold positive implicit attitudes towards kin, reciprocal, and general altruism, but the positive attitudes towards reciprocal and kin altruism are significantly stronger than towards general altruism. 2) Chinese students regard themselves neither as altruistic nor selfish in their implicit self-concepts. 3) Chinese students tend to judge altruism as honest rather than hypocritical behavior, especially in the cases of kin and reciprocal altruism.

Keywords

SC-IAT, Implicit Altruistic Attitude, Implicit Altruistic Self-Concept

1. Introduction

1.1. Implicit Association Test

The Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) has been widely used in many attitude

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1.2. SC-IAT

While Classical IAT has been considered as a relative measure of attitudes, its validity was handicapped by the problems of recoding (Fiedler, Messner, & Bluemke, 2006; Fleischhauer, Strobel, Enge, & Strobel, 2013; Gast & Rothermund, 2010; Karpinski & Hilton, 2001). To overcome these shortcomings, new implicit measures had have been proposed. The Single Category Implicit Association Test (SC-IAT) is a good example (Karpinski & Steinman, 2006).

SC-IAT is designed to assess the implicit attitude towards a single target concept. As Karpinski & Steinman (2006) suggested, the SC-IAT can assess the absolute attitude, and its administration and data analysis procedure is more concise but effective than the IAT. SC-IAT's reliability, validity and the ability to control conscious participation have been considered satisfactory (Karpinski & Steinman, 2006; Cuyper, Pieters, Claes, Vandromme, & Hermans, 2013; Rudolph, Schröder-Abé, Schütz, Gregg, & Sedikides, 2008; Tian, Liu, & Gilman, 2010). For instance, Karpinski & Steinman (2006) designed SC-IAT measures to assess implicit attitudes towards sodas, self-esteem and race. They found: 1) the reliability of the SC-IAT is similar to or higher than the IAT; 2) the explicit measure of self-esteem correlates with SC-IAT but not IAT; 3) conscious participation could be controlled more successfully in SC-IAT than in IAT. In a study led by Cuyper & colleges (2013), implicit perfectionism (automatically self-evaluated achievement striving) assessed by SC-IAT correlated significantly with explicit perfectionism and verified the power of SC-IAT in predicting explicit behaviors.

1.3. Implicit Attitude Measures and Overt Behavior

Implicit measures have proved to be good predictors of automatic behaviors (Rudolph et al., 2010; Fleischhauer et al., 2013; Aspden, Ingledew, & Parkinson, 2012; Perugini, Conner, & O'Gorman, 2011). Their incremental validity over explicit measures has also been verified (Cuyper et al., 2013).

Perugini, Conner, & O'Gorman (2011) designed the implicit altruistic attitude IAT and implicit altruistic self-concept IAT to predict altruistic behavior. They found: 1) The IAT measures correlated significantly with spontaneous helping behavior instead of general volunteering; self-reported altruism measures significantly correlated only with general volunteering, indicating that the explicit measure and the implicit measure predict different behavior. 2) IAT measures correlated significantly with monthly specific volunteering, while the self-reported helpfulness scale correlated significantly with general volunteering and monthly specific volunteering, indicating that there are behaviors that can be predicted by both the explicit and the implicit measures.

These studies revealed that behaviors can be predicted by people's attitudes. Whether the prediction occurs at the explicit or implicit level depends on what kind of behaviors is to be predicted. On considering this, we adopt implicit altruism measures to explore Chinese people's true attitudes towards altruism through which the characteristic of their altruistic behavior are expected to be explored.

1.4. Altruistic Behavior

Altruistic behavior refers to the helping behaviors that benefit others at a cost to the actor (Barclay, 2013). In this study we considered three kinds of altruism: kin altruism, reciprocal altruism and general altruism. Human are more likely to help those with whom they share a lot of genes. This kind of helping behaviors is called kin altruism which can be interpreted as the extension of self interest of the helper (Hamilton, 1964). Due to shared genes, helping kin can increase the reproductive fitness of the actor though maybe a cost at present. Large amounts of studies had verified Hamilton's rule in both human and animal world (Krupp, DeBruine, & Barclay, 2008). Reciprocal altruism was the expansion of kin altruism (Trivers, 1971). Reciprocity is important for harmonious relationships in small group even relatives (Fletcher & Zwick, 2006; Queller, 1985).

Through socialization most human individuals have to extend their social relationships beyond kin. If altruists can obtain subsequent reciprocation in a certain form, their current loss of fitness can be compensated in the future. General altruism refers to the altruistic behavior carried out on all humans (especially strangers, but kin and allies are not ruled out). It is used here as the synonym of "true altruism" or classical "altruism". Compassion may be an important reason for general altruism because kin selection and reciprocal altruism do not fully explain why individuals help strangers in anonymous contexts.

1.5. The Present Study

Altruism is a hot topic in Chinese academia and public. However, the current situation of charitable donation in China is not satisfying. According to Charities Aid Foundation's report (CAF) (retrieved November 5, 2014, from https://www.cafonline.org/PDF/WorldGivingIndex2013 1374AWEB.pdf), Mainland China ranked 133 among all 135 countries in World Giving Index. In the face of this reality, it is reasonable for us to suspect the humanity of Chinese people. In the present study SC-IAT was used to explore Chinese people's implicit attitudes towards altruism. Taking into consideration the nature of Chinese culture, three kinds of altruism (i.e. kin altruism, reciprocal altruism, and general altruism) were discerned and measured respectively.

Human altruistic behavior is the co-evolutionary product of gene and culture. Chinese people's implicit attitudes towards altruism embody the common human nature developed through human's evolutionary history. In the meantime, culture norm to which Chinese people conform also models the formulation and presentation of their implicit attitudes towards altruism. Based on this logic, we articulated three hypotheses listed below:

Hypothesis 1: Chinese participants' implicit attitudes towards altruism are generally positive; their implicit self-concepts are altruistic, and they tended to use altruistic words to describe themselves rather than others.

Hypothesis 2: As the nurtured results of traditional cultural values, the intensity of Chinese people's implicit attitudes towards kin, reciprocal and general altruism are different.

Hypothesis 3: Confucius and Mencius strongly advocated priority of kin altruism over general altruism (Nichols, 2013). Influenced by such ideology, Chinese may regard general altruism as hypocritical. So we presumed that the participants' implicit attitudes towards kin altruism and reciprocal altruism be labeled as honest, but it may not be the case for general altruism.

2. Method

2.1. Participants

One hundred and ninety-nine university students were recruited as participants and twelve were deleted because of incomplete responses. In the valid sample 89 students (12 males, 77 females) participated in the implicit altruistic self-concept SC-IAT and 98 students (22 males, 76 females) participated in the implicit altruistic attitude SC-IAT. They were presented delicate gifts for participation.

2.2. Ethics Statement

The study was approved by the Institutional Review Board (IRB) of Shandong Normal University. The tests caused no harm to participants' physical or mental health, and the results of this study were maintained confidentially. All participants were over 18 years old and there were no minors or children involved in the study. Evidence showed that all participants were provided with written informed consent as approved by the ethics committee.

2.3. Materials and Procedure

SC-IAT measures (see **Appendix A**) designed to test the implicit altruistic attitudes and self-concepts were administrated to two participant groups respectively. The administration order of three kinds of altruism was balanced by a Latin square design in order to counteract sequential effect. Four neutral words (see **Appendix B**) were added into the implicit attitude SC-IAT measures to balance participants' responding. All participants were tested individually in a quiet laboratory.

In kin altruistic attitude SC-IAT measure, 6 words representing kin Altruism were used as target words (see **Appendix B**), while the attribute words were 10 commendatory terms (including 5 words representing honest

traits), 10 derogatory terms (including 5 words representing hypocritical traits) and 4 neutral words (see **Appendix B**). There were two stages when administrating SC-IAT measures and each stage consists of 30 practice trials which were immediately followed by 72 test trials. In the first stage (kin altruism, positive), kin altruism words and positive words were categorized on the F key, negative words were categorized on the J key, and neutral words were categorized on the space key. In an attempt to prevent response bias, kin altruism words, positive words, negative words, and neutral words were presented in a ratio of 18:24:22:8, so 58% of correct responses were on the F key and 31% of correct responses were on the J key. In the second stage (kin altruism, negative), positive words were categorized on the J key, kin altruism words and negative words were categorized on the F key, neutral words were categorized on the space key.

Each stage was preceded by a set of instructions concerning the categorization task and the appropriate responses. Each word appeared on the center of screen for a time limit of 1500 ms. When the participants failed to respond, a reminder as "Please respond more quickly!" appeared for 500 ms. In this procedure a sense of urgency was created to decrease conscious participation. Participants were given feedback regarding the accuracy of their response to each task: A green " \sqrt " appeared on the center of the screen for 150 ms after each correct response and a red " \times " appeared on the center of the screen for 150 ms after each incorrect response. The administration of reciprocal and general altruistic attitude SC-IAT measures was similar to the above procedure, with the only difference of target words.

For the kin, reciprocal, and general altruistic self-concept SC-IAT measures, the attribute words were self (I, me, my, we, us, our) and other (he, his, she, her, they, their), whereas the target words were the same as those in the corresponding attitudes SC-IAT measures. The testing procedures of the three altruistic self-concept SC-IAT measures were similar to those of altruistic attitude SC-IAT. All words were presented in Chinese. Their English counterparts were listed in Appendix B.

The repetitive measurement deviation analysis was used to analyze the data via spss16.

3. Results

3.1. Reliability and D Value

After deleting invalid data, in the implicit altruistic self-concept SC-IAT, 89 students' (12 males, 77 females, mean age was 21.2, standard deviation was 2.01) data were analyzed, and in the implicit altruistic attitude SC-IAT, 98 students' (22 males, 76 females, mean age was 20.7, standard deviation was 2.45) data were analyzed. We adopted the method proposed by Karpinski & Steinman (2006) when analyzing test data. Non-response and responses with lengths less than 350 ms were eliminated, and incorrect responses were replaced with the block mean plus an error penalty of 400 ms. Then we separated 60 compatible and 60 incompatible trials in each SC-IAT into three parts and calculated a SC-IAT score separately for each of the trials without dividing by the standard deviation of RT (response time) of correct response. The internal consistency was obtained by calculating the average inter-correlation among the three scores. Then the Spearman-Brown formula was adopted for correction. To calculate D-value, the average RT of compatible tasks was subtracted from the average RT of incompatible tasks. This quantity was divided by the standard deviation of RT of all correct response within compatible and incompatible tasks. The results were listed in Table 1.

3.2. Implicit Altruistic Attitudes

The scores of altruistic attitudes SC-IAT measures were analyzed using a 3 (altruism type: general altruism, reciprocal altruism, kin altruism) \times 2 (task type: compatible task, incompatible task) ANOVA with repeated measures on both variables. Mean RT and SD were listed in Table 2.

The results showed (also demonstrated as Figure 1):

- 1) The main effect of altruism type was significant (F (2, 194) = 24.90, p < 0.001, partial $\eta^2 = 0.20$). Post hoc comparisons (least significant difference, LSD) revealed that the mean RT of general altruism was significantly longer than those of reciprocal and kin altruism (ps < 0.001), and the mean RT of reciprocal altruism and kin altruism showed no difference (p > 0.05).
- 2) The main effect of task type was significant (F (1, 97) = 229.19, p < 0.001, partial $\eta^2 = 0.70$). The mean RT scores of incompatible tasks were significantly longer than those of compatible tasks, meaning that participants' responses were slower in incompatible tasks than in compatible tasks.

Table 1. Reliability coefficients and D-values of 12 implicit tests.

	Altruistic self-c	oncept SC-IAT	Altruistic attitude SC-IAT		
	reliability	D-value	reliability	D-value	
General altruism	0.42	0.01	0.68	0.58	
Reciprocal altruism	0.79	0.05	0.74	0.58	
Kin altruism	0.41	0.01	0.86	0.47	

Table 2. Mean RT scores and SD of 12 implicit tests.

	Altruistic at	titude SC-IAT	Altruistic self-concept SC-IAT		
	Compatible task	Incompatible task	Compatible task	Incompatible task	
General altruism	626.81	796.64	681.56	683.26	
	9.90	17.99	11.21	10.71	
Reciprocal altruism	577.12	726.12	599.36	608.06	
	8.47	13.86	10.24	8.04	
Kin altruism	584.03	712.77	556.80	560.09	
	9.65	18.49	8.37	8.28	

Note: Mean RT and SD were respectively displayed in the first and second row of each kind of altruism.

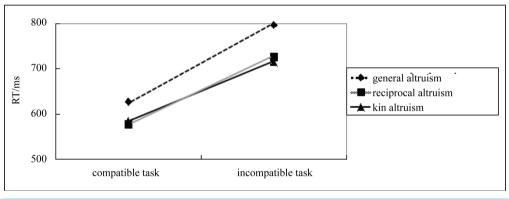


Figure 1. RT scores of implicit altruistic attitude SC-IAT measures.

3) The interaction between altruism type and task type was not significant (F (2, 194) = 3.03, p > 0.05, partial $\eta^2 = 0.03$), suggesting that participants' responses were slower in incompatible tasks than in compatible tasks for all three kinds of altruism.

3.3. Implicit Altruistic Self-Concepts

Altruistic self-concepts measured by SC-IAT were analyzed using a 3 (altruism types: general altruism, reciprocal altruism, kin altruism) \times 2 (task types: compatible task, incompatible task) ANOVA with repeated measures on both variables. Mean RT and SD were demonstrated in **Table 2**. The results showed (also demonstrated as **Figure 2**):

- 1) The main effect of altruism type was significant (F (2, 176) = 154.60, p < 0.001, partial $\eta^2 = 0.64$). Post hoc comparisons (LSD) revealed that the mean RT of general altruism was significantly longer than those of reciprocal and kin altruism (ps < 0.001), and the mean RT of reciprocal altruism was significantly longer than that of kin altruism (p < 0.001).
 - 2) The main effect of task type was not significant (F (1, 88) = 0.46, p > 0.05, partial $\eta^2 = 0.005$).

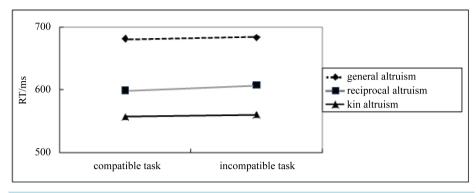


Figure 2. RT scores of altruistic self-concept SC-IAT measures.

3) The interaction between altruism type and task type was not significant (F (2,176) = 0.30, p > 0.05, partial $\eta^2 = 0.003$).

3.4. Implicit Honest/Hypocritical Attitudes towards Altruism

In altruistic attitude SC-IAT measures, participants' responses to honest/hypocritical, altruistic/selfish words were selected for a separate analysis. After a 3 (altruism types: general altruism, reciprocal altruism, kin altruism) \times 2 (attitude type: honest/hypocritical attitude, general positive/negative attitude) \times 2 (task type: compatible task, incompatible task) ANOVA with repeated measures on the three variables, mean RT and SD were demonstrated in **Table 3**.

The results showed that:

- 1) The main effect of altruism type was significant (F (2, 194) = 25.63, p < 0.001, partial $\eta^2 = 0.21$). Post hoc comparisons (LSD) revealed that the mean RT of general altruism was significantly longer than those of reciprocal and kin altruism (ps < 0.001) (with no significant difference between the latter two).
- 2) The main effect of attitude type was significant (F (1, 97) = 18.63, p < 0.001, partial $\eta^2 = 0.16$). Participants' responses to honest/hypocritical words were significantly longer than responses to general positive/negative words. In other words, participants' responses to honest/hypocritical words were slower than to general positive/negative words.
- 3) The main effect of task type was significant (F (1, 97) = 212.86, p < 0.001, partial $\eta^2 = 0.69$), with longer mean RT scores in incompatible tasks significantly than that in compatible tasks.
- 4) The interaction between altruism type and attitude type was significant (F (2, 194) = 8.32, p < 0.001, partial $\eta^2 = 0.08$, also shown in **Figure 3**). Simple effect analysis suggested that, there was significant variance among three kinds of altruism (ps < 0.001) at each levels of attitude type. Post hoc comparison revealed that, for honest/hypocritical words, participants' responses to general altruism words were slower than the responses to kin and reciprocal words (ps < 0.001) with no significant variance between the other two. Similarly, for general positive/negative words, participants' responses to general altruism were slower than the responses to kin and reciprocal words (ps < 0.001) with no significant variance between the latter two.
- 5) The interaction between altruism type and task type was not significant (F (2, 194) = 2.17, p > 0.05, partial $\eta^2 = 0.02$, see **Figure 4**), suggesting that participants' responses were slower in incompatible tasks than those in compatible tasks for all three kinds of altruism.
- 6) The interaction between attitude type and task type was not significant (F (1, 97) = 0.09, p > 0.05, partial $\eta^2 = 0.001$), showing that participants' responses were slower in incompatible tasks than that in compatible tasks either for honest/hypocritical words or for general positive/negative words for three kinds of altruism.
- 7) The interaction among altruism type, attitude type, and task type were not significant (F (2, 194) = 0.37, p > 0.05, partial $\eta^2 = 0.004$).

4. General Discussion

4.1. Reliability and D-Values

The reliability coefficients for the three implicit altruistic attitude SC-IAT measures range from 0.68 - 0.86, and

Table 3.	Mean RT	and SD	of honest/hy	pocritical	attitude	SC-IAT measures.
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	Compatible task		Incompatible task		Honest/hypocritical		Ordinary positive/negative	
	RT	SD	RT	SD	RT	SD	RT	SD
General altruism	620.89	9.75	764.11	16.62	691.80	11.68	693.21	11.55
Reciprocal altruism	571.90	8.41	709.00	13.52	647.63	10.47	633.26	10.09
Kin altruism	571.42	8.95	684.77	16.42	636.21	11.90	619.98	11.59

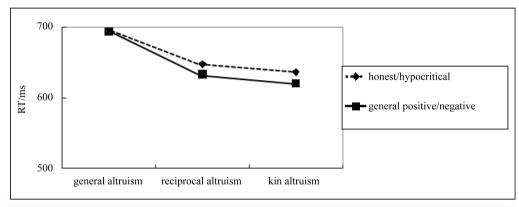


Figure 3. The interaction between altruism type and attitude type.

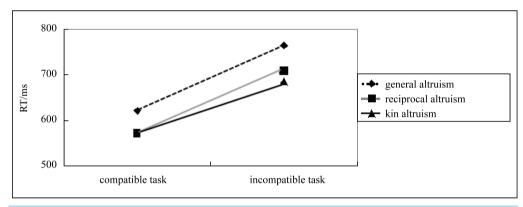


Figure 4. The interaction between altruism type and task type.

the reliability coefficients of the three implicit altruistic self-concept SC-IAT measures range from 0.41 - 0.79. These results are mostly consistent with Karpinski & Steinman (2006), indicating that most of the SC-IAT measures used in the present study were reliable, however, the reliability coefficients of two implicit altruistic self-concept SC-IAT measures (general altruism and kin altruism) were not satisfactory, suggesting the two implicit altruistic self-concept SC-IAT measures should be improved to be used in further research.

We found that the D-values of implicit altruistic self-concept SC-IAT measures are less than those of implicit altruistic attitude SC-IAT, which is consistent with Perugini, Conner, & O'Gorman (2011). They interpreted this result as a sequential effect because the implicit measures of altruistic self-concepts were administered after the implicit measures of altruistic attitudes.

But in our study, participants who completed the implicit measures of altruistic self-concepts were not the ones who completed the implicit measures of altruistic attitudes, so what Perugini, Conner and O'Gorman proposed is not the case. The truth may be: Chinese participants' implicit attitudes towards altruism were relatively stronger, while their altruistic self-concepts were weak nearly to the point of being neutral. This result needs

further investigation.

4.2. Implicit Attitudes towards Three Kinds of Altruism

Chinese students' implicit attitudes towards general, reciprocal and kin altruism were positive. Their implicit attitudes towards reciprocal and kin altruism were more positive than general altruism, while implicit attitudes towards kin altruism and reciprocal altruism showed no meaningful difference. Therefore *hypothesis* 1 and *hypothesis* 2 were partly tested. These results are consistent with the assumption of basic human nature (Hodgson, 2014) and the influence of Chinese culture.

Altruism to kin, to friends and to strangers was advocated by Confucianism (Luo, 2012; Mullis, 2010; Munro, 2002). Confucianism considered genetic relatedness as the criterion of altruism behavior (Nichols, 2013; Mullis, 2010; Wee, 2014; Zwick & Fletcher, 2014). Reciprocal altruism is also proposed, and reciprocal friendship is of crucial importance in cultivating moral traits (Mullis, 2010). Altruism to strangers is also advocated by Confucians (Wang, Zhang, & Wang, 2008), but its role is unimportant. When confronting the dilemma of whether his kin or others should be helped a Confucian will choose his kin without hesitation (Mullis, 2010; Munro, 2002).

In the present study the students' implicit attitudes towards kin and reciprocal altruism showed no variance. This can be interpreted by environmental influence. To the students, it is their friends rather than kin who are helpful when dealing with daily affairs, enabling the importance of reciprocal altruism to be elevated to a high level in the students' implicit cognition.

4.3. Implicit Altruistic Self-Concepts

Inconsistent with Perugini, Conner, & O'Gorman (2011), we found no IAT effect in implicit altruistic self-concept SC-IAT measures. This reveals that, although Chinese students hold positive attitudes towards altruism implicitly, in their implicit self-concepts they are rather neutral (neither altruistic nor selfish). This result contradicts *hypothesis* 1, and it may reveal the dark side of Confucianism. This issue should be deeply explored.

4.4. Honest/Hypocritical Attitudes towards Altruism

In general, the students regarded kin altruism, reciprocal altruism and general altruism as honest. Though it is more difficult for them to establish implicit association between general altruism and the honest trait, general altruism was not judged as a hypocritical trait. Therefore *hypothesis* 3 was validated. This is a quite important finding.

4.5. Difference from Previous Study

Our study may partly explain Ma's (1993) results. He found that the altruistic preference of children in Hong Kong and Mainland China decreased in the following direction: helping kin, helping friends, helping strangers, helping enemies, which demonstrated that Chinese have different attitudes towards people who have a different social distance from them. However, we didn't find any obvious difference between implicit attitudes towards kin altruism and reciprocal altruism as revealed by Ma (1993), indicating that the Chinese ethical value has been changing with the times.

The extension of kin altruism to reciprocal and general altruism is a requirement of modern ethics. What is optimistic in the present study is that Chinese students put nearly equal importance on reciprocal altruism and kin altruism, and their implicit attitude towards general altruism is positive. We may predict that traditional Chinese ethics would shift towards a modernizing pathway with the development of internationalization. By that time, China should ascend to a much higher rank in the World Giving Index.

4.6. Limitation and Future Research Orientation

The present study has three main limitations. Firstly, only Chinese students participated in this study, and their responses haven't been compared to those of foreign students. Secondly, whether implicit altruism measures can predict altruistic behavior is an unqualified assumption, and this decreases the practical value of the present study. Thirdly, other implicit measures should be employed to cross validate the results of present study. We hope to introduce or develop other IAT measures that are more applicable and valid in Chinese culture.

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Appendix

Appendix A. Word categories in six SC-IAT measures.

	Target words	Attribute words		
General altruistic attitude SC-IAT	General altruism	Commendatory terms	Derogatory terms	
Reciprocal altruistic attitude SC-IAT	Reciprocal altruism	Commendatory terms	Derogatory terms	
Kin altruistic attitude SC-IAT	itude SC-IAT Kin altruism Comme		Derogatory terms	
General altruistic self-concept SC-IAT	uistic self-concept SC-IAT General altruism		Other	
Reciprocal altruistic self-concept SC-IAT	eciprocal altruistic self-concept SC-IAT Reciprocal altruism		Other	
Kin altruistic self-concept SC-IAT	Kin altruism	Self	Other	

Appendix B. Target and attribute words and their Chinese counterparts.

General altruistic words

Charitable (乐善好施), helping those in distress (济危救困), generous (慷慨大方), helpful (乐于助人), support the weak (帮扶弱者), altruism (利他主义)

Reciprocal altruistic words

reciprocate when helped (知恩图报), value feelings and loyalty (重情重义), be adept in finding allies (善结人缘), value friendship (注重友谊), friendly (待人友好), immersing (相濡以沫)

Kin altruistic words

family commitment (看重家庭), devoted to offspring (关爱子女), filial piety (孝顺父母), affectionate to sibling (手足情深), respect for family elders (尊敬长辈), loving parents foster dutiful son (父慈子孝)

Commendatory terms (the first five are honest words)

unsophisticated (纯朴), sincere (真挚), real (真实), honest (诚实), concrete (实在), favorite (喜爱), wonderful (美妙), glorious (光荣), pleasant (愉快), smiling (微笑)

Derogatory terms (the first five are hypocritical words)

mendacious (虚假), ostentation (卖弄), insincerity (矫饰), affectation (做作), hypocrisy (伪善), distressed (苦恼), terrible (糟糕), sordid (肮脏), wicked (邪恶), harm (伤害)

Neutral words

connecting (承上启下), empty talk (纸上谈兵), turnaround (峰回路转), concentrate (聚精会神)

Self

I (我), me (我), my (我的), we (我们), us (我们), our (我们的)

Other

He (他), his (他的), she (她), her (她的), they (他们), their (他们的)



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