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Are Older Adults More Willing to Donate? The Roles of Donation Form and Social Relationship

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Abstract

Objectives: Whether older adults are more prosocial than younger adults has been under debate. In the current study, we investigated how age differences in prosocial behaviors varied across different contextual factors, that is, donation form, kinship, and social distance.
Methods: To achieve this purpose, 89 younger and 66 older adults took part in a hypothetical donation task in which they were asked to donate money and time to relatives and nonrelatives at various social distances.
Results: The results showed that, compared to younger adults, (a) older adults donated less to nonrelatives (regardless of the donation form), but donated a similar amount (in money) or even donated more (in time) to relatives; (b) older adults displayed higher levels of kin selection (favoring relatives over nonrelatives) in both monetary and time donations; and (c) older adults showed higher levels of social discounting (favoring socially close over distant others) in monetary but not time donation.
Discussion: The study underscored the importance of contextual factors in understanding age differences in prosocial behaviors such as donation.

Keywords: Aging, Donation, Kin selection, Prosocial behavior, Social discounting

Prosocial behavior refers to an action intended to benefit one or more people other than oneself (Batson, 1998). It could take a wide range of forms, such as comforting, sharing, cooperating, helping, donating, and volunteering (Batson, 1998; Brief & Motowidlo, 1986). Previous literature has found that there are age-related differences in prosocial behaviors (e.g., for a review, see Midlarsky & Kahana, 2007), but the findings are mixed regarding whether older adults are more or less prosocial than younger adults. The current study aimed to address age-related differences in prosocial behaviors by investigating how donation willingness varies across different contextual factors (i.e., donation form and social relationship).

Age Differences in Prosocial Behaviors

There has been growing interest in the age-related differences in prosocial behaviors; yet, so far, the findings have been mixed (Midlarsky & Kahana, 2007). Early research usually linked aging to interpersonal losses, disengagement or disconnection with others, and thus predicted fewer prosocial behaviors in older adults (for reviews see Midlarsky & Kahana, 1994, 2007). These perspectives have been supported by empirical findings about volunteering and donation. For example, nationwide surveys in the United States and Canada showed that the rate of volunteering was lower among older adults aged above 65 years than among younger adults aged below 45 years (Bureau of Labor

Statistics, 2016; Turcotte, 2015). Consistently, both surveys and naturalistic experiments have found that older adults were less likely to donate clothing (Pamela, 2016) and cash (Midlarsky & Kahana, 1994) than were younger adults.

However, along with the recent rise of the active aging approach, attention has been drawn to the positive aspects of aging related to adaptation, maintenance of social connection and continuous contribution to the society, which suggest more prosocial behaviors in older adults (Midlarsky & Kahana, 1994, 2007; Midlarsky, Kahana, & Belser, 2015). Accumulating evidence seems to support this argument. First, compared with younger adults, older adults were found to hold more generative goals, and were more considerate of others (Lay & Hoppmann, 2015). Older adults also reported higher levels of empathy and pity for people who were in adverse situations, as well as stronger willingness to help (Beadle, Sheehan, Dahlben, & Gutchess, 2013; Freund & Blanchard-Fields, 2014; Midlarsky et al., 2015). Second, although some studies found that older adults were less likely to volunteer (Bureau of Labor Statistics, 2016; Turcotte, 2015), those who volunteered provided more hours of working compared to their younger counterparts (Kahana, Bhatta, Lovegreen, Kahana, & Midlarsky, 2013). Third, older adults seem to donate more money. For example, recent data showed that the average amount of annual monetary donation increased with age, for example, in the United States, Canada, and the U.K. (Choi & Chou, 2010; Smith, 2012; Turcotte, 2015).

In addition to the aforementioned mixed findings, there are also some studies which detected no age difference in prosocial behaviors. For example, Bjalkebring, Västfjäll, Dickert, and Slovic (2016) found that there was no age-related difference in the amount of money donated to charities. Kettner and Waichman (2016) also reported that differences between younger and older adults in donating money in an economic experiment disappeared after controlling for confounding factors.

Factors Moderating Age Differences in Prosocial Behaviors

As described above, it remains inconclusive whether older adults are more or less prosocial than are younger adults. Such divergence could result from the fact that age differences in prosocial behaviors may change with the context (for reviews, see Choi, 2003; Lay & Hoppmann, 2015; Midlarsky & Kahana, 2007). In the current study, we selectively focused on the moderating roles of donation form (money vs. time) and social relationship (i.e., relative vs. nonrelative at different social distances) on younger and older adults' donation willingness.

Age effects on prosocial behaviors could vary with the form of giving (e.g., Midlarsky & Kahana, 1994). In the literature of volunteering and donation, money and time are the two major forms that have been well studied (Choi & Chou, 2010; Lee & Chang, 2007). It has been theorized

that volunteering willingness is positively associated with the availability of resources (Choi & Chou, 2010). Age differences in the availability of time and monetary resources might have contributed to the age differences in time and monetary donations (e.g., Choi & Chou, 2010; Midlarsky & Kahana, 1994). Although the small number of extremely rich people are usually older—according to *Forbes report 2015*, the average age of American billionaires is 66 years—older adults in general have lower incomes but more free time compared to their younger counterparts. This age-related discrepancy may help explain why some studies found that retired older adults made more time donation but less monetary donation than did the younger adults (e.g., Midlarsky & Kahana, 1994; Mutchler, Burr, & Caro, 2003).

In addition to the resources available to donors, donation willingness could also be moderated by the relationship (e.g., relative or not at different social distances) between the donors and the recipients. The kin selection theory, also known as the inclusive fitness theory, argues that people are particularly motivated to help and benefit those who are biologically connected with them, thereby promoting the survival of their own genes (e.g., Hamilton, 1964). A substantial body of research supported this perspective by showing that people behaved more prosocially towards their relatives than nonrelatives (e.g., Maner & Gailliot, 2007; Rachlin & Jones, 2008).

Moreover, to examine the moderating role of kinship in prosocial behavior, it is necessary to take social distance (i.e., psychological closeness) into account. It has been documented that prosocial behavior could act as a hyperbolic function of social distance among both relatives and nonrelatives (Ostaszewski & Osiński, 2011; Rachlin & Jones, 2007, 2008; Takahashi, 2006). This hyperbolic function, known as social discount function (Jones & Rachlin, 2006), reflects the fact that people are most prosocial to the closest others, and their prosocial behaviors decrease with perceived social distance.

To our knowledge, no study has yet examined how kinship and social distance moderate age differences in prosocial behaviors, although it has been well documented that older adults display higher levels of social selectivity compared to younger adults (e.g., Carstensen, 1992). Older adults typically keep fewer peripheral social partners but a comparable number of close partners in their social networks, and they selectively interact more with emotionally close (vs. distant) others (Antonucci, Akiyama, & Takahashi, 2004; Fung, Carstensen, & Lang, 2001; Fung, Lai, & Ng, 2001; Smith et al., 2015). As to the composition of social network, some studies found that age was associated with a greater proportion of family members in the social network (Antonucci et al., 2004; Carstensen, 1992; Fung, Stoeber, Yeung, & Lang, 2008), and the association was stronger in Eastern collectivistic cultures compared to Western individualistic cultures (Fung et al., 2008). These age differences in social selectivity are explained by

socioemotional selectivity theory (SST; Carstensen, 1995) in terms of shrinking future time perspective with age. With age, people prioritize emotionally meaningful goals and prefer to interact with close (vs. distant) social partners to fulfill these goals. Given this, it is plausible that older adults may donate more than younger adults when the target person is a relative or someone who is emotionally closer.

The Present Study

The current study adopted a hypothetical task from Rachlin and Jones (2006) to measure individuals' prosocial behaviors in terms of donation willingness. In the task, younger and older participants were asked to donate money and time to relatives and nonrelatives at various social distances. As discussed above, the availability of resources may also influence individuals' amount of donation (e.g., Choi & Chou, 2010). To diminish this potential confounding, all participants were asked to imagine that they had the same amount of time (100 free days) and money (100 thousand HK dollars) for donation. The purpose of the current study was to investigate how donation form, kinship, and social distance interact in shaping the donation willingness of younger and older adults.

Methods

Participants and Procedures

A total of 111 younger and 79 older community-dwelling Chinese adults were recruited via ads posted on social media or distributed in communities. Twenty-two younger and 13 older participants were excluded from analysis because their data had too many missing values. The final sample consisted of 89 younger Chinese (54 females; 18–44 years of age, $M \pm SD = 30.12 \pm 4.52$) and 66 older Chinese (38 females; 60–84 years of age, $M \pm SD = 69.39 \pm 7.25$). The study received ethics approval from the survey research ethics of The Chinese University of Hong Kong. A power analysis for the mixed design, repeated measures analysis of variance (ANOVA) was conducted with G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009), which showed that this cell size should be sufficient to detect the interactions between age and the within-subject variables (i.e., donation form, kinship, and social distance) at $p < .05$ of power = .90, assuming a medium effect size (i.e., $\eta^2 = .13$).

Measures and Tasks

Demographic questionnaire

Participants' demographic information of gender and age were recorded. We also measured core social network size as an index of social capital which might be associated with one's prosocial behaviors (Choi & Chou, 2010), as well as socioemotional selectivity (Fung et al., 2008). One way to measure core social network size is to ask participants to list important family members and/ or friends (Blyth, Hill, & Thiel, 1982; Kahn & Antonucci, 1980). In the current study, we asked participants to directly estimate the number of important relatives/ friends. Given that socioeconomic status may influence prosocial behaviors (Lee & Chang, 2007; Tandon, Verma, Vanathi, Pandey, & Vajpayee, 2004), educational level and household income were also measured.

Cognitive function

The older participants' cognitive function was assessed with the Chinese version of the Alzheimer's Disease Assessment Scale-Cognitive Subscale (ADAS-Cog) which has been demonstrated to be sensitive in detecting older adults' changes in cognitive function (Chu et al., 2000; Rosen, Mohs, & Davis, 1984). The Chinese ADAS-Cog consists of 11 items which assess abilities related to memory, language, and praxis. The total score of the scale ranges from 0 to 70, and a lower score indicates better cognitive function.

Hypothetical donation task

The study adopted a 2 (age: younger and older) × 2 (donation form: money and time) × 2 (kinship: relatives and nonrelatives) × 7 (social distance: 1, 2, 5, 10, 20, 50, and 100) mixed design, wherein age was a between-subject variable, and the other three were within-subject variables. Both younger and older adults completed a hypothetical donation task modified from the social discounting paradigm used in Rachlin and Jones (2006). In the task, participants were first given the following instruction:

> "The following task asks you to imagine that you have a list of 100 relatives (or non-relatives) arranged in descending order of their closeness with you. The person at position #1 is your closest relative (or non-relative), while the person at position #100 is a relative (or non-relative) you may know but are not close at all. You do not have to actually create the list — just imagine that you have done so. Next you will be asked to answer questions regarding these relatives (or non-relatives) at a given position."

After reading the instruction, participants were asked to answer 14 questions, each asking how much money and time they would like to donate to a person (relative or nonrelative) at position N (N = 1, 2, 5, 10, 20, 50, or 100) as below:

> "Imagine that the relative (or non-relative) at position N on your list is now hospitalized. He/she needs to be accompanied and taken care of in the hospital, as well as a large amount of money to pay for the medical expense. If you now own 100 thousand of Hong Kong dollars and 100 days of vacation, how much money would you donate to him/her, and how many days would you spend taking care of him/her?"

Data Analysis

To analyze the donation data, we first modeled the group donation data. For each age × donation form × kinship cell, a hyperbolic discount function (i.e., Equation 1) was fit to the group median values (Jones & Rachlin, 2006; Rachlin & Jones, 2007, 2008) over the seven social distances (N = 1, 2, 5, 10, 20, 50, and 100):

$$v = V / (1 + kN) \qquad (1)$$

where V is the undiscounted reward value, v is the reward value that a person would like to forgo for the benefit for someone at a social distance N, and k is a constant indexing degree of social discounting (i.e., discount rate) across social distances. Following the convention of the literature, group median values instead of mean values were used because such data were usually not normally distributed (e.g., Jones & Rachlin, 2006).

The fitting process was conducted by curve fit toolbox of Matlab (version 2015a), where R-square and root-mean-square error (*RMSE*) were used to assess the goodness of fit. Such a modeling technique has been widely used in the literature on temporal (e.g., Frederick, Loewenstein, & O'Donoghue, 2002) and social discounting (e.g., Jones & Rachlin, 2006). The technique enables us to sketch individuals' donation willingness across various social distances with simple parameters like discount rate (k) and area under curve (*AUC*) (e.g., Jones & Rachlin, 2006; Margittai et al., 2015). Discount rate (k) reflects a donor's social-distance dependent selectivity as to donation willingness—a larger k value indicates a higher level of selectivity, that is, the donor treats socially close and distant recipients more differently. *AUC* could be used to index the donor's overall generosity to people independent of social distance, with a larger value indicating a higher level of generosity (Margittai et al., 2015; Strombach et al., 2014).

Once the appropriateness of the hyperbolic discount function was confirmed for group data, we then conducted the same fitting process to individual data to get the discount rate (k) and the *AUC* for each participant under different conditions. Again following the convention of the literature, individual data that did not fit the hyperbolic discount function were excluded from further analyses (Vuchinich & Simpson, 1998). The individuals' k and *AUC* values were then normalized by a natural logarithm transformation (e.g., Margittai et al., 2015), and transformed values that exceeded ±3 *SD*s were treated as outliers.

Next, the transformed individual k and *AUC* values were correlated with demographic variables to preliminarily check the influences of demographic variables on donation willingness. To examine the moderating roles of donation form and kinship in the relation between age and donation willingness, the transformed individual *AUC* values and k values were submitted respectively to a 2 (age: younger and older) × 2 (donation form: money and time) × 2 (kinship: relatives and nonrelatives) mixed design, repeated measures ANOVA (and post hoc tests), with and without controlling for demographic variables.

Results

Preliminary Analyses

The donation dataset consisted of 620 cells (one cell represented one donation form × kinship condition of one participant) from the 89 younger and 66 older participants. Twenty-seven cells (including eight cells from six younger participants and 19 cells from 13 older participants) of data could not be fit by the hyperbolic function, and were treated as missing values in a pairwise manner. The fitting process failed because the amounts of donation were almost the same across social distances in these cells. Comparison between participants with and without such missing values showed no significant differences (*p*s > .1) in gender ratio, educational level, income, or number of significant relatives and friends. The k and *AUC* values in eight cells (including one cell from a younger participant and seven cells from seven older participants) exceeded ±3 *SD*s, and thus were treated as outliers.

Demographic Information

The older participants in the current study scored between 0 and 13 (*M* ± *SD* = 8.2 ± 3.2) on the Chinese ADAS-Cog, indicating that their cognitive function was better than the average of community-dwelling Hong Kong old population (*M* ± *SD* = 11.0 ± 5.4; Wong, Leung, Fung, Chan, & Lam, 2013). Correlations between the Chinese ADAS-Cog scores and donation outcomes (i.e., the k and *AUC* values) did not reach significance (*p*s > .1), indicating that cognitive function did not influence donation willingness.

The demographic information for both age groups is listed in Table 1. *T*-tests showed that younger adults had higher levels of education than did older adults, whereas no significant age difference was found in household income. Meanwhile, older adults reported having more important relatives than did younger adults, and there was no significant difference in the number of important friends between the two age groups.

Modeling Group and Individual Donation Data

Hyperbolic discount functions were fit for group donation data. The curves yielded are displayed in Figure 1, and the estimated parameters and goodness-of-fit indices in Table 2. The results demonstrated that the hyperbolic discount function sketched the relationship between donation willingness and social distance quite well under all experimental conditions. The same curve fitting process was then applied to individual donation data. The values of k and

Table 1. Demographic Information ($M \pm SD$) and Comparison Between Age Groups

	Younger	Older	Group comparison
Gender ratio (m/f)	35/54	28/38	$\chi^2(1) = 0.15$
Age	30.12 ± 4.52	69.39 ± 7.25	$t(153) = -38.78**$
Educational level	4.15 ± .39	2.50 ± 1.18	$t(153) = 12.31**$
Household income (×HK$10,000)	0.94 ± 0.50	0.82 ± 0.59	$t(139) = 1.31$
No. of significant relatives	8.98 ± 6.41	12.36 ± 11.83	$t(153) = -2.29*$
No. of significant friends	8.10 ± 6.97	10.08 ± 9.96	$t(153) = -1.45$

Notes: For educational level, 1 = primary school or lower, 2 = secondary school, 3 = high school, 4 = diploma or undergraduate, 5 = graduate or higher.
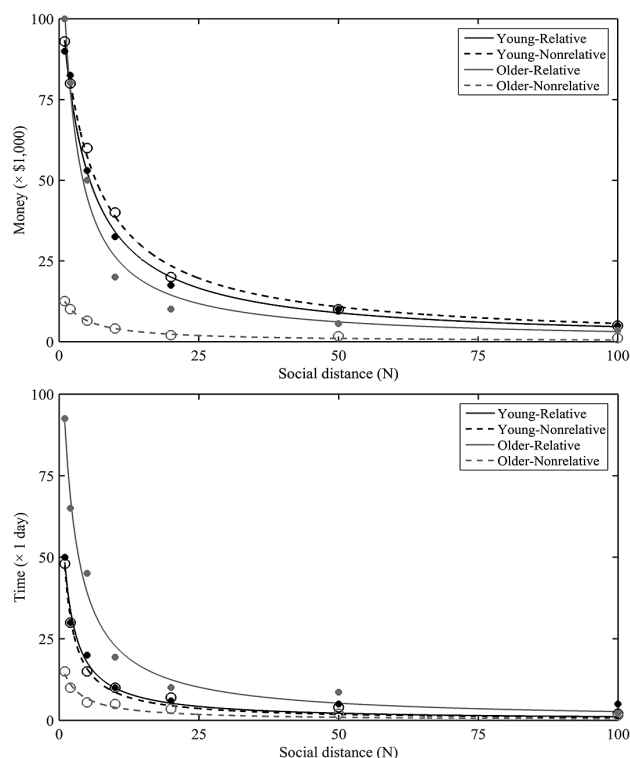*$p < .05$. **$p < .001$.

Figure 1. Donation willingness as a hyperbolic discount function of social distance. Upper panel: monetary donation; lower panel: time donation. Darker solid lines: younger adults' donation to relatives; darker dashed lines: younger adults' donation to nonrelatives; lighter solid lines: older adults' donation to relatives; lighter dashed lines: older adults' donation to nonrelatives. For each condition, the curve was fitted to the group median values over seven social distances ($N = 1, 2, 5, 10, 20, 50,$ and 100).

AUC were estimated for each participant, and the mean values across participants are displayed in Table 3.

Correlation Between Donation and Demographic Variables

Table 4 displays the bivariate correlation coefficients between donation outcomes (i.e., k and *AUC* values) and demographic variables. Social discount rate (k) was not related to any demographic variables except age. Age positively correlated with social discount rate (k) under the Relative-Money, $r = .17, p < .05$, and the Nonrelative-Money

Table 2. Estimated Parameters and Goodness-of-fit Indices of the Hyperbolic Functions

	V	k	R^2	*RMSE*
Monetary donation				
Younger-relative	92.96	0.19	.995	2.80
Younger-nonrelative	93.35	0.16	.997	2.10
Older-relative	102.08	0.32	.989	4.45
Older-nonrelative	12.48	0.23	.992	.43
Time donation				
Younger-relative	48.44	0.43	.973	3.03
Younger-nonrelative	47.29	0.50	.990	1.86
Older-relative	91.35	0.33	.989	3.95
Older-nonrelative	14.22	0.28	.944	1.25

Note: V = intercept of the function; k = discount rate; R^2 = R-squared; *RMSE* = root-mean-square error. Both R^2 and *RMSE* index the goodness of fit of the function. For each condition, the curve was fitted to the group median values over seven social distances ($N = 1, 2, 5, 10, 20, 50,$ and 100).

conditions, $r = .17, p < .05$. Meanwhile, age negatively correlated with the overall generosity (indicated by *AUC*) in donating money, $r = -.60, p < .001$, and time ($r = -.21; p < .01$) to nonrelatives, but positively correlated with the overall generosity in donating time to relatives ($r = .21; p < .01$).

Age Differences in Donation Willingness

AUC could be used to index an individual's overall donation willingness to others regardless of social distance—a larger *AUC* value indicates a higher level of generosity (Bickel et al., 2011; Bradstreet et al., 2012). A 2 (age: younger and older) × 2 (donation form: money and time) × 2 (kinship: relatives and nonrelatives) mixed design, repeated measures ANOVA on individuals' *AUC* values showed: (a) a significant main effect of age, $F(1,134) = 6.52, p < .05, \eta_p^2 = .05$, indicating that younger adults were more generous than older adults in general; (b) a significant three-way interaction of age × donation form × kinship, $F(1,134) = 4.03, p < .05, \eta_p^2 = .03$, suggesting that the age difference could be moderated by kinship and donation form.

To probe the three-way interaction, post hoc tests revealed that (a) older adults (vs. younger adults) were less generous to nonrelatives, $t(145) = 8.70, p < .001$, but equally generous to relatives, $t(148) = 1.54, p = .13$, in

Table 3. Discount Rate and Area Under Curve Under Each Donation Condition (*M ± SD*)

	Relative-money	Nonrelative-money	Relative-time	Nonrelative-time
Area under curve (*AUC*)				
Younger	7.27 ± 0.95	7.44 ± 0.77	6.29 ± 1.19	6.14 ± 1.41
Older	7.03 ± 1.03	5.67 ± 1.63	7.02 ± 1.11	5.71 ± 1.54
Total	7.17 ± 0.98	6.75 ± 1.46	6.58 ± 1.21	5.97 ± 1.47
Discount rate (*k*)				
Younger	–2.07 ± 1.20	–2.17 ± 1.06	–1.81 ± 1.48	–1.76 ± 1.45
Older	–1.54 ± 1.39	–1.70 ± 1.82	–2.04 ± 1.60	–1.78 ± 1.66
Total	–1.87 ± 1.30	–1.99 ± 1.40	–1.90 ± 1.52	–1.77 ± 1.53

Note: Both area under curve (*AUC*) and discount rate (*k*) are logarithmically transformed.

Table 4. Correlation Coefficients Between Donation and Demographic Variables

	Gender	Age	Education	Income	Relative no.	Friend no.
R-M *k*	0.03	0.17*	–0.05	–0.14	–0.10	–0.09
NR-M *k*	–0.07	0.17*	–0.23**	–0.02	–0.07	–0.06
R-T *k*	0.04	–0.03	0.07	–0.08	0.02	–0.11
NR-T *k*	–0.02	–0.06	–0.01	–0.08	–0.12	–0.10
R-M *AUC*	0.03	–0.15	0.13	0.15	0.14	0.14
NR-M *AUC*	–0.02	–0.60***	0.47***	0.19*	–0.11	–0.03
R-T *AUC*	0.05	0.21**	–0.14	0.04	0.15	0.25**
NR-T *AUC*	0.002	–0.21**	0.22**	0.07	0.09	0.17*

Notes: In the first column, R-M = Relative-Money; NR-M = Nonrelative-Money; R-T = Relative-Time; NR-T = Nonrelative-Time. Household income, area under curve (*AUC*) and discount rate (*k*) are logarithmically transformed.
*$p < .05$. **$p < .01$. ***$p < .001$.

monetary donation; (b) older adults (vs. younger adults) were less generous to nonrelatives, $t(144) = 2.10$, $p < .05$, but more generous to relatives, $t(145) = 3.22$, $p < .001$, in time donation. Since education, household income and number of important friends significantly correlated with *AUC* values, we repeated the tests controlling for these demographic variables. The results remained unchanged. Our results indicated that older adults displayed higher levels of kin selection (i.e., favoring relatives over nonrelatives) in donation willingness, regardless of donating money or time.

We also did a set of comparisons on the original donation values over discrete social distances instead of the *AUC* values. The results revealed the same pattern (and thus the detailed statistics are not reported here) of interaction among age, donation form and kinship; and from the Figure 1 we could see that this interaction pattern was not qualitatively changed according to social distance (i.e., the curves did not cross over each other), although the four-way interaction on the amount of donation was significant, $F(1,464) = 4.92$, $p = .002$, $\eta_p^2 = .03$.

Age Differences in Social Discounting

The value of discount rate *k* measures the degree of social discounting (Jones & Rachlin, 2006), and a larger *k* value indicates a higher level of selectivity towards socially close

others, that is, a larger gap between the generosity to socially close versus distant others. A 2 (age: younger and older) × 2 (donation form: money and time) × 2 (kinship: relatives and nonrelatives) mixed design, repeated measures ANOVA on individuals' *k* values yielded significant interaction effects of donation form × kinship, $F(1,130) = 4.05$, $p < .05$, $\eta_p^2 = .03$, and age × donation form, $F(1,130) = 7.08$, $p < .01$, $\eta_p^2 = .05$, whereas all other effects did not reach significance. Post hoc tests following the interaction of age × donation form revealed that older adults, compared to younger adults, discounted time donation equally for relatives, $t(144) = .41$, $p = .68$, and nonrelatives, $t(144) = .57$, $p = .57$, whereas they discounted monetary donation more for relatives, $t(148) = 1.92$, $p = .05$ and nonrelatives, $t(142) = 1.94$, $p = .05$. These results indicated that older adults displayed higher levels of social-distance dependent selectivity in monetary donation for relatives but not in other donations.

Discussion

Whether older adults are more or less prosocial than younger adults has been under debate in the literature (for reviews see Midlarsky & Kahana, 1994, 2007; Midlarsky, Kahana, & Belser, 2015). Seeking to clarify this question, the current study used a hypothetical donation task to measure younger and older adults' willingness in donating

time and money to relatives and nonrelatives at various social distances.

Our primary finding was that older adults were not necessarily more or less prosocial than younger adults; instead, older adults might be more selective in performing prosocial behaviors. Specifically, this research showed that older adults, compared to younger adults, were less generous to nonrelatives regardless of donation form (i.e., money or time), but equally (in terms of monetary donation) or even more (in terms of time donation) generous to relatives; older adults also displayed higher levels of preference for relatives over nonrelatives, and for socially close over distant others, in terms of donation willingness.

This finding is in accord with the SST literature (e.g., Carstensen, 1995, 2006), which postulates that people increasingly prioritize relationships with close (vs. distant) social partners to fulfill emotionally meaningful goals when getting older (e.g., Fung et al., 2008). It suggests that selective prosocial behaviors towards relatives and close others could be an important form of heightened social selectivity among older adults. It also underlines the importance of taking the effects of social relationship into account to understand age differences in prosocial behaviors.

Moreover, our study shed light on the role of kinship in prosocial behaviors. Kin selection theory posits that human beings have evolved to be more prosocial to their relatives than nonrelatives for the purpose of optimizing the survival rate of their own genes (e.g., Hamilton, 1964). Previous studies showed that there were cultural differences in kin selection in terms of the tendency of including relatives into individuals' core social networks, such that older Chinese were more likely to include relatives into their core social networks compared to older Germans (Fung et al., 2008). In consonance with this, results from our sample of Chinese suggested that the kin selection tendency in prosocial behaviors might increase with age. Future studies should test whether this age difference in kin-selection in prosocial behaviors varies across cultures.

It is also noteworthy that younger adults in the current study displayed no preference for relatives over nonrelatives; instead, they exhibited similar levels of generosity to nonrelatives (vs. relatives) on monetary donation. The results are in line with the argument that kin selection might be inadequate in explaining people's prosocial behaviors (e.g., Griffin & West, 2002; Zahavi, 1995). People could also conduct prosocial behaviors to nonrelatives due to other reasons or purposes, such as reciprocal benefits (Trivers, 1971), social prestige (Zahavi, 1995), empathy (e.g., de Waal, 2008; Eisenberg & Miller, 1987) or pure altruism (Batson, 1998). Future studies could also examine age differences in these motives for prosocial behaviors. In addition, our data also showed that education, household income and number of significant friends positively correlated with generosity in certain conditions, for example, education was associated with greater willingness to donate money to nonrelatives. These findings are congruent with the integrated theory of volunteering which highlights the significant roles of available resources—human capital (e.g., education and household income), social capital (e.g., social network) and cultural capital (e.g., social obligation)—in volunteering and donation behaviors (Choi & Chou, 2010).

In our donation scenario, all participants had the same amount of time and money available for donation. However, the same amount of time and money could be subjectively perceived differently by the younger and older participants due to their differences in resources availability in real life. Older adults, especially the retirees, in general have more free time but lower potential to make money than younger adults. This could be the reason why compared with younger adults, the older participants generally were less generous in donating money but not time.

Limitations and Conclusion

The current study used a hypothetical task in which younger and older participants were asked to donate when given a certain amount of money and time. Such a design may have both pros and cons. On the pro side, we controlled for the inter-individual inequity in resource availability that might confound with differences in donation willingness. On the con side, the experimental control may tax the ecological validity of the study. For example, in real-life situations, participants' donation willingness may be under the influences of their empathy and personality, which cannot be eliminated by the hypothetical task and may limit the generalizability of the current findings. Future studies should test whether individual differences in empathy and personality may determine donation willingness jointly or independently from the donation form and social relationship (relative vs. nonrelative and social distance) examined in this study.

Some may argue that that our donation task might be subjected to social desirability, that is, participants might overrate their willingness of donation to look good. However, there is no reason to speculate that social desirability, if presented, would be different across conditions and confound our cross-condition comparisons. Nevertheless, future studies should consider directly measuring social desirability to control for it.

Despite the limitations, our findings showed that donation form, kinship, and social distance could moderate age differences in donation willingness. Compared to younger adults, older adults were less generous to nonrelatives regardless of donation form (i.e., money or time), but equally (in terms of monetary donation) or even more (in terms of time donation) generous to relatives; and older adults displayed higher levels of kin selection and social discounting in donation willingness. The study highlights the necessity to take contextual factors into account when investigating prosocial behaviors. There is no universal

pattern of the age differences in prosocial behaviors; instead it depends, at least partially, on donating what to whom.

As for the practical implications, our results indicate that it might be beneficial to develop different strategies for older and younger adults in promoting volunteering or donation. For example, it could be a good idea to highlight the salience of social connectedness and kinship when encouraging older adults to volunteer or donate.

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Conflict of Interest

All authors have declared no conflicts of interest.

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