

## Giving to Friends, Classmates, and Strangers in Adolescence

Suzanne van de Groep , Kiki Zanolie, and  
 Eveline A. Crone

*Leiden University  
 Leiden Institute for Brain and Cognition  
 Brain & Development Research Center*

This study examined how perspective taking and sensitivity to social rewards predict giving to friends, classmates, and strangers in adolescence. Five hundred and twenty adolescents aged 12–17 years completed questionnaires on perspective taking and social rewards and played three Dictator Games in which they divided coins between themselves and a friend, classmate, and stranger. We found that, irrespective of age, adolescents donated most to a friend, less to their classmate, and least to a stranger, and females donated more than males. Individual differences in perspective taking and social reward sensitivity moderated how much adolescents donated, especially to strangers. These findings suggest that perspective taking and sensitivity to social rewards influence giving behavior in adolescence, especially to unknown others.

Giving is a form of prosocial behavior and one of the most important building blocks of kind and reciprocal interactions. Prosocial behavior is a complex, multi-faceted construct, referring to various forms of positive other-oriented behavior (e.g., giving, helping, cooperating) directed at interaction partners or *targets*, such as strangers, friends, and family (Padilla-Walker & Carlo, 2014). Recently, it has been suggested that adolescence is a crucial turning point in the development of prosocial behavior during which young people develop social-affective goals and navigate increasingly complex social worlds (Crone & Dahl, 2012; Foulkes, Neumann, Roberts, McCrory, & Viding, 2017; Kwak & Huettel, 2016). However, it remains poorly understood which processes in adolescence predict prosocial behaviors (Crone & Dahl, 2012) and how this depends on the social context and characteristics of the expresser (Güroğlu, van den Bos, & Crone, 2014; Padilla-Walker & Carlo, 2014). In this study, we examined how individual differences in perspective taking and social reward sensitivity predict giving and its development in adolescence. We also examined how giving

depends on the target (friends, classmates, and strangers) as well as gender differences.

### Adolescents' Giving to Peers in Dictator Games

One way to study giving behavior is with the Dictator Game, which involves a transaction between two individuals where one person can decide to share part of an endowment (e.g., 10 coins) with a second person (Kahneman, Knetsch, & Thaler, 1986; Will & Güroğlu, 2016). Even in settings where the second person is anonymous, with no future transactions, individuals typically give 20–30% of their resources to others (Will & Güroğlu, 2016). Developmental studies have shown that giving behavior already occurs in childhood but that during adolescence giving decisions become increasingly sensitive to the situational context (Güroğlu et al., 2014). Changes in adolescents' social environment, such as the increased influence and importance of peers, are likely to affect whether and how giving behavior is expressed toward specific targets. Indeed, researchers recently demonstrated that adolescents' giving behavior depends on the target (Güroğlu et al., 2014; Padilla-Walker & Carlo, 2014). Results showed that adolescents between ages 9 and 18 years increasingly differentiate between targets, such that they give more to friends than disliked or unknown others

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Requests for reprints should be sent to Suzanne van de Groep, Department of Developmental and Educational Psychology, Institute of Psychology, Leiden University, Wassenaarseweg 52, 2333 AK Leiden, The Netherlands. E-mail: s.w.van.de.groep@fsw.leidenuniv.nl

(Buhrmester, Goldfarb, & Cantrell, 1992; Güroğlu et al., 2014). This may indicate a strengthening of in-group bias and an increase in close-relational giving across adolescence (Telzer, Ichien, & Qu, 2015).

### **Individual Differences in Giving: Perspective Taking and Social Rewards**

Even though it is possible to discern general developmental patterns in giving toward different targets, prior studies have demonstrated pronounced individual differences in giving behavior in relation to perspective taking and sensitivity to social rewards (Kwak & Huettel, 2016; Padilla-Walker, Carlo, & Memmott-Elison, 2017; Van Hoorn, Dijk, Meuwese, Rieffe, & Crone, 2016; Will & Güroğlu, 2016). Higher levels of perspective taking are associated with an increase in perceived similarity of unknown others (Galinsky & Moskowitz, 2000) and greater levels of giving during adolescence (Güroğlu et al., 2014; Will & Güroğlu, 2016). A second process associated with giving is sensitivity to social rewards. A recent study showed that adolescents who displayed higher sensitivity to social rewards donated more to charity (Kwak & Huettel, 2016). In this study, we investigated associations between giving and two domains of social rewards, namely prosocial interactions (i.e., feeling rewarded by having kind, reciprocal relationships) and sociability (i.e., feeling rewarded by engaging in group interactions; Foulkes et al., 2017). These domains are expected to be associated with differences in giving to different peers (i.e., friends, classmates, and strangers) in adolescence. Firstly, we expect the prosocial interactions domain to be associated with greater levels of giving to peers during adolescence because individuals who feel rewarded by this generally act prosocially toward others (Foulkes et al., 2017). We expect this association to be stronger for close-relational giving (i.e., stronger for friends than classmates and stronger for classmates than strangers), as closer relationships are more reciprocal in nature (Güroğlu et al., 2014). Secondly, we expect the sociability domain to be positively associated with close-relational giving (i.e., to friends, and to a lesser extent, classmates) and negatively associated with giving to unfamiliar others, as sensitivity to this domain may strengthen in-group bias at the cost of reducing giving toward strangers.

### **The Present Study**

In this study, we focused on adolescents between ages 12 to 17 years, given that this is the developmental phase in which differentiation between peer

targets emerges (Buhrmester et al., 1992; Güroğlu et al., 2014). In an individual session, participants played three one-shot Dictator Games in which they divided 10 coins between themselves and one of three targets: a stranger, classmate, and friend. We included classmate as an additional target because it is understudied and may provide an intermediate relationship group (Telzer et al., 2015) given that, unlike strangers, classmates engage in frequent interactions and share a relational history, yet lack the closeness of friends. Questionnaires and Dictator Games were used to examine (1) differences between the three targets in adolescent giving behavior, (2) individual differences in perspective taking and sensitivity to two domains of social rewards (i.e., prosocial interactions and sociability) and their relation to giving in general, and (3) whether these individual differences influenced how much adolescents differentiated between the three targets of giving behavior. We also tested relationships with age given that previous studies have suggested increased differentiation between targets over the course of adolescence (Buhrmester et al., 1992; Güroğlu et al., 2014). Furthermore, we tested gender differences based on prior studies showing higher levels of communal giving in females (Espinosa & Kovářík, 2015; Meuwese, Crone, Rooij, & Güroğlu, 2015).

This study tested the following hypotheses. First, we expected that adolescents would give more coins to targets they were most familiar with, i.e., that they would donate most coins to a friend, less to a classmate, and least to a stranger (Buhrmester et al., 1992; Güroğlu et al., 2014). Second, we expected increased differentiation between targets with increasing age (Buhrmester et al., 1992; Güroğlu et al., 2014). Third, we expected that females would give more than males and explored whether this pattern was similar for different targets. Fourth, we expected that perspective taking and sensitivity to two domains of social reward (prosocial interactions and sociability) would be associated with giving to peers. Specifically, based on theoretical accounts of in-group bias, social identity theory, and relational giving (e.g., Telzer et al., 2015), we expected that (1) higher levels of perspective taking would be associated with greater levels of giving and less differentiation between targets; (2) higher levels of the prosocial interactions reward would be associated with greater levels of giving to all targets but that this association would be stronger for friends and lowest for strangers; (3) higher levels of the sociability reward would be positively associated with giving

to friends, less strongly but also positively associated with giving to classmates, and negatively associated with giving to unfamiliar others. As such, we expect increased differentiation between targets for higher levels of the prosocial interactions and sociability rewards.

## METHOD

### Participants

The sample included 520 adolescents (12–17 years;  $M$  age = 14.33,  $SD$  = 1.11; 51.5% female). Participants were recruited from a Dutch high school and 90.8% were born in the Netherlands. See Appendix S1 for more information on the sample demographics.

### Procedure

Informed consent was obtained from parents and participants. The study was approved by the local ethics committee. Data for this study were collected in two sessions, as part of a larger study: the first session (duration: 10–30 min) took place at home and consisted of several tasks and questionnaires (including the questionnaires on perspective taking and social rewards we used in this study) that participants filled out online. The second session (duration: 45 min) took place in participants' classrooms (10–30 students). During each classroom session, at least three trained experimenters were present to supervise and answer questions. During classroom sessions, additional measures of social behavior were acquired after completion of the Dictator Game. Time between the two sessions was at most three weeks. See Appendix S1 for information on additional measures that participants completed as part of the larger study.

Before each session, participants were reminded that participation was voluntary and that data would be handled confidentially and anonymously. After all participants had finished the study, participants received a €5 gift card for taking part and were debriefed and thanked for their participation.

This study had some missing data: 43 participants completed only the first session and 48 only the second session. Additionally, specific questionnaire data were missing for 15 participants. Therefore, we report the number of participants separately for each analysis in the results section. For a description of how we correlated the variables of interest and for details on how we performed the statistical analyses, including assumption checks, see Appendix S2.

### Materials

*Giving toward several targets: Dictator Game.* To measure giving behavior we used a Dictator Game (Kahneman et al., 1986) with three trials presented in randomized order. On each trial, participants divided 10 coins between themselves and one of three targets: a stranger, classmate, or friend. Giving behavior was measured as the number of coins given, resulting in a discrete value between 0 and 10 for each target. The target had no influence over the number of coins they would receive (i.e., they could not decline the offer; Kahneman et al., 1986). Although participants were not informed about the targets' exact identity, they knew on each trial whether the target was a stranger, classmate, or friend. It was emphasized that keeping more coins for oneself would result in fewer coins for the target, and vice versa, and that these choices would influence payment of themselves and the target at the end of the study. In addition, they were told that the coins represented real money, but not how they exactly translated to real-life money. It was also emphasized that there were no right or wrong choices and that participants were free to make their own decisions.

*Individual differences in perspective taking.* We measured perspective taking using the 6-item perspective taking subscale ( $\alpha$  = 0.72) of the Interpersonal Reactivity Index (IRI-PT; Davis, 1983), which assesses the inclination to spontaneously adopt the psychological viewpoint of others. Items were rated using a 5-point Likert scale from 0 (*does not at all apply to me*) to 4 (*completely applies to me*; sample item: "I try to look at everybody's side of a disagreement before I make a decision"). The mean of the six items was computed for analyses.

*Sensitivity to social rewards.* We measured sensitivity to social rewards with the Dutch adolescent version of the Social Reward Questionnaire (Foulkes et al., 2017). We used only the sociability and prosocial interactions subscales because of their likelihood to be associated with giving to friends, classmates, and strangers. A high score on the five-item prosocial interactions subscale ( $\alpha$  = 0.65) reflects feeling rewarded by having kind, reciprocal relationships (sample item: "I enjoy treating others fairly"). A high score on the three-item sociability subscale ( $\alpha$  = 0.60) reflects feeling rewarded by engaging in group interactions (sample item: "I enjoy belonging to a group or club"). Items were scored on a 7-point Likert scale

(1 = *strongly disagree* to 7 = *strongly agree*). For each subscale, mean scores were computed and used in analyses.

## RESULTS

See Table 1 for psychometric properties and descriptive statistics of all measures. All variables were approximately normally distributed (skewness < 2).

### Giving Toward a Friend, Classmate, and Stranger

To examine differences in giving behavior toward a stranger, classmate, and friend, we performed repeated measures ANOVA with target (stranger, classmate, friend) as a within-subject factor. The analysis ( $N = 475$ ) showed a main effect of target, suggesting differences in donations to friend, classmate, and stranger,  $F(1.55, 735.31) = 386.80$ ,  $p < .001$ ,  $\eta_p^2 = 0.45$ . Post-hoc pairwise comparisons with Bonferroni correction showed that more coins were donated to a friend ( $M = 4.79$ ,  $SD = 1.04$ ) than to a classmate ( $M = 4.07$ ,  $SD = 1.24$ ); both of which received more coins than a stranger ( $M = 3.19$ ,  $SD = 1.68$ ), all  $p$ 's < .001, see Figure 1. To examine whether this was influenced by gender and age, we added gender as a between-subjects factor, and linear age as a covariate ( $N = 472$ ). There was a main effect of gender,  $F(1, 469) = 24.08$ ,  $p < .001$ ,  $\eta_p^2 = 0.05$ , such that females on average donated more coins than males (see Table 1). Therefore, we added gender as a factor to all subsequent analyses. There was no significant interaction between target and gender,  $F(1.56,$

$730.09) = 3.18$ ,  $p = 0.055$ ,  $\eta_p^2 = 0.01$ , (i.e., males and females donated to targets in a similar way). There were no main effects or interactions with age. Therefore, we did not include age as a covariate in subsequent analyses (additional analyses in which age was included in the analyses did not change the results).

### Individual Differences in Giving to Peers: Perspective Taking and Social Rewards

To investigate associations between giving to a stranger, classmate, or friend and (1) perspective taking, (2) prosocial interactions reward, and (3) sociability reward we performed a repeated measures ANOVA with target as a within-subject variable, gender as between-subject factor, and the three individual differences measures as covariates. The results of the repeated measures ANOVA ( $N = 419$ ) did not show a main effect of perspective taking,  $p = .070$ , but did show an interaction between target and perspective taking,  $F(1.61, 662.33) = 4.57$ ,  $p = .017$ ,  $\eta_p^2 = 0.01$ . As shown in Figure 2a, perspective taking was differently associated with giving toward a stranger ( $B = 0.44$ ,  $p = 0.029$ ), classmate ( $B = 0.06$ ,  $p = 0.696$ ), and friend ( $B = -0.09$ ,  $p = 0.440$ ), such that the relationship between perspective taking and giving was not significant for friends and classmates, but participants low on perspective taking donated less to strangers. This pattern was not significantly different for males and females (three-way interaction n.s.,  $p = 0.092$ ).

The analysis further showed a main effect of the prosocial interactions subscale,  $F(1, 411) = 4.70$ ,

TABLE 1  
Descriptive Statistics of Donated Coins Toward a Stranger, Classmate, or Friend; and Perspective Taking and Sensitivity to Social Rewards

Measure	No. of items	Min. score	Max. score	Mean score (SD)		Mean score (SD)
				Males (N = 251)	Females (N = 268)	Total (N = 520)
Donated coins						
Stranger	1	0	10	2.84 (1.80)	3.50 (1.50)	3.19 (1.68)***
Classmate	1	0	10	3.82 (1.41)	4.28 (1.02)	4.07 (1.24)***
Friend	1	0	10	4.59 (1.30)	4.98 (0.69)	4.79 (1.04)***
Perspective taking						
IRI-PT	6	1	5	3.44 (0.66)	3.60 (0.63)	3.52 (0.65)**
Social rewards						
Sociability	3	1	7	5.36 (1.17)	5.65 (0.92)	5.51 (1.06)**
Prosocial interactions	5	1	7	5.71 (0.76)	6.13 (0.60)	5.93 (0.72)***

Note. Min. and Max. scores indicate the range of possible choices, not the actual minimal and maximal choices that were made by participants.

All means are significantly different across gender, \*\* $p < .01$ ; \*\*\* $p < .001$ .

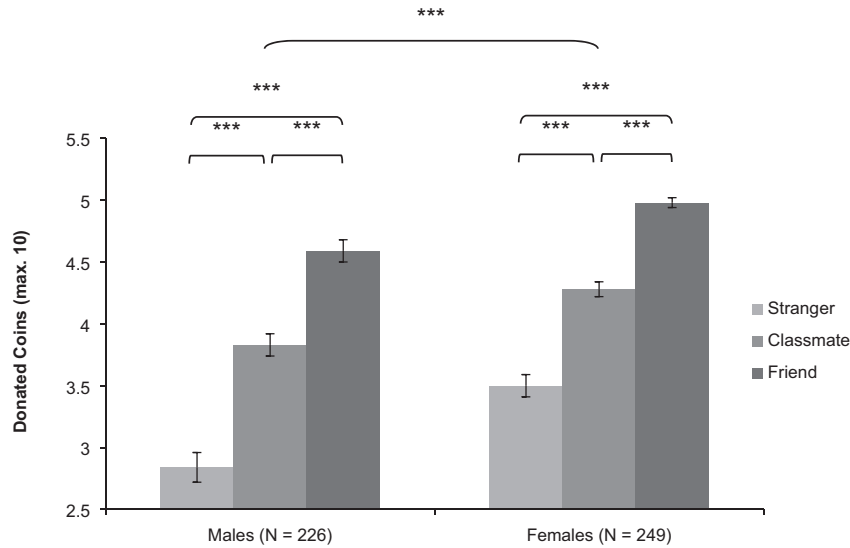


FIGURE 1 Mean number of coins that were donated to a stranger, classmate, and friend by male and female adolescents, \*\*\* $p < .001$ .

$p = 0.031$ ,  $\eta_p^2 = 0.01$ ,  $B_{\text{stranger}} = 0.22$ ,  $p = 0.201$ ,  $B_{\text{classmate}} = 0.49$ ,  $p < .001$ ,  $B_{\text{friend}} = 0.39$ ,  $p < .001$ , such that a higher score on this subscale was associated with more donated coins. There was no interaction between this subscale and the target of the donation,  $p = 0.211$ , but there was an interaction between the prosocial interactions subscale and gender,  $F(1, 411) = 4.10$ ,  $p = 0.044$ ,  $\eta_p^2 = 0.01$ . Separate repeated measures ANOVAs for males and females indicated that the relationship between this subscale and donations was only significant for males,  $F(1, 195) = 7.70$ ,  $p = 0.006$ ,  $\eta_p^2 = 0.04$ , not females,  $F(1, 216) = 0.01$ ,  $p = 0.910$ ,  $\eta_p^2 = 0.00$ , see Figure 2b.

The analyses also showed a main effect of the sociability reward,  $F(1, 411) = 10.98$ ,  $p = 0.001$ ,  $\eta_p^2 = 0.00$ , such that a higher score on the sociability subscale was associated with fewer donated coins. This was qualified by a two-way interaction between target and the sociability reward,  $F(1.61, 662.33) = 7.44$ ,  $p = 0.002$ ,  $\eta_p^2 = 0.01$ , and a three-way interaction between target, sociability reward, and gender,  $F(1.61, 662.33) = 6.66$ ,  $p = 0.003$ ,  $\eta_p^2 = 0.02$ . Separate repeated measures ANOVAs for males and females showed that the interaction between the sociability reward and target was only significant for females,  $F(1.66, 357.67) = 11.95$ ,  $p < .001$ ,  $\eta_p^2 = 0.05$ , not for males,  $F(1.66, 306.15) = .86$ ,  $p = .399$ ,  $\eta_p^2 = 0.01$ . As shown in Figure 2c, associations between the sociability reward and donations for males did not differ depending on the target ( $B_{\text{stranger}} = -.08$ ,  $p = 0.436$ ,  $B_{\text{classmate}} = -.16$ ,

$p = 0.056$ ,  $B_{\text{friend}} = -.05$ ,  $p = 0.472$ ). For females, however, this association was strongest for donations to strangers ( $B_{\text{stranger}} = -.50$ ,  $p < .001$ ), less strong for donations to classmates ( $B_{\text{classmate}} = -.21$ ,  $p = 0.010$ ), and no association was found with donations to friends ( $B_{\text{friend}} = -.05$ ,  $p = 0.320$ ).

## DISCUSSION

Consistent with prior studies and theoretical accounts of in- versus out-group differentiation, social identity theory, and relational giving (Buhrmester et al., 1992; Güroğlu et al., 2014; Telzer et al., 2015), we found that in Dictator Games adolescents donated more to individuals that they are closer to, or in-group members, such as their friends. Giving to unknown peers was limited to approximately 30% of the stake (Will & Güroğlu, 2016), whereas participants gave 45–50% to friends. Interestingly, we added an additional target (classmate), which showed an intermediate in-group bias relative to strangers and friends. Though the identities of the friend and classmate were not revealed, participants may have given more to these targets because of expected reciprocity. Consistent with prior research (Espinosa & Kovářík, 2015), we found that females generally donated more than males regardless of target (Espinosa & Kovářík, 2015; Meuwese et al., 2015; Padilla-Walker et al., 2017).

We also examined whether there were age differences in giving toward different partners, based

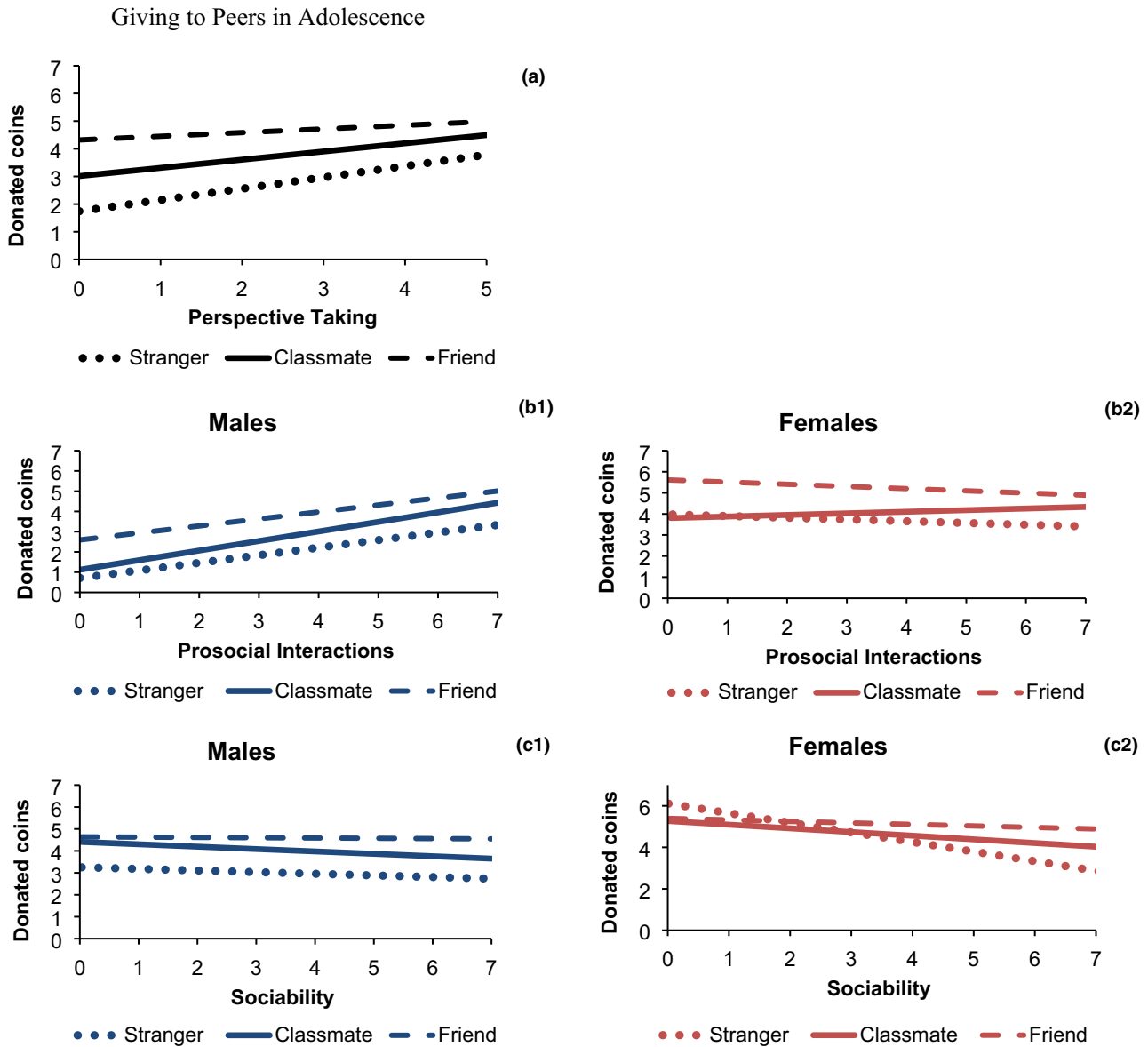


FIGURE 2 (a) Association between perspective taking and the number of donated coins to a stranger, classmate, and friend. The graph displays a fitted line at total for each of the three targets. (b1, b2) Association between the prosocial interactions subscale of the Social Reward Questionnaire (SRQ) and the number of donated coins to a friend, classmate, and stranger. The fitted lines at total for each target are displayed separately for males and females. (c1, c2) Association between the sociability subscale of the SRQ and the number of donated coins to a stranger, classmate, and friend. The fitted lines at total for each target are displayed separately for males and females. Note that the B weights displayed here indicate the association between the predictor and the number of donated coins, uncorrected for other predictors and gender.

on studies showing that target differentiation emerges between childhood and adolescence (Buhrmester et al., 1992; Güroğlu et al., 2014). However, we found no age differences in how much adolescents donated to whom. Although this might initially seem surprising given prior studies that found differential developmental trajectories for self-reported prosocial behavior aimed at friends and strangers (Padilla-Walker et al., 2017),

prior studies that used economic games like we did suggest that the ability to differentiate between targets emerges between ages 9 and 12 (Güroğlu et al., 2014). It is possible that in adolescence (12–17-years in this study) individual differences explain more variance in giving within the context of economic games than age differences. Future research could use longitudinal designs and child or adult reference groups to elucidate how this

differentiation emerges and changes within individuals and whether there are different trajectories based on self-report versus economic games, also for other types of prosociality.

### Traits and Gender Influence Adolescent Giving Behavior

Next, we examined whether perspective taking explained differences in giving behavior to friends, classmates, and strangers. Consistent with research showing that perspective taking is an important correlate of prosocial behaviors, we showed that individual differences in perspective taking were associated with target-dependent giving behavior (Galinsky & Moskowitz, 2000; Güroğlu et al., 2014). Notably, our results indicate that perspective taking is especially important for giving to strangers as compared to classmates and friends, suggesting it may be key to overcoming in-group bias.

Based on prior research showing associations between social rewards and giving (Kwak & Huetel, 2016; Van Hoorn et al., 2016), we also examined how sensitivity to two domains of social rewards (prosocial interactions and sociability) were related to differences in giving to a friend, classmate, or stranger. We expected that sensitivity to the reward of prosocial interactions would be associated with higher donations, especially for friends, but we found this association regardless of target and only in male participants. This suggests that for male adolescents feeling rewarded by having kind, reciprocal relationships is associated with giving, not only to people they already have a relationship with, but also to unfamiliar others. In contrast, for female adolescents, giving cannot be explained by sensitivity to this social reward. Perhaps, this can be explained by moral identity theory (Hardy & Carlo, 2011), which poses that during adolescence internal rules and ideology become increasingly important for morality compared to external factors (e.g., rewards or relationships). The association between the prosocial interactions reward and giving may only have been found in males because they are still relatively influenced by external factors compared to females, who may be further ahead in their moral identity development. Future studies should aim to replicate our finding that sensitivity to the prosocial interactions reward is associated with giving for males, but not females.

Third, we expected that feeling rewarded by engaging in group interactions would be positively associated with giving to friends and classmates,

and negatively associated with giving to strangers. However, we found a negative association with giving to strangers only in females, for whom we also found a negative association with giving to classmates, but no association with giving to friends. We found no association with giving to any target in males. This result suggests that females who like to engage in group interactions are more prone to in-group versus out-group differentiation, consistent with social identity theory. Not only does this study support previous findings that females donate more in general than males (Espinosa & Kovářík, 2015; Meuwese et al., 2015; Padilla-Walker et al., 2017), it further shows that this behavior depends on the interplay between personality (i.e., sensitivity to social rewards) and social context (i.e., target). That is to say, females who are more sensitive to in-group rewards, also distinguish more between in- and out-group giving.

### Limitations and Future Directions

This study has several limitations that should be addressed in future research. Firstly, we did not ask participants about inferences that they made about the target. Future studies could overcome this by asking participants additional questions, for example how much they liked each target and what reactions they expected from the target based on their own giving behavior. Secondly, the task was performed anonymously and in an individual setting. Given the importance of friends and peers in adolescence (e.g., Van Hoorn et al., 2016), future research could consider the influence of friends and peers on giving by not only including them as target, but also examining whether their presence and evaluations influence giving choices. Although a previous study established that positive peer feedback can increase donations to a participant's group (Van Hoorn et al., 2016), future studies could examine whether the same holds for adolescents' individual relationships.

### CONCLUSION

To conclude, we showed that 12- to 17-year-old adolescents' giving behavior is influenced by perspective taking and social rewards, especially in the case of unfamiliar others. Prior studies have mainly focused on undefined or anonymous interaction partners (Padilla-Walker & Carlo, 2014), however, there are important reasons to focus on relational giving. Firstly, giving to anonymous others is less prevalent in adolescents' lives than

relational giving, as adolescents spend more time with friends, classmates, and family (Padilla-Walker & Carlo, 2014; Van Hoorn et al., 2016). Secondly, it is probable that there are different motivations for relational giving than anonymous giving, which may underlie giving behavior toward various targets. Insight into the mechanisms of anonymous and relational giving may help explain inconsistent findings regarding the development of giving behavior in previous studies (Padilla-Walker & Carlo, 2014). Although there is an emergence of studies investigating the interplay of personality and prosocial behaviors aimed at different targets (e.g., Padilla-Walker et al., 2017), further research is warranted to investigate giving behavior in different social contexts (e.g., public or anonymous giving decisions) and should include targets from different social groups in the same study (e.g., peers and family). Another important venture for future research is to examine whether and in which way perspective-taking and identification with out-group members can be trained in adolescence and whether this leads to higher donations to unfamiliar others (Crone & Dahl, 2012). Together, this study provides important insights for understanding adolescent giving behavior by considering how adolescents' traits interact with diverse social contexts over development to shape prosocial decisions.

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## Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

**Appendix S1.** Details regarding the sample and measures.

**Appendix S2.** Details regarding statistical analyses and correlations.