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Getting what you pay for: Children's use of market norms to regulate exchanges

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Abstract

Children are sensitive to a number of considerations influencing distributions of resources, including equality, equity, and reciprocity. We tested whether children use a specific type of reciprocity norm—market norms—in which resources are distributed differentially based strictly on amount offered in return. In two studies, 195 children 5-10 years and 60 adults distributed stickers to friends offering same or different amounts of money. Overall, participants distributed more equally when offers were the same, and more unequally when offers were different. Although sensitive to why friends offered different amounts of money, children increasingly incorporated market norms into their distributions with age, as the oldest children and adults distributed more to those offering more, irrespective of the reasons provided.

Keywords: Children, Allocation, Market

Getting what you pay for: Children's use of market norms to regulate exchanges

People make decisions about allocating resources to other people in many contexts. However, it is not always clear how those allocations should be made. The developmental literature has focused on children’s developing conceptions of different kinds of “fair” allocation strategies—equality and equity. Equality is the relatively simple principle that everyone gets the same. Consider, for example, a situation where you have been tasked with distributing four new

pens to two people. If using an equality norm, you would distribute two pens to each person. Equity is a more complex construction of fairness involving assessments of deservingness (e.g., how much a person contributes should determine the outcomes they experience; Carrell & Dittrich, 1978). Perhaps one of the potential recipients helped you complete another task earlier in the day; an equitable distribution gives more to the helpful person. Alternatively, one person may have many pens and the other none; an equitable distribution, in this case, gives more to the needy person. A significant body of empirical research has explored which kinds of equity considerations children attend to and when (e.g., Baumard, Mascaro, & Chevallier, 2012; Hamann, Bender, & Tomasello, 2013; Elenbaas & Killen, 2016; Elenbaas, Rizzo, Cooley, & Killen, 2016; Kanngiesser & Warneken, 2012; Kenward & Dahl, 2011; Rizzo, Elenbaas, Cooley, & Killen, 2016).

In the current paper, we consider a third norm of particular cultural and practical significance: market exchange. What if people are buying and selling pens? In a market exchange the allocation problem is establishing a price: how to maximize returns (for both buyer and seller). Although equity might require that a more deserving person get more even if they cannot pay more, the principles of market exchange do not. In this sense, market norms can be construed as qualitatively distinct from equality and equity norms, which have more of a social or personal element (Heyman & Ariely, 2004). To extend the example provided earlier, of distributing four pens to two people, a market exchange would entail allocating the pens in such a way as to maximize the amount of resources received in return. The “right” thing to do in a market is to get the best price for your goods. Distributing this way may not produce an equal outcome, or an equitable outcome, however, it is appropriate under market norms.

As noted above, children’s attention to equality and equity tend to be studied in the context of fairness, to which children show a strong commitment. In many contexts that have been studied, children's “fair” distributions tend to be equal, particularly in third-party distribution contexts (i.e., when the participants themselves are not recipients). In third-party contexts, for example, children as young as 6-8 years are averse to unequal distributions and will even throw away odd items to preserve equality (Shaw & Olson, 2012). Attention to equality may be present in infancy (Sloane, Baillargeon, & Premack, 2012), which suggests that it emerges early—even before children can physically engage in third-party distributions.

Although often motivated by equality, children are not wholly committed to it in all

contexts. For example, children as young as 3.5 years help protagonists preferentially distribute to puppet friends and family members compared to strangers in third-party contexts (Olson & Spelke, 2008). And in a shift toward equity, children as young as 5-6 years distribute unequally to rectify third-party ingroup inequalities (e.g., Elenbaas et al., 2016). Preschool children also distribute differently depending on their preference for a recipient (Chernyak & Sobel, 2015); children of this age will also take merit and past behavior into account when deciding how to distribute items (Baumard et al., 2012). For example, when resources are less plentiful, 4.5-year-olds give more to helpful vs. unhelpful recipients (Kenward & Dahl, 2011). Thus, young children will deviate from equal distributions to perform equitable distributions, which consider a potential recipient's deservedness along various dimensions including need, effort, time, and/or status (see Deutsch, 1975 for an early review of different dimensions along which just distributions can be made). Overall, with increasing age, children display an increasing departure from equal distributions based on justified equity concerns (e.g., merit, need) from preschool-age through at least middle-childhood (Schmidt, Svetlova, Johe, & Tomasello, 2016).

Although prior work has extensively explored how equality and equity concerns guide children's distributions, much less is understood about the influence of market norms. Though children lack adult-like understanding of market principles, possibly due in part to parents' reluctance to discuss personal financial matters in the home (Romo, 2011), children regularly engage in exchange-type behaviors (e.g., trading toys, food) wherein the goal is to maximize value. For example, children at lunch may seek out more desirable snacks and look to friends to trade. Market norms reflect principles (e.g., value, price) for resource distributions that people, particularly those participating in a capitalistic economy, grapple with on a day-to-day basis. Within this type of economy, the receipt of resources and goods is linked to the amount someone offers in exchange, rather than linked to desert or need (Fiske, 1991).

Market norms may be understood as a specific form of reciprocity. Reciprocity involves giving resources in the expectation (or in response to) receipt of resources: You give to me so I give to you. A significant body of research has explored children's sensitivity to reciprocity considerations. Prior work in this area shows that children as young as 3 years engage in direct reciprocity via first-party (Dunfield, Kuhlmeier, & Murphy, 2013) and third-party tasks (Olson & Spelke, 2008; see House, Henrich, Sarnecka, & Silk, 2013, for overview of the development of contingent reciprocation in children 3-7.5 years). For example, by 3.5 years children track past

behaviors to reason about who should receive later resources (Olson & Spelke, 2008), and by age 5 years share more with partners who may reciprocate in the future vs. not (Sebastián-Enesco & Warneken, 2015).

The kind of reciprocity addressed in prior research is a more a general, informal form than that involved in market norms. We suggest that market norms are a specific kind of reciprocity involving direct *quid pro quo*. Informal reciprocity involves a loose account of balance in the long run. For example, the expectation that a gift or favor may someday be returned, without explicit understanding of the amount or timing, is informal reciprocity. Indeed, it is a violation of informal reciprocity to demand or offer direct *quid pro quo*. One cannot offer to pay (or otherwise assign a specific value) for a meal at a friend's house (Tetlock, 2003). Nor ought one to expect that the value received in reciprocation matches the value given (the meal you invite me to may not be equal in value to the labor I expended helping you move). It is the specific accounting character of tracking the particular value of goods during a single exchange that distinguishes market exchanges from informal reciprocity.

We operationalize market exchanges as those involving money. How do children understand exchanging goods for money? Clearly monetary exchanges are not equal—everybody who walks in to a store does not walk out with the same goods. Monetary exchanges are also not based on equity as traditionally conceived, because the amount of money offered in a market exchange need not rectify inequalities or reward those who work harder or are more deserving. For example, a person may be highly deserving, but if they do not provide the asking price, then they will not have access to goods (Rizzo & Killen, 2016). In contrast, in monetary exchanges, people will generally receive goods in proportion to the amount they offer. This relation is especially reliable in fixed-price transactions (e.g., shopping) that characterize most monetary exchanges for the population involved in the current study. Neither norms of equality nor norms of equity capture adult expectations for monetary exchanges, strictly conceived.

Finally, market exchanges are not equivalent to other forms of reciprocity. Whereas reciprocity may entail consideration of past or future reciprocation, market exchanges can be based on singular interactions with those one has not met before and is unlikely to meet again in the future. Although prior research indicates that young children consider reciprocity as it rests on enduring (or at least repeated) personal relationships, it is unclear whether children's judgments involve one-shot market exchanges. And whereas reciprocity may entail a general

sense of "do me a favor, and I'll do you a favor", market exchanges entail more precise expectations about the amount of timing of exchanges.

Though prior research exploring reciprocity in children tests whether they are sensitive to past and future behaviors when distributing resources, it is unclear how children reason about market exchanges in this stricter sense. Understanding core market principles, such as the role of supply and demand in determining a price, involves extended development (see Siegler & Thompson, 1998). However, the basic intuition that it is acceptable to distribute more items to one who offers higher payments, may develop early, at least for children in modern Western societies who grow up immersed in a market economy—as aspect of reciprocity that has yet, to our knowledge, to be explored. More generally, it remains an open question whether and how young children apply these three norms (equality, equity, and market) in the context of monetary exchanges.

Present Research

The present research tests how 5-10-year-old children's third-party distributions are affected by money offers, as prior work in the areas of fairness and merit understanding suggests that changes should be observed across this age range. Attention to equality has been observed in the youngest age within this range (e.g., Shaw & Olson, 2012), whereas attention to equity expands in scope. Thus, for example, by preschool age (3-4 years), children consider merit when determining how to distribute items—i.e., children allocate based on individual contributions (Baumard et al., 2011). In contrast, by 10-11 years, children act on a more nuanced understanding of merit (and deservedness) to rectify social inequalities—i.e., older children seek to correct disparities across groups (Elenbaas et al., 2016). We therefore expected adherence to increasingly shift toward incorporating equity concerns across the age range. In addition, the youngest children within this age range have been shown to track cooperative behaviors and engage in contingent reciprocation (Sebastián-Enesco & Warneken, 2015). For these reasons, it is of particular interest to determine how children would reason about market norms in the context of these developmental changes.

Across two studies, children (and adults as a comparison group) help a Giver distribute extra stickers. Using a third-party design allowed us to present the relationships among the Giver and Friends neutrally, thus providing a better test of market norms (which should apply even among strangers), and eliminating the child's own stake in the distributions. In Study 1,

participants help a Giver distribute extra stickers among the Giver and two friends. In Study 2, participants help a Giver distribute extra stickers between two friends only. In both studies, friends make offers to the Giver for the extra stickers, offering no money (allowing for comparisons to previous literature), equal amounts of money, or different amounts of money. When offers are different, the reasons vary: (1) one friend simply offers more money (no reason provided), (2) one friend refuses to pay despite having funds available, or (3) one friend wants to pay, but lacks available funds. We include these scenarios to test, in a market exchange context, whether differences in monetary offers are the only factor that matters, or whether children factor in equity concerns: Do you get what you pay for, or what you deserve?

Predictions. If guided strictly by equality norms, then children will distribute stickers equally irrespective of the offers. If guided by equity, then children will distribute stickers equally when offers are the same (i.e., when no money is involved, and when equal amounts of money are offered). Equity norms would also predict that when offers are different and no explanation for the difference is provided, or when one friend is able but refuses to pay, children will distribute unequally in favor of the friend offering more. However, when someone is willing but unable to pay, equity would favor either an equal distribution (both participants are deserving) or an unequal distribution in favor of the person who is *unable* to pay (to rectify an inequality). Finally, if guided by market norms, children will strictly distribute stickers based on the payment offered. That is, when offers are the same, children will distribute equally, and when offers are different, children will distribute unequally in favor of the friend offering more. Thus, trials where one friend is willing but unable to pay provide the clearest test of whether children adhere to equity vs. market norms (i.e., equity entails equal distributions or favoring the friend willing but unable to pay; market entails favoring the friend offering more money).

Finally, we predict that the degree to which children depart from equality will differ by age. That is, younger children (5-6 years) are predicted to display a stronger commitment to equal distributions than older children (9-10 years) and adults. Younger children may also be more influenced by equity (ability to pay) than older children and adults, who have more experience with fixed prices (e.g., the grocery store does not care how rich you are). Thus, we predict that principles for all three types of exchanges will be available from an early age, but the degree to which children appeal to equity and to market considerations will increase with age (see Rizzo & Killen, 2016).

STUDY 1

Method

Participants

Participants included 76 children between the ages of 5 and 10 years, subdivided into three age groups: 5-6 years (n = 27, M = 5.94, SD = .56, 15 females), 7-8 years (n = 24, M = 7.71, SD = .49, 15 females), and 9-10 years (n = 25, M = 9.70, SD = .48, 12 females). Twenty-five adults (M = 19.10, SD = .93, 16 females) also participated. Prior to analyzing the data, an additional 13 children were excluded for the following reasons: 3 due to experimenter error (e.g., recording errors), 4 due to observing other participants complete the task, 4 due to parental or friend interference, and 2 for not completing the task. Only one adult was excluded, due to experimenter error. Children were recruited and tested in lab spaces at two local museums between September 2015 and January 2016. We did not collect data on race, ethnicity, nor socioeconomic status; however, one museum required an entrance fee whereas the other did not. Adults were recruited via a university Psychology Subject Pool between October 2015 and November 2015. Children received a thank-you gift for participating, and adults received course credit.

Materials

Materials included laminated squares depicting one of five shapes: star, circle, triangle, crescent, or hexagon. The laminated squares with shapes represented the stickers participants were asked to distribute on behalf of the Giver. Depending on the trial, there were four or five laminated squares of each shape, and shapes within a trial were all colored the same, with no color repeated across trials. Shapes were placed in collection bowls for Friends and/or on top of a plastic bag for the Giver, allowing us to more clearly distinguish Friends from the Giver. Stickers for the Giver were placed on a plastic bag, as it is more plausible that extra stickers (which the Giver had brought) would be contained in a bag rather than in a bowl prior to distributing.

Design

Participants heard third-party vignettes describing situations where friends offered no money (No Money), equal amounts of money (one quarter each; Equal Money), or different amounts of money (see Table 1 for sample vignettes of each type). The following different offers were made: (a) More/Less: one friend offers two quarters, one friend offers one quarter, (b) Refusal: one friend offers one quarter, one friend refuses to offer the one quarter they have

available, and (c) Inability: one friend offers one quarter, one friend offers zero quarters due to being unable to pay (i.e., having no quarters). For each scenario, there were two trials—one requiring the distribution of four stickers, and one requiring the distribution of five stickers. Thus, participants heard ten vignettes total (see Table 2 for complete design).

The ten vignettes were presented in three blocks: No Money vignettes, money vignettes involving the distribution of four stickers (Even), and money vignettes involving the distribution of five stickers (Odd). The No Money block was always presented first to avoid potential effects of money influencing participants' distributions in the absence of money, and the order of the other two blocks was randomized. The order of the vignettes within blocks was randomized and the side on which unequal offers were made was counterbalanced across participants.

Procedure

Children. Before the session began, a parent/guardian provided written consent and the child provided oral assent. The child then worked with an experimenter individually who told them that they were going to hear some stories and answer some questions. The experimenter read ten vignettes displayed on a computer, each depicting three characters—a Giver and two friends, gender-matched to the child—and children were tasked with helping the Giver decide how to give away the Giver's extra stickers. During each vignette, children were told that the Giver could give away the extra stickers any way they wanted—they could give them to both friends or to just one friend, and they could give them all away or keep some for the Giver. The Giver was included as a possible recipient to allow for equal distributions to the Friends during the five-sticker trials. While reading the vignette, the experimenter laid out all stickers directly in front of the child, in a row. The child was then instructed to put stickers for the friends in corresponding collection bowls (situated on either side of the computer) and to put stickers for the Giver on a plastic bag (situated in front of the computer). This arrangement of collection bowls and bag mirrored the spatial relationship of the characters on the computer screen (see Figure 1). The number of stickers distributed to each character was recorded. At the conclusion of the task, children were asked why they distributed stickers as they had during the last trial. Responses were gathered for exploratory purposes and are not discussed further.

Adults. Adults provided consent and completed the same task as presented to children.

Results

To test our predictions, we first tallied the number of stickers distributed to each possible

recipient (Friend A, Friend B, Giver). When Different offers were made, Friend A was defined as the friend who offered more money. When Same offers were made, Friend A was simply defined as the friend on the left.

Same vs. Different Offers

We first predicted that participants would distribute stickers more equally when offers were the same: When offers were different, equity and market considerations should lead participants to distribute more stickers to friends offering more money. To test this, we collapsed across Same trials (No Money, Equal Money) and collapsed across Different trials (More/Less, Refusal, Inability), and then for Same vs. Different trials separately, we calculated the proportion of trials for which an equal number of stickers was distributed to Friend A and Friend B (i.e., zero to each, one to each, or two to each). Proportions were used to permit comparison across the different numbers of trials (two Same Offer trials, three Different Offer trials). We conducted a repeated-measures analysis of variance (ANOVA) with offer type (Same, Different) and sticker number (Even, Odd) as the within-participants factors and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor.

As predicted, participants were more likely to distribute stickers equally during Same (.88) vs. Different (.42) trials, $F(1, 97) = 189.22$, $p < .001$, $\eta_p^2 = .66$. However, this effect interacted with age group, $F(3, 97) = 13.25$, $p < .001$, $\eta_p^2 = .29$. To examine the interaction, we tested the effect of offer type within each age group considered individually, setting our alpha level for post-hoc comparisons of the interaction to .0125 (.05/4 age groups) to account for multiple comparisons. At all age groups, participants distributed more equally when offers were the Same vs. Different (5-6: .72 vs. .56; 7-8: .89 vs. .48; 9-10: .94 vs. .40; Adults: .97 vs. .23; *p*s $\leq .012$). See Figure 2 for distributions by offer type and age group. Finally, there was a main effect of sticker number, $F(1, 97) = 5.89$, $p = .017$, $\eta_p^2 = .06$, indicating that participants distributed more equally between the two friends when an even number of stickers was available to give away than when an odd number of stickers was available to give away (.68 vs. .62). This result may be due to the relative ease of distributing an even vs. odd number of stickers between two people. No other significant results were found.

No Money vs. Equal Money Offers

We next tested whether participants' distributions differed during Same offers when money was involved vs. not involved. Testing whether this is the case serves as an important

control to check that introducing money offers does not unexpectedly influence behaviors. Again, our dependent variable was the proportion of trials on which participants distributed the stickers evenly between A and B. We conducted a repeated measures ANOVA with vignette type (No Money, Equal Money) and sticker number (Even, Odd) as the within-participants factors and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor. We obtained only one significant effect, a main effect of age group, $F(3, 97) = 7.35$, $p < .001$, $\eta_p^2 = .19$. Children 5-6 years distributed less equally than participants in all other age groups (5-6: .72; 7-8: .89; 9-10: .94; Adults: .97; all *p*s < .01). Thus, the inclusion of money in the allocation context had no bearing on the likelihood of distributing equally when offers were the same.

Different Offers: Market Norms vs. Equity Norms

Turning to trials where different offers were made, we predicted that, if strictly adhering to market norms, participants would distribute more stickers to Friend A than Friend B, since Friend A was defined as the one who offered more. However, equity norms would dictate equal or more favorable distributions to the friend willing but unable to pay. To test this, we calculated a difference score—subtracting the number of stickers distributed to Friend B from the number of stickers distributed to Friend A. Positive values indicate more stickers for Friend A, whereas negative values indicate more stickers for Friend B. We conducted a repeated measures ANOVA with vignette type (More/Less, Refusal, Inability) and sticker number (four, five) as the within-participants factors and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor. This analysis yielded main effects of vignette type, $F(2, 194) = 15.88$, $p < .001$, $\eta_p^2 = .14$, and age group, $F(3, 97) = 10.10$, $p < .001$, $\eta_p^2 = .24$. Participants distributed more stickers to Friend A during both More/Less (.87) and Refusal (.96) trials than during Inability (.35) trials (*p*s < .001), suggesting that participants are sensitive to the reasons for which friends offer no money. Again, setting our alpha level to .0125 to account for multiple comparisons, we found that the difference in the number of stickers distributed to Friend A vs. Friend B was smaller for all groups of children than for adults (5-6: 0.35; 7-8: 0.58; 9-10: 0.75; Adults: 1.23; *p*s < .01). See Figure 3 for distributions by vignette type and age group. No other significant results were found.

We next tested whether participants reliably distributed more stickers to the friend offering more money, testing participants' commitment to equity vs. market norms. That is, we tested whether participants distributed significantly more stickers to Friend A than to Friend B than would be expected by chance (0). Because no effect of sticker number was found, we

collapsed across this variable in this analysis (one-sample *t*-test; alpha not adjusted given independence of *t*-tests). At all age levels, participants distributed stickers to Friend A above chance during More/Less (5-6: 1.30; 7-8: 1.58; 9-10: 1.84; Adults: 2.24) and Refusal (5-6: 1.07; 7-8: 1.42; 9-10: 1.88; Adults: 3.32) trials (*p*s < .02). However, during Inability trials, only children 9-10 years and adults distributed stickers above chance to Friend A (5-6: -.30; 7-8: .46; 9-10: .80; Adults: 1.84; *p*s for the latter two age groups ≤ .002), demonstrating that older children and adults are more likely to adhere to market norms irrespective of the reasons for which lower offers are made.

Zero Offers: Market Norms vs. Equity Norms

Finally, we considered how often participants gave a non-zero number of stickers to the friend offering less. That is, did they adopt a strategy in which one who does not pay gets nothing (which would be consistent with a pure market norm), or did they give at least something to the person offering less (indicating some degree of equity)? To test this, we tallied the number of trials on which participants (by age group, collapsed across sticker number) distributed zero stickers to friends offering less money during More/Less trials and no money during Refusal and Inability trials. This was done to test whether participants engaged in a pure-profit strategy (i.e., distributed stickers only to the friend offering more money) without concern for equity, which would predict that participants would, for example, be more likely to distribute zero stickers to the friend refusing vs. willing but unable to pay. On this analysis, we found that overall participants rarely gave nothing to the friend offering less money. During More/Less trials, friends offering one fewer quarter received nothing on 14 of 202 trials (6.93% overall; 5-6: 8/54 trials; 7-8: 1/48 trials; 9-10: 3/50 trials; Adults: 2/50 trials). Similar rates of zero distributions were given when the friend offering less was willing but unable to pay (5.94% overall; 5-6: 5/54 trials; 7-8: 4/48 trials; 9-10: 1/50 trials; Adults: 2/50 trials). However, participants were more inclined to give nothing to the friend refusing to pay (19.31% overall; 5-6: 8/54 trials; 7-8: 11/48 trials; 9-10: 8/50 trials; Adults: 12/50 trials). Interestingly, participants' zero distributions did not differ by age group during any trial type, as assessed via logistic regressions where age group was entered as a categorical predictor and decision to give nothing vs. at least one sticker was entered as the binary dependent variable. These results are consistent with those from the previous analyses showing that children are sensitive to the reason for the no-money offer, and suggest that children incorporate equity concerns into their distribution

decisions in this market context.

Discussion

Overall, throughout the age range tested here (5-10 years and adults), participants tended to distribute stickers equally between friends when offers were the same, consistent with prior research showing that children adhere to an equality-distribution strategy in third-party contexts. However, participants (again, in all age groups) were more likely to distribute unequally when different offers were made. Participants distributed equally on fewer than half of the unequal trials (42%), which is in stark contrast to the proportion of equal distributions observed when offers were the same (88%). Thus, different offers can encourage children to depart from equality when distributing items. Interestingly, although participants in all age groups distributed more stickers to the friend who offered more money during More/Less and Refusal trials, only the oldest children and adults distributed more stickers to the friend offering more money during Inability trials. This suggests that there is an increase with age in children's willingness to abandon equal or equitable norms for distributions and adhere to market norms when they conflict, a point to which we return in the General Discussion.

In Study 1, participants could have employed an equality-distribution strategy by distributing odd items to the Giver—and indeed, participants did regularly distribute items to the Giver. Because Study 1 allowed for equal distributions on each trial, it does not provide the most sensitive test of children's commitment to equal distributions, nor does it tell us how sensitive children are to the different ways in which offers can be unequal. It is thus an open question how children would respond if unable to distribute equally on each trial. The purpose of Study 2 was to test whether even the youngest children would more consistently depart from equality when the task did not permit equal distributions on a given trial. To test this, on every trial participants were tasked with distributing an odd number of stickers (i.e., five; no four-sticker trials included) and were unable to distribute to the Giver (i.e., they could only distribute between friends A and B). Study 2 also provides an opportunity for conceptual replication of Study 1.

STUDY 2

Method

Participants

Participants included 119 children between the ages of 5 and 10 years, subdivided into three age groups: 5-6 years (n = 41, M = 5.95, SD = .61, 20 females), 7-8 years (n = 42, M =

7.91, *SD* = .58, 21 females), and 9-10 years (*n* = 36, *M* = 10.03, *SD* = .55, 16 females), and 35 adults (*M* = 19.05, *SD* = .69, 18 females). Prior to analyzing the data, an additional three children were excluded: 2 due to not understanding English and 1 due to watching a previous participant complete the task. Only one adult was excluded, due to experimenter error. Children were recruited and tested in lab spaces between June 2016 and July 2016 at the same museums where testing took place in Study 1. As in Study 1, we did not collect data on race, ethnicity, or socioeconomic status. Adults were recruited via a university Psychology Subject Pool between October 2016 and November 2016. Children received a thank-you gift for participating, and adults received course credit.

Materials

Materials were the same as those used in Study 1 with one exception—there was no plastic bag, as participants were required to distribute all the stickers to the friends.

Design

Participants heard the same third-party vignettes describing situations where friends offered no money (No Money), equal amounts of money (one quarter each; Equal Money), or different amounts of money. As in Study 1, when offering different amounts of money, the following offers were made: (a) More/Less: one friend offers two quarters, one friend offers one quarter, (b) Refusal: one friend offers one quarter, one friend refuses to offer the one quarter they have available, and (c) Inability: one friend offers one quarter, one friend offers zero quarters due to being unable to pay. Thus, participants heard five vignettes total. On every trial, participants were tasked with distributing five stickers. The No-Money vignette was always presented first, and the other four vignettes were presented in randomized order.

Procedure

The procedure was the same as Study 1 with one exception–participants were told that the Giver could not keep any of the extra stickers for themselves; they could give them to both friends, or to just one friend. As before, the arrangement of the bowls mirrored the spatial relation of the friends on the computer screen and children, for exploratory purposes, were asked why they distributed stickers the way they had after the last trial. Responses are not discussed further. The number of stickers distributed to each friend was recorded.

Results

To test our predictions, we first tallied the number of stickers distributed to each recipient

(Friend A, Friend B). As before, when Different offers were made, Friend A was defined as the friend who offered more money; when Same offers were made, Friend A was simply defined as the friend on the left.

Same vs. Different Offers

In line with Study 1, we predicted that, given equity and market concerns, participants would distribute more stickers to Friend A than Friend B during Different vs. Same trials. To test this, we calculated the proportion of stickers distributed to Friend A during Same (No Money, Equal Money) and Different (More/Less, Refusal, Inability) trials. As before, proportions were used to allow for comparison across the different numbers of trials (two Same Offer trials, three Different Offer trials). Values close to .50 indicate no preference, whereas values above .50 indicate a preference for Friend A. We conducted a repeated measures ANOVA with offer type (Same, Different) as the within-participants factor and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor. This analysis yielded main effects of offer type, $F(1, 150) = 92.23$, $p < .001$, $\eta_p^2 = .38$, and age group, $F(3, 150) = 7.13$, $p < .001$, $\eta_p^2 = .13$, but no interaction. As in Study 1, we set our alpha level to .0125 (i.e., .05/4) to account for multiple comparisons. Regardless of age, participants distributed more stickers to Friend A when offers were different (.66) than when they were the same (.51). However, children 5-6 years distributed fewer stickers to Friend A than children 7-8 years and adults (5-6: .53; 7-8: .59; 9-10: .58; Adults: .63; $ps \leq .002$). See Figure 4 for distributions by offer type and age group.

Re-analysis of Study 1. The findings reported above are generally similar to those observed in Study 1. Nonetheless, to enable a more direct comparison, we applied the analysis employed in Study 2 to the data from Study 1. That is, we calculated the proportion of stickers distributed to Friend A given the number of stickers distributed to both friends during each trial. We then conducted a repeated-measures ANOVA with offer type (Same, Different) and sticker number (Even, Odd) as the within-participants factors and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor. This analysis yielded main effects of offer type, $F(1, 97) = 138.56$, $p < .001$, $\eta_p^2 = .59$, and age group, $F(3, 97) = 7.96$, $p < .001$, $\eta_p^2 = .20$, and an offer type × age group interaction, $F(3, 97) = 3.09$ $p = .031$, $\eta_p^2 = .09$. (Note that these effects are the same as those found in the original analysis of Study 1, indicating that the two different analytic methods yielded the same patterns.) As in Study 2, participants in Study 1 distributed more stickers to Friend A when offers were different (.61) than when they were the same (.48), and this trend was

observed across all age groups even after setting our alpha level to .0125 to account for multiple comparisons (*p*s < .001).

No Money vs. Equal Money Offers

We next tested whether participants' distributions differed during Same offers when money was involved vs. not involved—again as a control to ensure that the inclusion of money per se did not unexpectedly influence behaviors. To do this, we tested whether the difference in the number of stickers distributed to the friends differed by vignette type. A repeated measures ANOVA with vignette type (No Money, Equal Money) as the within-participants factor and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor yielded no main effects nor an interaction. Thus, participants' distributions did not differ depending on whether money was involved.

Different Offers: Equity Norms vs. Market Norms

Turning to trials where different offers were made, we predicted, as before, that that if strictly adhering to market norms, participants would distribute more stickers to Friend A than Friend B. However, appeals to equity norms would yield greater distributions to friends willing but unable to pay as compared to friends offering more or refusing to pay. As in Study 1, we tested this with a difference score (A-B). We conducted a repeated measures ANOVA with vignette type (More/Less, Refusal, Inability) as the within-participants factor and age group (5-6, 7-8, 9-10, Adults) as the between-participants factor. This analysis yielded main effects of vignette type, $F(2, 300) = 11.12$, $p < .001$, $\eta_p^2 = .07$, and age group, $F(3, 150) = 5.21$, $p = .002$, $\eta_p^2 = .09$, but no interaction. Setting our alpha level to .0125 to account for multiple comparisons, we found that the difference in the number of stickers distributed to the friends was greater during the Refusal trial (1.81) than during both the More/Less (1.10) and Inability (0.88) trials (*p*s ≤ .002). Further, the difference in the number of stickers distributed to the friends by the youngest children (5-6 years) was smaller than the difference observed in children 7-8 years and adults (5-6: 0.63; 7-8: 1.52; 9-10: 1.07; Adults: 1.82; *p*s ≤ .005). See Figure 5 for distributions by vignette type and age group.

We next tested whether participants reliably distributed more stickers to the friend offering more money, testing participants' commitment to equity vs. market norms. That is, we tested whether participants distributed significantly more stickers to Friend A vs. Friend B than would be expected by chance (0; one-sample *t*-test; alpha not adjusted given independence of *t*-

tests). Children 7-10 and adults reliably distributed more stickers to Friend A during More/Less (5-6: 0.71; 7-8: 1.33; 9-10: 0.89; Adults: 1.46) and Refusal (5-6: 0.71; 7-8: 2.19; 9-10: 1.72; Adults: 2.60) trials (*p*s < .001). However, only children 7-8 years and adults reliably distributed more stickers to Friend A during Inability trials (5-6: 0.46; 7-8: 1.05; 9-10: 0.61; Adults: 1.40; *p*s < .01).

Zero Offers: Market Norms vs. Equity Norms

Finally, to test whether participants engaged in a pure-profit strategy, we tallied the number of trials on which participants (by age group) distributed zero stickers to friends offering less money during the More/Less trial and no money during Refusal and Inability trials. As in Study 1, participants were more inclined to give nothing to the friend refusing to pay (19.48% overall; 5-6: 7/41 trials; 7-8: 12/42 trials; 9-10: 4/36 trials; Adults: 7/35 trials) vs. the friends offering one fewer quarter (6.49% overall; 5-6: 7/41 trials; 7-8: 3/42 trials; 9-10: 0/36 trials; Adults: 0/35 trials) and willing but unable to pay (6.49% overall; 5-6: 2/41 trials; 7-8: 6/42 trials; 9-10: 2/36 trials; Adults: 0/35 trials). Consistent with Study 1, participants' zero distributions did not differ by age group during any trial type, as assessed via logistic regressions where age group was entered as a categorical predictor and decision to give nothing vs. at least one sticker was entered as the binary dependent variable.

Discussion

Study 2 was designed to provide a stronger test of children's commitment to equal distributions by requiring participants to distribute an odd number of stickers between two friends. Consistent with the results from Study 1, including a reanalysis of Study 1 data using the Study 2 analysis, participants were more likely to distribute stickers unequally when different offers were made (assessed by determining whether there was a preference for Friend A over Friend B). Additionally, participants' distributions were sensitive to the distribution context, such that the difference in the number of stickers distributed to the friends was greater when someone refused to pay vs. when someone was unable to pay or simply paid more (with no reason provided). This result is in line with those from Rizzo et al. (2016), where children 6-8 years considered the welfare of the recipients when deciding how to distribute different kinds of resources. In addition, though participants rarely gave nothing to the friend offering no money, they were more inclined to do so when friends were refusing vs. willing but unable to pay. Our

results suggest that children were similarly sensitive to the welfare of the recipients, as those willing but unable to pay were given more stickers than those able but refusing to pay.

Although the difference in the number of stickers distributed to Friend A vs. Friend B was greater during Refusal than both More/Less and Inability trials, the differences in distributions to the two friends differed from zero for only older children and adults (though distributions for the youngest age group trended in the same direction for each condition). This last result demonstrates that children are willing to depart from equal distributions, but increasingly so with age.

General Discussion

Across two studies, participants decided how a set of resources (extra stickers) should be distributed to two friends. In Study 1, participants distributed stickers with the possibility of reserving (not giving away) some, and in Study 2, participants distributed stickers exhaustively (all stickers given away). During each trial, friends offered the Giver either the same or different amounts of money and it was up to the participant to decide how the Giver should give away their extra stickers. In both studies, participants distributed stickers more equally when offers were the same and more unequally when offers were different. This is a novel finding, demonstrating that children as young as 5-6 years of age are willing to depart from equality when considering a person who offers more money. It is also consistent with prior work showing that children incorporate equity concerns (e.g., merit, need) into their distribution decisions. Lastly, it extends prior work on children's reciprocity by demonstrating that children are sensitive to relative quantity, such that those who offer more (money), receive more.

In addition to studying equality and equity norms, we examined the use of market norms, in which a person attempts to maximize monetary gains. The use of market norms would lead participants to select the friend who offers more money, regardless of other considerations (such as ability or willingness to pay). In the present study, older children and adults distributed more consistently based on market considerations than did younger children. The key test came on trials that pitted one person able to pay against another who was willing, but unable to pay. Older participants gave fewer stickers to the person unable to pay. In contrast, younger children did not penalize partners who were willing but unable to pay: They received the same number of stickers as those who could (and did) pay. One way to interpret these results is that older participants relied on market norms even when those norms conflicted with equity (which would favor the

person unable to pay). In contrast, younger participants relied on market norms when those norms did not obviously conflict with equity (no explanation, or unwillingness to pay).

Despite overall very similar patterns across the two studies, participants' decreased attention to equity norms was found only in Study 1, and not in Study 2. We suspect that these study differences are due to one important methodological difference. Recall that in Study 2, it was simply not possible for participants to distribute equally on any trial, as they did in Study 1. As a consequence, participants who would otherwise have engaged in equal distributions were forced to shift their strategy, engaging in a "next-best" distribution strategy that was less consistent and more variable, introducing noise and yielding the different results. When equal distributions *were* possible (Study 1), the developmental patterns were clear. Overall, then, these results suggest that older children and adults may be less concerned about equity, strictly conceived, in these types of exchanges. In this way, results are consistent with our prediction that children, increasingly so with age, can entertain at least three types of norms when deciding how to distribute items in market-oriented exchanges.

The current study also extends research on children's sensitivity to reciprocity in exchanges. Previous research has shown that quite young children are more likely to give resources to others who have or will give them resources (e.g., Sebastián-Enesco & Warneken, 2015; Warneken & Tomasello, 2013). However, from that prior work it was not clear whether the amount given would be directly related to the amount received (or expected), as would be the case in more strictly market exchanges. In the current study, we found that even the youngest children did distribute more to those offering more. This consideration of quantity goes beyond a simple or informal construction of reciprocity. Older children and adults demonstrated an even stricter form of market norms: The amount given depends only on the amount offered, not the reasons behind the offer. Specifically, in the case of the friend willing but unable to pay, general reciprocity would favor giving. That friend may be able to reciprocate, perhaps non-monetarily, in the future.

In light of support for this last prediction, we argue that young children do follow market norms when distributing or exchanging resources, at least in addition to norms of equality and equity. One of the claims of this paper is that market norms function as a specific form of reciprocity that regulates exchanges. In the present studies, market exchanges were evoked by including money in the exchange contexts—though, we acknowledge that not all market

exchanges involve money (e.g., barter systems), nor is it the case that market exchanges require money. For this reason, observed trends may not extend to children outside our WEIRD samples (e.g., consider that Blake and colleagues found clear developmental differences in the rejection of disadvantageous inequity across different cultures, demonstrating the importance of context in examining these issues; Blake et al., 2015). An alternative perspective, however, is that equality and equity are not distinct norms, but rather distinct aspects or varieties of market considerations. From an economic perspective, all exchanges are based on expected utility: The person making the offer is maximizing some return. The return may be material (the amount of goods received) or immaterial (friendship, goodwill, or indebtedness of the recipient). The return may also be quite abstract, as in a sense of justice being done, or a "warm-glow" from having done the right thing (Andreoni, 1990). Equality and equity are just different kinds of utilities to be maximized. We do not take a position on the nature of equality and equity motivations, nor on whether such norms are fundamentally different from utility maximization. However, one key feature of money is that it is quantifiable. Money provides a common medium in which different values can be expressed. Therefore, monetary exchanges may be most suited to the application of market norms that depend on specific assessment of quantities (values) exchanged. The current study demonstrates that young children do consider the specific amounts of goods and money offered in exchange, at least in addition to more abstract goals of equality and equity. Older children and adults privilege the linkage between amounts offered in exchange above equality and equity, at least in this cultural context and this specific context of exchanging goods for money. Recognizing that it is right or appropriate to do so (in the context of exchanging goods for money) is what we take to be the market norm.

The current study used money as the medium of exchange. Previous literature suggests that the inclusion of money may prompt children to adopt a more market-oriented perspective (Gasiorowska, Chaplin, Zaleskiewicz, Wygrab, & Vohs, 2016; Gasiorowska, Zaleskiewicz, & Wygrab, 2012). Contrary to this prediction, we did not find that distribution decisions differed when comparing No Money and Equal Money trials. However, our studies were not designed to test the effects of money per se, and future work should test whether the same results would be observed with other, non-monetary forms of exchange (e.g., bartering).

In addition, the transactions in the current study were introduced as exchanges among friends, leaving open how children would distribute resources in the context of strangers or

family members (Olson & Spelke, 2008). The use of friends may have reduced market norms and increased concerns with equality and equity, so it is all the more interesting that even the youngest children adopted market norms to guide their distribution decisions in the context of friends. Perhaps asking children to distribute among strangers would amplify effects of market norms, or asking children to distribute among family members would decrease their effects. Importantly, though, using a third-party design limits selfish interests that participants could bring to bear on the task—yielding results that can more clearly speak to whether and when participants adhere to different norms. However, a first-party design (one where a child would be a direct stakeholder) would provide insight into how children balance personal interests with concerns over equality, equity, and maximizing returns. Another aspect of the task framing was that distributions did not involve a store context, which is the most familiar place where market norms apply. It is an open question whether we would observe similar results in more market-oriented contexts (e.g., a store). Though these open questions remain, it is nonetheless interesting that children appealed to market norms in this market exchange context involving friends, outside a context that would more clearly dictate distributing based on ability to pay as would be the case in a store. Lastly, subsequent work should explore whether children explicitly reference market concerns when participating in a market exchange. It could be that children display market-oriented behaviors, but motivate decisions appealing to fairness norms—a finding that would inform how children balance multiple concerns simultaneously.

Conclusions

In line with prior work exploring children's attention to equity concerns when distributing items, we found that children as young as 5-6 years will depart from equality and use money offers to guide their distribution decisions. In addition, we found that children are sensitive to the reasons underlying the different offers—that is, children penalize recipients refusing to pay more than recipients willing but unable to pay. Lastly, participants did not adhere to a pure-profit strategy—participants still distributed stickers to friends offering no money or lesser amounts of money. Taken together, these studies contribute to our understanding of factors influencing children's distribution decisions with the novel finding that children as young as 5-6 years will consider money offers and depart from equal distributions.

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Table 1

Sample vignettes heard by participants.

Offer Type	**Vignette Type**	**Vignette**
Same	No Money	*Sally is at the park with her friends Bernice and Hazel. Sally has some extra stickers she doesn't need. Bernice says, "Sally, can I have some stickers?" and Hazel says, "Sally, can I have some stickers?"*
Same	Equal Money	*Lucy is at the park with her friends Olive and Barbara. Lucy has some extra stickers she doesn't need. Olive says, "Lucy, can I have some stickers? I'll pay you 1 quarter for some stickers," and Barbara says, "Lucy, can I have some stickers? I'll pay you 1 quarter for some stickers."*
Different	More/Less	*Georgette is at the park with her friends Alice and Cecelia. Georgette has some extra stickers she doesn't need. Alice says, "Georgette, can I have some stickers? I'll pay you 1 quarter for some stickers," and Cecelia says, "Georgette, can*

		I have some stickers? I'll pay you 2 quarters for some stickers."
Different	Refusal	*Colleen is at the park with her friends Beatrice and Myrtle. Colleen has some extra stickers she doesn't need. Beatrice says, "Colleen, can I have some stickers? I have 1 quarter, but I don't want to pay, and Myrtle says, "Colleen, can I have some stickers? I'll pay you 1 quarter for some stickers."*
Different	Inability	*Kelly is at the park with her friends Sue and Ida. Kelly has some extra stickers she doesn't need. Sue says, "Kelly, can I have some stickers? I'll pay you 1 quarter for some stickers," and Ida says, "Kelly, can I have some stickers? I want to pay, but I don't have a quarter."*

Note. Vignettes gender-matched to child. Girls heard about friends with female names (included above), boys heard about friends with male names. After each vignette, participants' distribution options were reiterated.

Table 2

Offer and vignette types in Studies 1 and 2.

Offer Type	**Vignette Type**	**Friend A's Offer**	**Friend B's Offer**
Same	No Money	0	0
	Equal Money	1 quarter	1 quarter
Different	More/Less	2 quarters	1 quarter
	Refusal	1 quarter	0 (though 1 quarter is visible in B's bag)
	Inability	1 quarter	0

Note: In Study 1, participants distributed four or five stickers, depending on the block. In Study 2, participants only distributed five stickers.

(a)

(b)

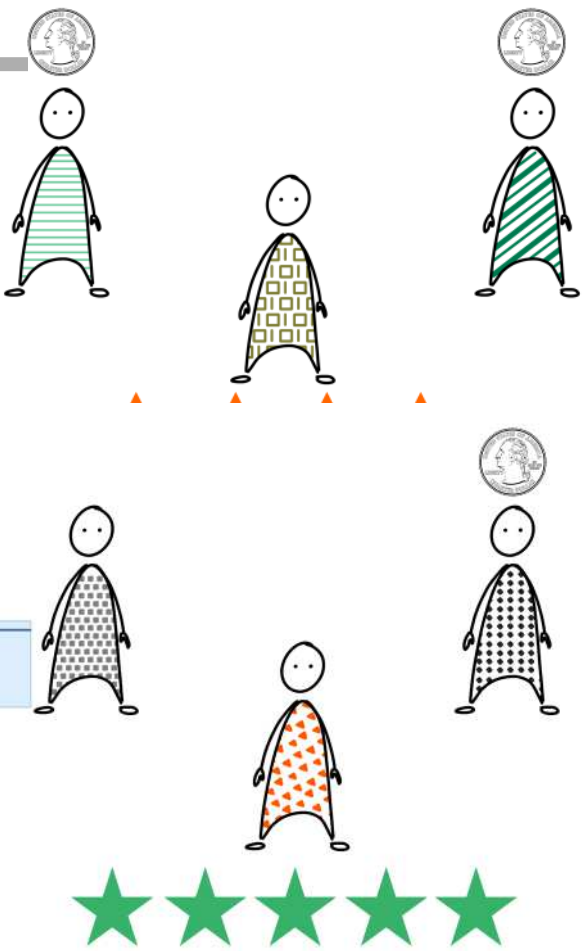

Figure 1. Sample vignettes: (a) Equal Money, even number of stickers; (b) Inability, odd number of stickers. After hearing vignettes, participants distributed stickers matching those present on the computer screen to the recipients.

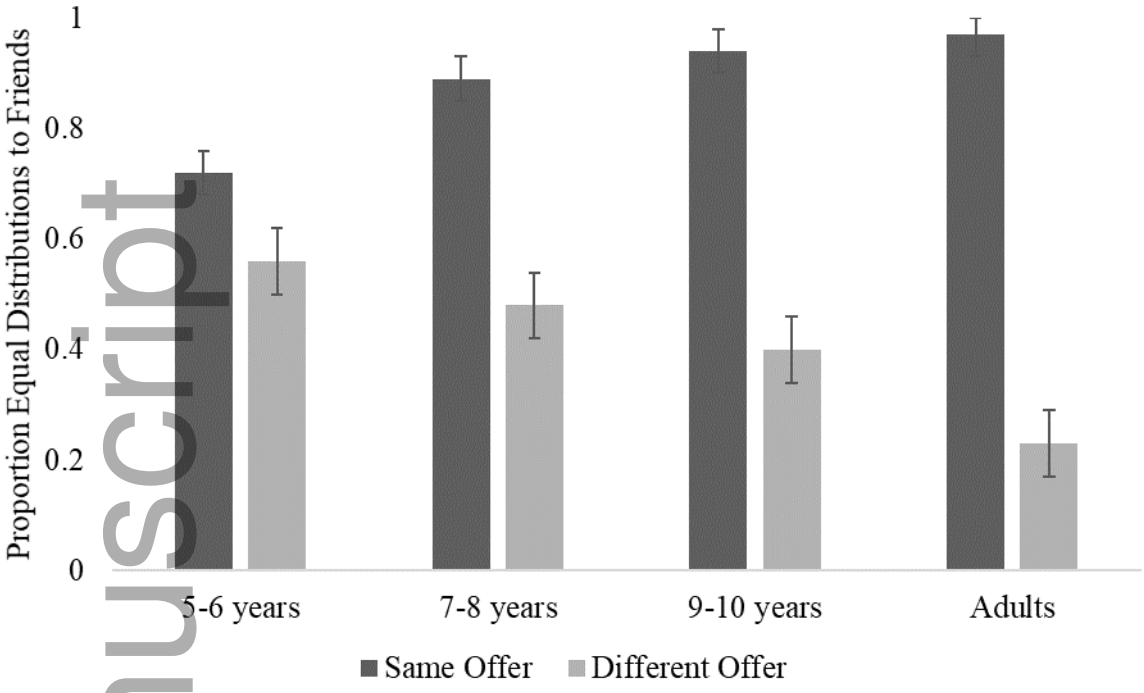

Figure 2. Proportion equal distributions to friends during Study 1.

Figure 3. Difference in the number of stickers distributed to friends (where positive numbers indicate a preference for the friend offering more) during Study 1.

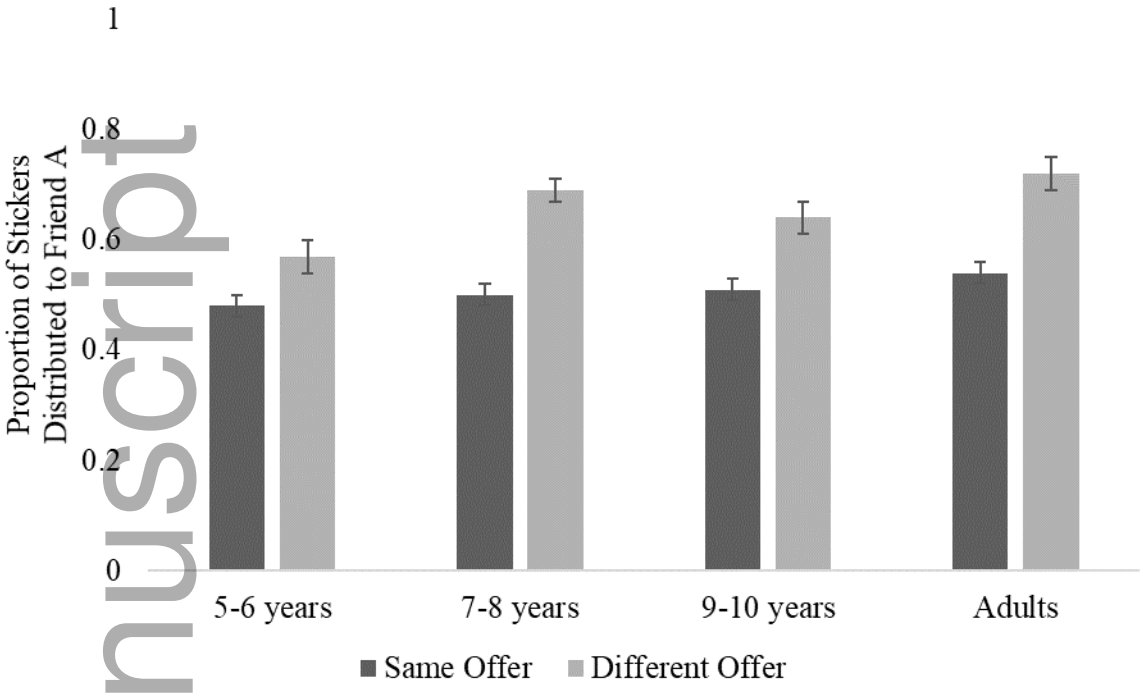

Figure 4. Proportion of stickers distributed to Friend A during Study 2.

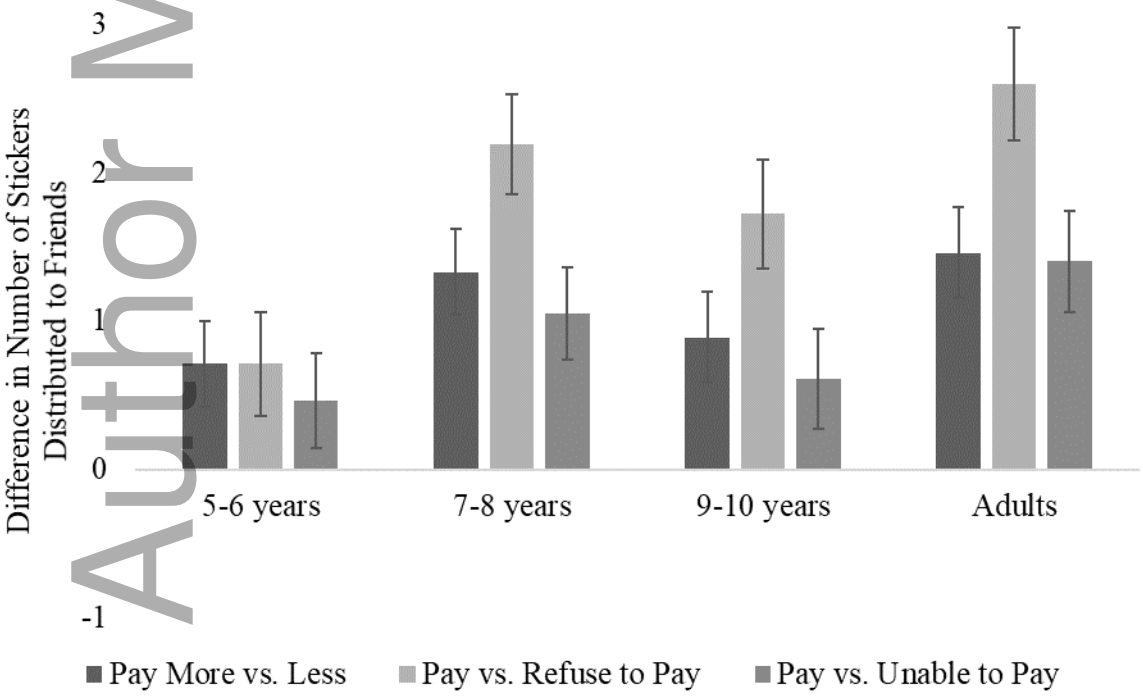

Figure 5. Difference in the number of stickers distributed to friends (where positive numbers indicate a preference for the friend offering more) during Study 2.