Variations in Children's Generosity: Reputation and the Role of Mutual Identification

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Abstract

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From an early age, humans perform generous acts toward one another. The current studies were designed to test the role of reputation in influencing children's generosity. Accordingly, in Study 1, we varied whether children could see or be seen by a peer recipient. We found that 6-year-old children were most generous when they and the recipient could see one another (the condition allowing for mutual identification). Interestingly, children were not only less generous when their actions *could not* be seen by a recipient (when there was no chance to signal a good reputation), but were also less generous when their actions *could* be seen by a recipient and they were not aware of who that recipient was. In Study 2, we further investigated the influence of mutual identification (conditions with two-sided exchanges) on generosity. We found that even less rich forms of mutual identification, specifically only seeing one another and only talking with one another, also led to increased generosity. Thus, mutual identification may be necessary to motivate children's generous acts through triggering reputation concerns.

Variations in Children's Generosity: Reputation and the Role of Mutual Identification

People frequently act in ways that benefit others, such as participating in charity walks, purchasing birthday gifts for friends, and volunteering at food kitchens. The tendency to engage in prosocial behavior is a prevalent aspect of human social life (Henrich et al., 2005), to the extent that adults willingly incur costs and risks to themselves in order to act in ways that benefit others (Becker & Eagly, 2004). Interestingly, these prosocial behaviors often occur within the context of social interactions with a beneficiary. Although people are sometimes helpful or generous in less social contexts, such as privately donating money online or organizing a food drive, prosocial behavior seems to be more pronounced in social situations. For example, adults are more generous in economic games when they and their interaction partners were able to see what one another look like, or when they were able to verbally communicate with one another (Bohnet & Frey, 1999). Thus, social contexts, or contexts in which people are mutually identifiable, seem to be an important component of prosociality. Further, evolutionarily, it's hard to think of any cases in which generosity was likely to occur outside of a social context. That is, people were likely to be generous in the presence of others and anonymous giving (e.g., online donations to strangers) appears to be a rather new innovation.

A particularly compelling aspect of prosocial behavior is that it is even present early in development, such that young children will share their resources with others. For example, Blake and Rand (2010) examined 3- to 6-year-olds' generosity in two versions of an economic game (Dictator Game), where they were asked to allocate ten of their favorite stickers and ten of their least favorite stickers between themselves and another child. They found that, even in this anonymous giving situation, children at all ages allocated about 50% of the low-value stickers and 40% of the high-value stickers to the other child. Thus, children are willing to share their resources with others, even when they are alone and nobody is aware of their generous actions (see also, Benenson, Pascoe, & Radmore, 2007). However, while prior work suggests that children *can* be generous outside of social contexts, the current work asks whether children's generosity *varies* as a function of whether they are in situations where others can or cannot know their generous actions (i.e., contexts where they can or cannot establish a good reputation).

One reason why children may be more generous in social contexts is due to reputational concerns. Because acts of generosity are considered favorable behaviors, individuals may be at least partially motivated to be generous out of a desire to establish a good reputation in the eyes of others. In the developmental psychology literature, reputation has been defined as, "people's beliefs about and positive or negative evaluations of a person, based on directly or indirectly gathered social information" (Shaw, Li, & Olson, 2013). Since reputation is an important component of forming and maintaining social relationships, which are critical to one's survival and success, it is not surprising that individuals care deeply about making a good impression on others and that people may be more likely to perform generous acts in situations where they can demonstrate these behaviors to others.

Only a few studies have examined how reputation concerns motivate children's generous behavior, so it is unclear to what extent reputation motivates generosity, or what cues are necessary to give rise to reputational motivations early in development. The current work is aimed at further investigating the role of children's reputational concern by testing what identification contexts and types of identification cues motivate 5- and 6-year-olds' generous behavior. The following sections include a review of studies documenting reputation as a motivation for adults' generous behavior, a review of the extant literature on how children's generosity may be promoted by reputation concerns, and an introduction to the current studies.

Concern for Reputation

In order to promote one's reputation individuals engage in self-presentational behaviors, or behaviors that demonstrate favorable information about oneself to others (Baumeister, 1982), more frequently in situations where others will know about these behaviors and less frequently when others will not know about them. Consistent with this hypothesis, adults frequently engage in self-presentational behaviors in situations where others have the opportunity to create a favorable impression of them (Jones & Pittman, 1982; Leary & Kowalski, 1990). For example, when young adults' purchasing behaviors and preferences for fair-trade vs. non-fair-food were observed by others, they were more likely to buy and report a preference for the ethically favorable choice (fair-trade) than when their purchases and responses were anonymous (Kimura et al., 2012). Similarly, following a social status prime, adults were more interested in purchasing "pro-environment (green)" products when they were asked to imagine themselves purchasing the products in a public setting; however, they were more interested in purchasing "luxurious non-green" products when asked to imagine themselves purchasing the products in a private setting. Thus, in public settings, where others can easily observe one's behavior, an individual is more likely to perform desirable behaviors that he or she may not (as frequently) perform when nobody is watching.

Individuals also engage in generous acts toward others as a means of self-presentation. To this end, adults are also more generous and cooperative in social contexts where they believe others will know about their generous actions, compared to situations where their identities and/or behaviors remain anonymous (Hardy & Van Vugt, 2006; Reis & Gruzen, 1976). For example, in a field study, participants who had the chance to give donations in a public setting gave 25% more money on average than those in a private setting (Alpizar et al., 2008).

Additionally, in an economic game, participants who were told that future interaction partners would know about their generous contributions were significantly more generous than those who were not aware that their contributions would be known (Barclay & Willer, 2007). Finally, participants whose photographs were given to recipients along with their resource allocations were more likely to split resources fairly with a recipient than those whose photographs were not given to recipients (Burnham, 2003). Thus, adults' generous behavior is promoted when they are aware that others have direct information about their generous behavior.

Furthermore, adults' generosity is also not only motivated by people being present or knowing that others are aware of their generous behavior. Instead, adults' concern for reputation seems to be elicited by very subtle signals of the presence of other people, even when they are not actually coming from real people. Haley and Fessler (2005) found that the presence of eyespots (a photograph of 'stylized' human eyes) on the computer screen led to significantly larger allocations in an anonymous computer generosity task than when no eyespots were present. This finding suggests that even the feeling of the presence of others may elicit reputational concern, in turn promoting generous behavior. The influence of eyespots on generosity and cooperation has been replicated in a number of studies (Keller & Pfattheicher, 2011; Oda, Niwa, Honma, & Hiraishi, 2011; Rigdon, Ishii, Watabe, & Kitayama, 2009), including in a naturalistic setting (Bateson, Nettle, & Roberts, 2006, though see also, Raihani & Bshary, 2012; Tane & Takezawa, 2011).

Children's Reputational Concern

There is considerably less research on the degree to which motivations regarding reputation influence children's generosity, and the types of cues that might trigger such reputational concerns. Some newer work suggests that reputation concerns influence children's generosity. Similar to findings in the adult literature, children display increased generosity when there are explicit cues that others are aware of their generous actions. Leimgruber, Shaw, Santos, and Olson (2012) tested 5-year-olds' reputational concern with a resource allocation task by varying whether peer recipients could see the participants making allocation decisions and their allocation options or not. Participants were significantly more generous when participants and recipients could see one another, compared to when they could not see each other. Additionally, participants were more generous when recipients could see participants' allocation options (and therefore would presumably know whether the participant was being generous or not), compared to when recipients could not see participants' allocation options. Therefore, five-year-olds seem to show a concern for their reputation by being more generous when they know a recipient is aware of whether or not they are choosing a more generous option.

Similarly, children in kindergarten, fourth, and eighth grade were more generous during face-to-face interactions with recipients than in private "secret ballot" situations (Buhrmester, Goldfarb, & Cantrell, 1992). As such, when children were asked to allocate five tokens between themselves and a peer recipient, they were more likely to give the recipient a majority of the tokens when that recipient was observing them from across a table, compared to when children believed the recipient would never know their identity or decision (see also, Engelmann, Herrmann, & Tomasello, 2012). Thus, evidence from these few studies suggests that by the time children are five years of age, their generous behavior may be in part motivated by reputational concerns.

However, there is some reason to believe that reputational concern might not be as easily triggered for children as it is for adults. For example, unlike adults, a subtle cue of the presence of others (eyespots) does not influence children's generosity (Fujii, Takagishi, Koizumi, &

Okada, 2015). In this study, 5-year-old children allocated resources to another child in one of three conditions: 1) when an experimenter was watching, 2) when a picture of eyespots was on the computer screen, and 3) when a picture of flowers was on the computer screen. Children were significantly more generous when being watched by an experimenter, but were less and equally generous in the other two conditions. Therefore, the subtle cue of another person watching through the presence of eyespots did not influence five-year-olds' generosity, but knowing that an actual other person was watching did. This finding suggests that children may actually need a more explicit cue that a person is observing their actions or at least believe a real person will know about their actions, in order to show an increased rate of generosity (over and above their baseline generosity).

Considering these initial studies, we formed two potential hypotheses regarding the role of reputational concern in motivating children's generosity. First, children's generosity may indeed be promoted by reputation concerns, such that they are more generous whenever they have reason to believe an actual person will be able to form an impression of them. According to this hypothesis, it is expected that children's generosity will increase when they think another person is aware that they are responsible for the generous actions. This hypothesis explains why children's generosity was not impacted by the presence of eyespots (there was no actual witness), but was influenced by the presence of an experimenter (Fujii et al., 2015) and why children are more generous when recipients are aware of their identities and allocation decisions (Leimgruber et al., 2012; Buhrmester et al., 1992).

A second possibility is that children need something beyond simply knowing another person is aware of them and their allocation decisions. Children might also need to have information about the person who will form a good impression of them. As such, this hypothesis would suggest that children's generosity will increase in cases where the participants and recipients are both aware of each other's identities (henceforth, cases of *mutual identification*), but will not increase if participants are not aware of the recipient's identity (even if the participants know the recipients are aware if who they are). This hypothesis could explain why children aren't motivated by the presence of eyespots (Fujii et al., 2015), since there isn't a real person for them to recognize in that situation. It can also explain why studies found increased generosity in situations where children can see the observers of their generosity, as compared to when children and observers cannot see one another (Leimgruber et al., 2012; Buhrmester, et al., 1992).

The extant literature cannot currently speak to which of these two hypotheses most likely explains how reputation motivates children's generosity, since no study has compared children's generosity in a situation where a child participant and recipient both have cues of one another's identity (a mutual identification condition) to a situation where a child participant does not have information about the identity of the recipient observing her actions (a one-sided identification allowing her to be evaluated by an unknown recipient). Such cases are necessary to disentangle these different reputation explanations of increased generosity.

Current Studies

The current studies investigate whether children are generous anytime they believe a recipient can see their actions, or if their reputation concerns rest on mutual identification. To test these possibilities, in the first study we varied whether 6-year-old children could see a recipient and (independently) whether they could be seen by a recipient in a no-cost resource allocation task, using a 2 (participant can see recipient or not) x 2 (recipient can see participant or not) design. If, according to the first hypothesis, being observed by a recipient is all that is necessary to motivate children's generosity, participants are expected to be more generous in the two conditions where they and their allocation decisions can be seen by the recipient, compared to the two conditions where they cannot be seen. However, if children's concern about reputation depends on whether they also know who is forming an impression of them, they will only be more generous when they can both see the recipient and be seen by the recipient. Additionally, since there are many ways in which mutual identification can occur (e.g., through seeing one another, talking with one another, or both), in the second study, we further explored children's reputation motivation for generosity by investigating the influence of these forms of mutual identification on children's reputation concerns.

Study 1: Is only being seen enough?

Children are more generous when others are present and can see their actions, suggesting that children's generosity is motivated, at least to some extent, by reputational concern (Leimgruber et al., 2012; Engelmann et al., 2012). In previous studies, however, whenever observers are present and aware of the participant's behavior, the participant is also able to see the observer (situations involving mutual identification). Will children's generous behavior increase most from mutual identification between participants and recipients, or will simply having a recipient aware of their behavior be enough to boost generosity? In Study 1 we independently varied whether children could see a recipient and be seen by a recipient while completing a no-cost resource allocation task. This approach allowed us to ask whether boosts in generosity were driven just by the participant believing that a recipient could see her or whether two-way (mutual) identification was necessary to increase generosity. Given the more complex nature of the new paradigm, we ran this study with 6-year-olds, children one year older than previous work demonstrating reputation effects on generosity (e.g., Leimgruber et al, 2012).

Method

Participants

Sixty-four 6-year-olds (37 females; M_{age} = 6.56 years, *SD* = 3.06 months) were recruited through a database of volunteers and at local schools. An additional four children were tested, but the data were discarded due to their failure to pass all of the manipulation check questions (*n* = 1), failure to complete the study (*n* = 1), or experimenter error (*n* = 2). Forty-seven children were tested at a university lab and 17 children were tested at their schools. Parents gave informed consent for their children's participation in the study and children gave verbal assent. All children were compensated with a small prize.

Design

Participants were randomly assigned to one condition of a 2 (seeing: participant can versus cannot see the recipient) X 2 (being seen: participant can versus cannot be seen by the recipient) between-subjects design. Thus, in total there were four conditions: the Both Condition (both participant and recipient can see each other), the Seeing Condition (participant sees recipient, but not vice versa), the Being Seen Condition (participant believes recipient sees her, but she cannot see recipient), Neither Condition (no one sees anyone; baseline control condition). Regardless of condition, participants completed the same computer-based sharing task in which they had four opportunities to allocate M&Ms to themselves and another child (the recipient).

Procedure

All participants were tested individually in a university lab or at their school. Participants were first told that they would be a part of an activity during which they would choose the number of M&Ms to be given to themselves and to another child and that they would receive these M&Ms at the end of the activity. They were also told that this other child was in another room at the time of the activity and that participants would be interacting with the other child via a video camera in the computer (actually, prerecorded videos played using Matlab). Next, the experimenter acted as if she was setting up the video connection with those in the other room by starting the pre-recorded video of the confederate experimenter and child. In the introduction video, participants saw another experimenter appearing to set up a computer and video camera in the other room.

After both experimenters appeared to have set up the video feed, the manipulation occurred. At this point, half of participants observed that the screen became covered in static, indicating the camera in the other room had failed and half of the participants did not. These two conditions were further crossed by whether the experimenter in the other room appeared to indicate that the participant's video feed failed. Thus, participants in the Both Condition experienced two-way (mutual) exchange of identities with the recipient, since participants could both see and be seen. However, the Seeing (participant could see recipient but could not be seen) and the Being Seen (participant could be seen by recipient but could not see) conditions involved a one-way revealing of identities, such that either participants knew who the recipients were, or participants believed recipients knew who they were. Finally, in the Neither Condition participants could neither see nor be seen; therefore, there was no revealing of identities. See Table 1 for a summary of the protocol by condition.

Following set-up with the introduction video, the video appeared to be blocked by a screen introducing participants to their options for M&M allocation. This screen displayed two pairs of allocations from which the child could select one. On each trial they could see that one option involved giving themselves three M&Ms and the recipient two M&Ms and the other option involved giving themselves three M&M and the recipient one M&Ms (henceforth 3,2 vs.

3,1). Children would select an option by pointing to their choice and then they would see the box around that option turn red as the experimenter pressed a corresponding key on the keyboard. At this point, participants were asked how many M&Ms they would receive and how many the recipient would receive to be certain that participants understood the set-up of the allocation choices on the screen. If children failed to understand this on-screen set-up, which only happened once for a total of two participants, the experimenter would re-explain the screen to the child. Critically, participants in conditions in which they were told the recipient could not see them (the Seeing and Neither conditions), they were also told the recipient could not see the computer screen options. In effect, this meant that children in these two conditions knew that the recipient would never know if they were being generous or not. Thus, being seen meant both that the participant could be seen and that the allocation options could be seen.

Following the M&M selection screen, the video feed would return, either depicting the reaction of the recipient or static, consistent with the initial manipulation. Children saw four trials, each followed by the recipient's response or static. The computer program randomly displayed the counterbalanced orders of 3,2 vs. 3,1 options across four trials. Responses to sharing trials were coded as either a 0 for choosing the less generous option (3,1) or a 1 for choosing the more generous option (3,2).

In the conditions where children saw recipient responses to the decisions (Both and Seeing conditions), the videos of recipient reactions were either very positive or moderately positive depending on whether or not the participant made a more or less generous decision. Of course, in the Seeing Condition, the recipient presumably did not know what the participant's options were, but still, we assumed a child would react more positively when receiving more than fewer M&Ms.

Once all trials were complete, the experimenter asked each participant three manipulation check questions. Participants were asked, "During the activity, could you see Amy/John?"; "During the activity, could Amy/John see you?"; and "During the activity could Amy/John see your choices on the screen?". These questions were intended to be sure that participants understood and believed the manipulation. Those who did not correctly answer the questions were not included in data analyses, with the exception of a small number who only missed the last question (n = 5). Finally, at the end of the study children were given 12 M&Ms (the number they were allocated over the course of the task). The procedure took about seven minutes to complete.

Results

Total Generosity

Total generosity scores were computed as the number of times (out of four trials) on which children chose the most generous (3,2) option. Total generosity was analyzed in a 2 (seeing: participant can versus cannot see the recipient) X 2 (being seen: participant can versus cannot be seen by the recipient) X 2 (gender) between subjects ANOVA, which revealed a significant interaction between *seeing* and *being seen,* $F(1,56) = 3.91$, $p = .05$. A contrast test revealed that children were significantly more generous in the condition where participants could both *see* and *be seen* (two-sided: $M = 3.53$), than in the three other conditions (one-sided being seen: $M = 2.50$; one-sided seeing: $M = 2.71$; no interaction: $M = 2.81$), $t(60) = 2.71$, $p = .009$ (see Figure 1). In other words, participants were most generous when there was mutual identification between participants and recipients.

There were no other main effects or interactions other than a significant interaction between *gender* and *seeing,* $F(1,56) = 4.03$, $p = .049$. Post hoc tests revealed that girls were more generous when they could see the recipient (*M* = 3.35) than when they could not see the recipient (*M* = 2.50), $F(1,35) = 6.71$, p = .014, whereas boys' rates of generosity did not differ depending on whether they could see the recipient (*M*=2.80) versus not see the recipient (*M*=2.92), $F(1,25) = .061$, $p = .81$ (see Figure 2).

Responses to Recipient Reactions

We next examined whether observations of recipients' responses (as more versus less happy) influenced subsequent behavior on the part of participants. Critically, only participants in the Both and Seeing Conditions could actually see responses of recipients; therefore, responses from participants in only those two groups were analyzed. To examine this question, we asked whether participants who had seen each of the two possible responses from the recipient within the first two trials (that is, those who had already seen both a "more happy" and "less happy" response) had differing rates of generosity in the last two trials compared to participants who had not seen each of the two possible responses from the recipient (that is, those who had seen only "more happy" or "less happy" responses).

Results revealed that generosity in the second two trials from participants who had seen both types of reactions (those who had been more and less generous in the first two trials) (*M* = 1.55) was not different generosity from participants who had seen only one type of reaction (those who had been either only more generous or only less generous in the first two trials) (*M* = 1.55), $t(31) = 0.0$, $p = 1.0$. Thus, for participants who could see the recipient, it is unlikely that seeing the different reactions from the recipient upon making different choices (less positive response for less generous choice vs. more positive response for more positive choice) influenced children's subsequent generosity choices.

Discussion

In order to determine whether children's generosity is promoted anytime they are aware that their actions are observed by a recipient, or whether also identifying the recipient is necessary to elicit reputational concern, Study 1 examined children's rates of generosity when they were seeing and/or being seen by a recipient. Results indicate that 6-year-old participants were most generous when they could both see a recipient *and* be seen by a recipient. In other words, the condition allowing for a mutual identification between participants and recipients led to the highest rates of generosity. Interestingly, participants in the condition where they could only be seen by a recipient were not more generous than participants in the two conditions where they could not be seen by the recipient, suggesting that the simplest case of reputation (merely knowing you are being observed by the recipient) did not lead to boosts in generosity in young children.

The finding from this study conceptually replicates previous work, showing that children are more generous when participants and recipients can see one another compared to when they cannot not see one another (e.g., Leimgruber et al., 2012), but this study displays the more nuanced way in which reputational concern motivates children's generosity. It suggests that, in contrast to the first hypothesis proposed above, 6-year-olds' generosity is not motivated only by the fact that others are aware of their actions. Instead, in line with the second hypothesis proposed, children are cued into concerns for reputation in situations where they also are able to identify who is forming an impression of them, or situations involving mutual identification. Since there are many ways to form mutual identification, in Study 2 we examined how these different types of identification influence children's generosity.

Study 2: Types of Mutual Identification

In Study 1, the condition involving mutual identification between participants and recipients was incredibly rich, such that in the 'video-chat' paradigm children were able to see and talk with one another. In other words, participants and recipients were able to connect and identify one another via seeing what each other looked like *and* by talking with each other. In order to test whether this rich social context is necessary to elicit a reputational concern, or whether impoverished forms of mutual identification are sufficient, in Study 2 we varied whether participants and recipients could see and talk with one another while completing a resource allocation task. Also, after completing Study 1 we were increasingly confident that younger children could complete this similar paradigm (which doesn't involve a 'breaking' of cameras), so we combined both 5- and 6-year-old participants since both ages had now been shown to display the basic enhancement of generosity effects in totally open versus anonymous conditions (6-year-olds in Study 1 and 5-year-olds in Leimgruber et al, 2012).

Method

Participants

Sixty-four 5- and 6-year-olds (34 females; M_{age} = 5.99 years, *SD* = 6.57 months) were recruited through a database of volunteers and at local schools. An additional ten children were tested, but the data were discarded due to their failure to pass all of the manipulation check questions ($n = 8$), failure to complete the study ($n = 1$), or experimenter error ($n = 1$). Fifty-five children were tested at a university lab and nine children were tested at their schools. Parents gave informed consent for their children's participation in the study and children gave verbal assent. All children were compensated with a small prize.

Design

Participants were randomly assigned to one condition of a 2 (seeing: participant/recipient can versus cannot see what one another look like) X 2 (talking: participant/recipient can versus cannot talk with one another) between-subjects design. Thus, in total there were four conditions: the Both Condition (participant and recipient both see and talk to each other), the Seeing Only Condition (participant and recipient see photos of each other, and cannot talk to each other), the Talking Only Condition (participant and recipient can talk to each other, and do not see photos of each other), the Anonymous Condition (no one sees or talks with anyone; baseline control condition). Regardless of condition, participants completed the same computer-based sharing task used in Study 1, in which they had four opportunities to allocate M&Ms to themselves and another child (the recipient).

Procedure

All participants were tested individually in a university lab or at their school. Participants were first told that they would be a part of an activity during which they would choose the number of M&Ms to be given to themselves and to another child participant and that they would receive these M&Ms at the end of the activity. They were also told that this other child was in another room at the time of the activity and that participants would be giving the other child some M&Ms using the computer.

Next, the manipulation occurred when the experimenter set-up the context corresponding to one of the four conditions. Participants in the Anonymous condition were simply told that they would not be able to see or talk with the recipient, but manipulations for the other three conditions were more detailed. For participants in the Both condition, the experimenter acted as if she was setting up the video connection with those in the other room by starting the pre-recorded video of the confederate experimenter and child participant (recipient). In the introduction video, participants saw another experimenter appearing to set up a computer and video camera in the other room followed by her introducing the confederate child (actually pre-recorded videos played in Powerpoint). In the video, the confederate child said hello to the participant and the participant had an opportunity to reply.

Participants in the Seeing Only Condition were instead told that they would see a picture of the child recipient and that they would also send a picture of themselves to that child. The experimenter pretended to take a picture of participants on a smart phone and send it to those in the other room. Then participants saw a picture of the recipient on the computer (a still from the video used in the first condition); however, participants were never greeted by the confederate child and were never able to talk with him/her.

Finally, participants in the Talking Only Condition were told that they would be able to talk to the child using the computer, but that they wouldn't be able to see what one another looked like. The experimenter played pre-recorded audio of the confederate experimenter and child participant talking, which was the audio from the introduction video of the Both Condition. Participants heard the other experimenter talking about setting up the computer in the other room followed by her introducing the confederate child. In the audio, the confederate child said hello to the participant and the participant had an opportunity to reply. See Table 2 for a summary of the protocol by condition.

After set-up of the condition, participants saw a screen introducing them to their options for M&M allocation. This screen displayed two pairs of allocations from which the child could select one. On each trial they could see that one option involved giving themselves three M&Ms and the recipient two M&Ms and the other option involved giving themselves three M&M and the recipient one M&Ms (henceforth 3,2 vs. 3,1). Children would select an option by pointing to their choice, followed by a question from the experimenter about how many M&Ms they would receive and how many the recipient would receive to be certain that participants understood the set-up of the allocation choices on the screen. If children failed to understand this on-screen set-up, which only happened once for a total of two participants, the experimenter would re-explain the screen to the child. Critically, participants in conditions in which they were told the recipient could not see or talk with them (the Anonymous Condition), they were also told the recipient could not see the computer screen options. In effect, this meant that children in this condition knew that the recipient would never know if they were being generous or not. Thus, being known by the recipient through seeing, talking or both, meant both that the recipient was also aware of the allocation options.

Following the M&M selection screen, a reaction screen would appear in all conditions except the Anonymous Condition. In the Both Condition, the video feed would return, depicting a happy facial and verbal reaction from the recipient; in the Seeing Only Condition, a photo would return, depicting a happy facial reaction from the recipient; and in the Talking Only Condition, an audio would return, depicting a happy verbal reaction from the recipient. Children saw four trials, each followed by the recipient's response consistent with the manipulation. The computer program randomly displayed one of four counterbalanced orders of 3,2 vs. 3,1 options across four trials. Responses to sharing trials were coded as either a 0 for choosing the less generous option (3,1) or a 1 for choosing the more generous option (3,2).

Once all trials were complete, the experimenter asked each participant five manipulation check questions. Participants were asked, "During the activity, could you see what Amy/John looks like?"; "During the activity, could Amy/John see what you look like?"; "During the activity, could you hear Amy/John talking?"; "During the activity, could Amy/John hear us talking?"; and "During the activity could Amy/John see your choices on the screen?". These questions were intended to be sure that participants understood and believed the manipulation. Those who did not correctly answer the questions were not included in data analyses, with the exception of a small number who only missed the last question ($n = 6$). Finally, children were asked two questions in order to assess their general liking toward the recipient. Participants were asked, "Did you like the other kid or did you not like the other kid that much?", followed by "Did you really [not] like the other kid or did you kind of [not] like the other kid?". At the end of the study children were given 12 M&Ms (the number they were allocated over the course of the task). The procedure took about seven minutes to complete.

Results

Total Generosity

Total generosity scores were computed as the number of times (out of four trials) on which children chose the most generous (3,2) option. Total generosity was analyzed in a 2 (seeing: participant/recipient can versus cannot see what one another look like) X 2 (talking: participant/recipient can versus cannot talk with one another) X 2 (gender) between subjects ANOVA, which revealed a significant interaction between *seeing* and *talking,* $F(1,56) = 5.69$, $p = .020$. A contrast test revealed that children were significantly less generous in the condition where participants could neither *see* nor *talk* with the recipient (anonymous condition: $M = 1.44$), than in the three other conditions (seeing only: $M = 2.69$; talking only: $M = 2.63$; both: $M = 2.44$), $t(60) = 3.37$, $p = .001$ (see Figure 3). In other words, participants were least generous when they had no opportunity for mutual identification with the recipient. There were other significant main effects or interactions, all ps > .103.

Liking Measure

Responses to the liking question were coded on a 1-4 scale (1 = really not like; 2 = kind of not like; 3 = kind of like; 4 = really like). Liking scores were analyzed in a 2 (seeing: participant can versus cannot see the recipient) X 2 (being seen: participant can versus cannot be seen by the recipient) X 2 (gender) between subjects ANOVA, which revealed a marginally significant main effect of *talking*, $F(1,55) = 2.88$, $p = .095$. Participants who were able to talk with the recipient expressed somewhat greater liking toward the recipient ($M = 3.25$) compared to those who were not able to talk with the recipient ($M = 2.81$), $F(1,61) = 3.32$, $p = .073$. There was also a marginally significant interaction between *talking* and *gender,* $F(1,55) = 3.01$, $p = .089$, such that girls expressed somewhat greater liking for the recipient when they had the opportunity to talk with the recipient ($M = 3.41$) compared to when they could not talk with the recipient ($M = 2.59$), $F(1,32) = 5.72$, $p = .023$, whereas boys' responses to the liking question did not differ depending on whether they could talk with the recipient ($M = 3.07$) or not ($M = 3.07$), $F(1,27) = 0.00$, $p = .989$. Since we did not find any significant differences in liking based on condition, it its likely that differences in generosity across conditions is not due to overall differences in liking toward the recipient.

Discussion

To test whether different forms of mutual identification influence children's generosity, Study 2 examined 5- and 6-year-olds' generosity when they could see and/or talk with a recipient. Results replicated the finding of Study 1, such that 5- and 6-year old participants were significantly more generous when they could see and talk with a recipient compared to when they could neither see nor talk with a recipient. Additionally, children were significantly more generous in impoverished mutual identification conditions (i.e., when they were only seeing one another or only talking with one another) compared to when they could neither see nor talk with one another (baseline condition). Additionally, participants across conditions reported similar degrees of liking of the peer recipient, suggesting that variations in generosity are likely not based on the degree to which participants liked the recipient. These findings suggests that the result of Study 1 may not be due to the rich nature of the stimuli in the two-sided condition, but that in fact mutual identification seems to play an important role promoting children's generous behavior by triggering a concern for reputation.

General Discussion

Taken together, the current studies disentangle two possibilities regarding the situations in which reputation motivates children's generosity. We hypothesized that children are more generous out of a concern for reputation either 1) anytime they believe a recipient is aware that they are responsible for the generous actions (even a one-sided identification condition), or 2) when there is *mutual* identification between themselves and the recipient witnessing their generous actions. The findings of Study 1 support the latter hypothesis, such that children were most generous in the mutual identification condition, when they had information about the identity of the recipient who was also aware of their identities and actions. Interestingly, the one-sided identification condition, where participants knew that recipients were aware of their actions even though they didn't have a chance to identify the recipients, did not promote children's generous behavior above the baseline condition, suggesting that children's concern for reputation is not triggered by only having recipients be aware of their actions. Additionally, Study 2 suggests that even impoverished mutual identification exchanges (such as only seeing one another or only talking with one another) trigger children's reputational concern and motivate generosity, further supporting the case that two-sided identification appears to facilitate generosity over and above anonymous situations.

The current work conceptually replicates previous studies indicating that children's generosity is (at least in part) motivated by concerns for reputation in situations allowing for mutual identification (Leimgruber et al., 2012; Buhrmester et al., 1992), though added to that literature in important ways. While previous work investigated children's reputation motivation by examining children's generosity in situations where participants and peer recipients could both identify one another versus situations where they could not identify one another, our first study was designed to compare those conditions to situations involving one-sided identification (where only the participant can identify the recipient or only the recipient can identify the participant). Since children's generosity was not promoted in the one-sided condition where a recipient was aware of their identities and actions, our first study rules out that children's generosity is promoted anytime they believe that another person is aware of their identities and actions. Instead, this work further specifies that for children, a reputation motivation for generosity is triggered most when children are able to identify the observer of their generous decisions.

Moreover, previous work has examined children's generosity in mutual identification conditions that allow participants and recipients to only see, but not talk with, one another (Leimgruber er al., 2012), or it is ambiguous as to whether participants and recipients in these mutual identification contexts could also talk with one another (Buhrmester et al., 1992). Our second study tested how different forms, particularly impoverished forms, of two-sided identification influence children's generosity. This study expanded upon previous work by showing that multiple forms of mutual identification— seeing, talking, or both—triggered children's reputation motivation for generous behavior.

Why might children's concern for reputation depend on mutual identification? We propose two possibilities. First, it may be a result of increased *motivation*, in that children might be more likely to act generously out of a concern for their reputation when they know for sure to whom they are promoting their reputation. It might be important for children to be able to identify the person observing them because they may only care about forming a good reputation in the eyes of observers with whom they believe they are likely to form relationships. In other words, in situations without mutual identification, where children do not know who is observing them, they might be less motivated to form a good impression on that observer through boosting their generous behavior, because they aren't able to track, going forward, whose impression of them has been improved.

Seeing that people are likely to reciprocate prosocial acts towards those who have previously proven to be prosocial and cooperative (i.e., people with good reputations), reputation plays an important role in reciprocity. Adults do in fact choose to cooperate with and be generous toward those who acted fairly or generous toward themselves and others in the past (Fehr, Fischbacher, & Gächter, 2002; Fehr & Gatcher, 2002; Nowak & Sigmund, 1998; Seinen & Schram; 2006). Similarly, children prefer to associate with (Hamlin, Wynn, & Bloom, 2007) and choose to perform generous actions towards (Olson & Spelke, 2008; Dunfield & Kuhlmeier, 2010; Warneken & Tomasello, 2013; Hamlin, Wynn, Bloom, & Mahajan, 2011; Dahl, Schuck, & Campos, 2013) those who have previously been generous to themselves or others. Therefore, children's reputation motivation is likely in part related to their desire to form reciprocal relationships.

In line with this hypothesis, Engelmann, Over, Herrmann, & Tomasello (2013) found that 5-year-olds were significantly more generous when they were told that a peer observer in the room with them was a "future reciprocator" compared to when they were told that the peer observer was a "non-reciprocator", suggesting that children care more about signaling a good reputation to those with whom they expect to establish reciprocal relationships. In the same study, 5-year-olds were more generous when their actions were observed by an in-group versus an out-group member (Engelmann et al., 2013). Even in this minimal groups paradigm, children were more concerned about making a good impression on those they would more likely form relationships with (i.e., in-group members). Therefore, it is possible that children's reputation motivation for generosity is triggered in situations of mutual identification because children are able to identify whether the observer is a person whom they are likely to form reciprocal relationships with, and thus a person they want to make a good impression on.

In the current studies, children in all conditions were told that they would be allocating resources between themselves and another child who was same age and gender as them. We did this in order to maximize the likelihood that children would want to be generous at all. However, across studies, only children in the mutual identification conditions were able to *both* confirm such information *and* have the chance to establish a good reputation. Children were not told whether or not the peer recipient would reciprocate with them, leaving the reciprocal relationship somewhat ambiguous. Therefore, it is possible that children in the mutual identification conditions were more motivated by reputation concerns, and thus more generous, because they had the opportunity to establish a good reputation in the eyes of someone whom they could identify and possibly form a relationship with.

A second explanation for why mutual identification is important for triggering children's reputational concern is that children may have difficulty with the *representation* of reputation in situations without mutual identification. Since the concept of reputation depends on understanding that others have a particular opinion (mental state) about the self, mental state understanding is clearly a critical component of representing reputation. Banerjee and Yuill (1999) posit that understanding reputation involves second-order mental state understanding (Perner & Wimmer, 1985), such that children must not only understand that others have an opinion of them, but also that they can change that opinion through changing their behavior. Therefore, it is possible that children around 5- to 6-years of age need the cues provided by mutual identification in order to represent a situation as one in which they have the opportunity to establish a good reputation.

The hypothesis that children's self-presentation behavior depends on their social-cognitive abilities was examined by assessing when in development children begin understanding self-presentation behavior and whether it is related to their second-order mental state understanding (Banerjee & Yuill, 1999). Self-presentational understanding improved between the ages of 4-6 years old, with particular advances around five years of age, and children who understood second-order mental states were more successful with identifying self-presentational behavior, suggesting that social-cognitive abilities inform children's ability to have concerns about their reputation. Since children begin to understand second-order mental representations around five years of age (Banerjee & Yuill, 1999; Sullivan, Zaitchik, and Tager-Flusberg, 1994), that is when children are expected to begin displaying concern for reputation, which is consistent with previous (Leimgruber et al., 2012; Buhrmaster et al., 1992) and the current findings.

However, based on the current studies, it is likely that the context is incredibly important in triggering children's representations of others' mental states, and thus their reputational concern. In other words, young children's social cognitive abilities are such that they can represent second-order mental states, but the cues provided by situations, particularly those involving mutual identification, are necessary to elicit reputational concerns. In the two-sided identification conditions, the observer's mind is incredibly salient to children because they can see and/or talk with that observer. On the other hand, in the one-sided identification condition, even though children were explicitly told that they were being observed, it was likely more challenging for children to represent and act on reputation concerns with no information about who is observing them. Therefore, even if children are told that others are aware of their actions, if they cannot also identify those others, they might not be able to actually represent the situations as relevant to reputation. It's not to say that children at this age do not have the ability to represent reputation, but that mutual identification might be critical for cuing children into reputation concerns early in development.

The current work cannot disentangle the motivational and representational explanations for why mutual identification situations promote children's reputation concerns, thus future research should further examine these mechanisms underlying children's generous behavior. Additionally, an alternative interpretation of the current findings is that situations involving mutual identification are inherently more social contexts; therefore, children may be more generous in these situations instead out of a social motivation. Paulus and Moore (2012) have argued that prosocial actions might be rooted in a desire to interact socially with a partner. Whether or how this social motivation is different form reputation motivation has yet to be determined, thus future research should further examine these two motivations for children's prosociality as well.

A limitation of the current work is that an experimenter was present and aware of participants' allocation decisions in all conditions. Therefore, although participants and their actions were anonymous to recipients in one condition of each study, their decisions were never completely private. Since the presence of an experimenter was consistent across conditions and there were significant differences between the two-sided identification and the one-sided identification or no identification conditions in both studies, the current work speaks to the role of mutual identification *with the recipient* of one's actions in triggering a children's reputation motivation for generosity. Future studies should elucidate whether the influence of mutual identification on children's reputation motivation holds without an experimenter present.

Additionally, participants in the current studies did not know whether or not the recipient would have a chance to reciprocate. This ambiguity within the task may have added noise to the data, as the expectation of reciprocity was left up to participants' interpretation of the situation. An interesting future direction would be to test whether mutual identification is necessary to trigger reputational concern when children are told that the recipient will reciprocate, or whether the reciprocity cue will influence children's reputation motivation in a one-sided identification condition. Finally, since the current investigation of children's generosity was conducted using technology, future research should examine how children's reputation concern is influenced by mutual identification within a live setting.

In conclusion, our work suggests that social contexts, or situations allowing for mutual identification with a beneficiary, are critical in promoting children's generosity by eliciting concerns about reputation. These findings fit with those in the adult literature, indicating that adults are significantly more generous when they have some identity information about a person observing their generous behavior (Bohnet & Frey, 1999). Perhaps this pattern of behavior makes sense considering that anonymous and even one-sided identification giving situations are a rather new phenomenon evolutionarily speaking (Fehr & Henrich, 2003), and that most opportunities for generosity still frequently occur within social contexts.

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Table 1. Summary of protocol for Study 1 by condition, from perspective of participant.

<table>
<tr><th>Both</th><th>Seeing</th><th>Being Seen</th><th>Neither</th></tr>
<tr><td colspan="4">(1) Sees video of E2 set up recipient computer</td></tr>
<tr><td colspan="2">(2) See recipient introduced by E2</td><td colspan="2">(2) Video turns to static before recipient is introduced by E2</td></tr>
<tr><td>(3) Believes he/she and allocation options can be seen by recipient*</td><td>(3) Believes he/she and allocation options cannot be seen by recipient*</td><td>(3) Believes he/she and allocation options can be seen by recipient**</td><td>(3) Believes he/she and allocation options cannot be seen by recipient**</td></tr>
<tr><td colspan="4">(4) Presented option screen with two choices of allocation (e.g. 3,1 or 3,2) and asked, "Which one do you want to pick?"</td></tr>
<tr><td colspan="4">(5) For Trial 1 only, reminded of who can/cannot see whom prior to decision</td></tr>
<tr><td colspan="4">(6) Step 4 repeated for remaining three trials</td></tr>
<tr><td colspan="4">(7) Asked three manipulation check questions: "During the activity, could you see John/Amy", "During the activity, could John/Amy see you?"; "During the activity could John/Amy see your choices on the screen?"</td></tr>
</table>

*communicated by E2 in set-up video
**communicated through apparent phone call between E1 and E2

Table 2. Summary of protocol for Study 2 by condition, from perspective of participant.

<table>
<tr><th>Both</th><th>Seeing Only</th><th>Talking Only</th><th>Anonymous</th></tr>
<tr><td>(1) Sees and hears video of E2 set up recipient computer</td><td>(1) Believes E1 is takes a photo of him/her to send to recipient</td><td>(1) Hears audio of E2 set up recipient computer</td><td>(1) Is not told name or age of recipient</td></tr>
<tr><td>(2) Sees and hears recipient introduced by E2</td><td>(2) Sees photo of recipient</td><td>(3) Hears recipient introduced by E2</td><td>(2) Is not introduced to recipient via seeing or talking</td></tr>
<tr><td>(3) Believes he/she can seen and talk with recipient*</td><td>(3) Believes he/she and recipient can see, but not talk with one another*</td><td>(3) Believes he/she and recipient cannot see, but can talk with one another*</td><td>(3) Believes he/she and recipient cannot see nor talk with one another</td></tr>
<tr><td colspan="4">(4) Presented option screen with two choices of allocation (e.g. 3,1 or 3,2) and asked, "Which one do you want to pick?"</td></tr>
<tr><td colspan="4">(5) For Trial 1 only, reminded of who can/cannot see and hear whom prior to decision</td></tr>
<tr><td colspan="4">(6) Step 4 repeated for remaining three trials</td></tr>
<tr><td colspan="4">(7) Asked five manipulation check questions: "During the activity, could you see what the other kid looks like?", "During the activity, could the other kid see what you look like?"; "During the activity, could you hear the other kid talking?"; "During the activity, could the other kid hear us talking?"; and "During the activity could the other kid see your choices on the screen?"</td></tr>
<tr><td colspan="4">(8) Asked liking questions about recipient: "Did you like the other kid or did you not like the other kid?" and "Did you really [not] like the other kid or did you kind of [not] like the other kid?"</td></tr>
</table>

*also believes allocation options can be seen by recipient

Figure 1. Average total generosity (number of "more generous" choices across four trials) in Study 1, by condition.

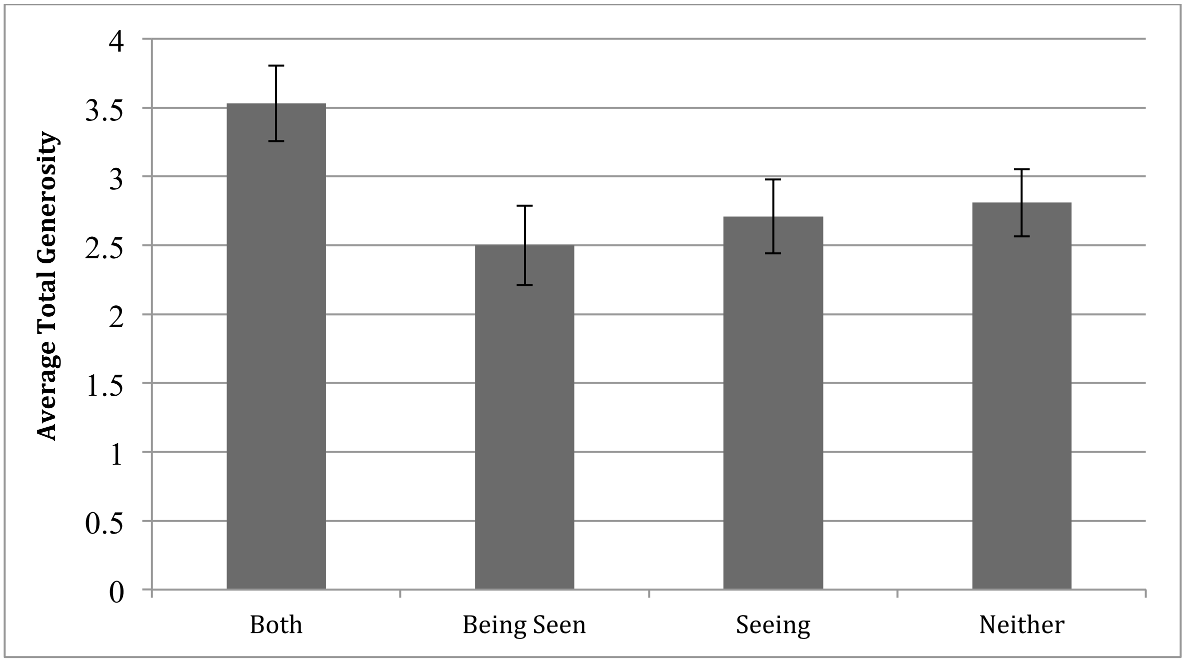

Figure 2. Average total generosity (number of "more generous" choices across four trials) in Study 1 for seeing conditions (Both/Seeing) vs. not seeing conditions (Being Seeing/Neither), by gender.

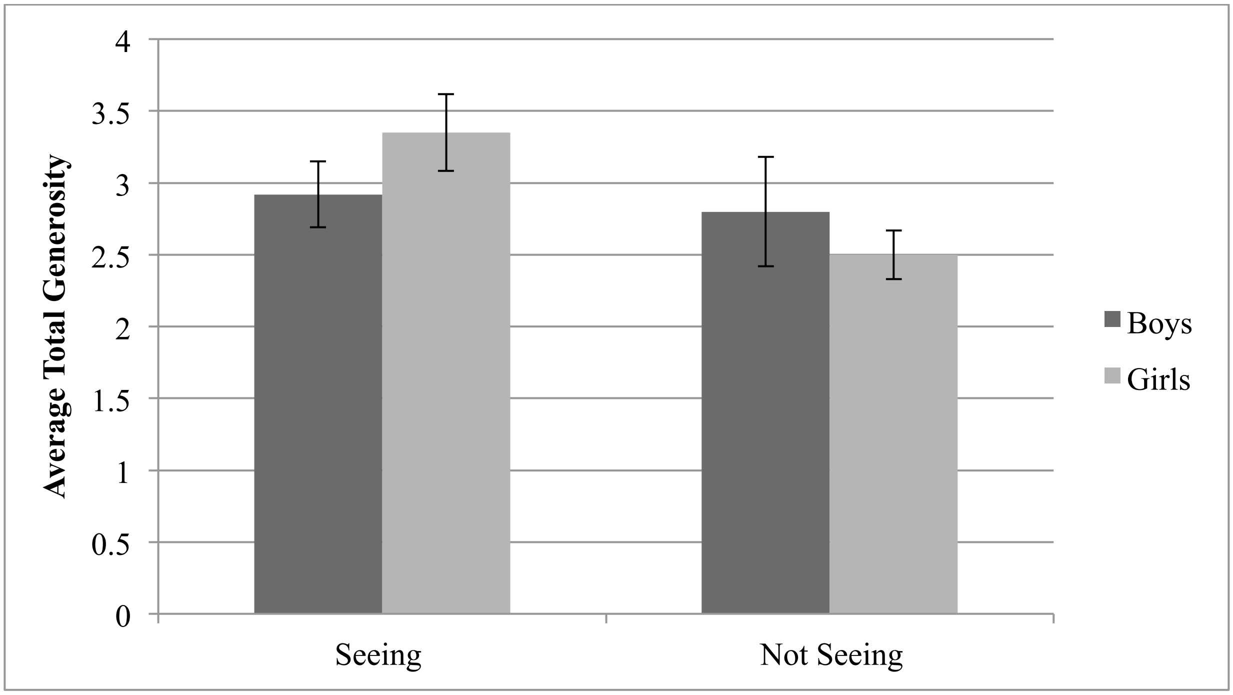

Figure 3. Average total generosity (number of "more generous" choices across four trials) in Study 2, by condition.

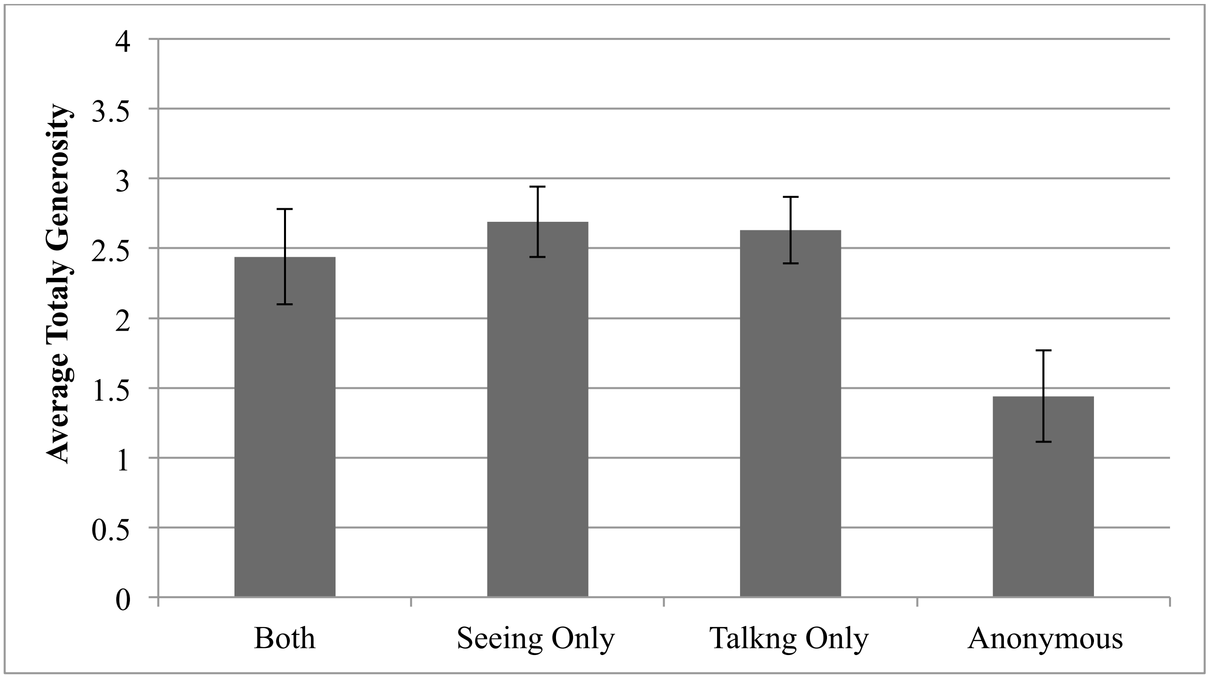

Figure 4. Average liking of recipient in two talking conditions (Both & Talking Only) versus two not talking conditions (Seeing Only & Anonymous) in Study 2, for girls versus boys.