She Helped Even Though She Wanted to Play: Children Consider Psychological Cost in Social Evaluations

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Abstract

Sometimes we incur a high psychological cost (for example, forgo something we really like) in order to fulfill social or moral obligations. How would the information of incurring psychological costs influence children's social evaluations? Prior work suggests that children do not recognize the virtue of resolving inner conflicts until age 8. In two studies, we de-confounded costs from inner conflicts and found that when the difficulty was not explicitly stated as having conflicting desires (a self-interested desire and a moral desire) at once, most 8- to 9-year-olds and some 6 to 7-year-olds gave adult-like favorable evaluations of the character who overcame psychological or physical difficulty to act morally. Moreover, neither adults nor children inferred conflicting moral and personal desires spontaneously. These together suggest that children's evaluation of moral virtue depends on understanding of cost rather than conflict: Physical cost is incorporated early in development, and psychological cost later.

Keywords: cognitive development, social cognition, moral development, moral cognition, costs

Introduction

Suppose that you ask two of your friends to help you with a paper you have to finish tonight; at the same time there is a really good show on tv. One of your friends really likes this show. The other friend does not have any interest in the show at all. If each one of these friends offered to help you with your paper, would you evaluate their actions towards you differently? Even if both friends ended up helping you, the one who gave up watching her favorite show incurred a higher psychological cost to do so, and intuitively this might lead us to evaluate her as nicer, kinder, perhaps a better friend. The costliness of her choice to help seems to weigh heavily in our evaluation. We investigate children and adults' intuitions about psychological cost as it relates to moral status in the current studies.

The ability to make social evaluations about others develops early in childhood (Hamlin, Wynn, & Bloom, 2007; Hamlin, Wynn, Bloom, & Mahajan， 2011; Burns & Sommerville, 2014; Geraci & Surian, 2011; Sloane, Baillargeon, & Premack, 2012; Olson & Spelke, 2008). Even infants and young children prefer someone who helps another person fulfill a goal (e.g., climbing a mountain or opening a box) over someone who hinders another person from goal completion (e.g., Hamlin et al., 2007) and prefer someone who shares equally with others over someone who does not share equally (e.g., Olson & Spelke, 2008). This research has mainly focused on comparing actions that bring about different outcomes (usually a positive outcome vs. a negative outcome). By preschool age, children consistently consider the intention behind an action even when it is inconsistent with its outcome (e.g., attempted or innocent harm; see Baird & Astington, 2004; Cushman, Sheketoff, Wharton, & Carey, 2013; Killen, Mulvey, Richardson, Jampol, & Woodward, 2011). Prior work suggests a link between the development of intent-based social evaluation and theory of mind (Killen et al., 2011; Smetana et al., 2012).

Previous research has examined young children's consideration of costs in their inferences of individual's goals and preferences. For example, infants consider the cost that someone expends to achieve a goal when making inferences on how much the agent values the goal. After seeing someone achieve two goals one at a larger cost than the other (e.g. has to jump over a higher barrier), infants expect her to value the goal that incurs a larger cost more than the other goal (Liu, Ullman, Tenenbaum, & Spelke, 2017). Similarly, toddlers are more likely to exonerate a non-helper for whom helping would have been hard than someone for whom helping would have been easy (Jara-Ettinger, Tenenbaum, & Schulz, 2015). Preschoolers even consider the cost they themselves incur to share with others in interpreting if their own actions are prosocial (Chernyak & Kushnir, 2013, 2018).

To date, studies of young children's evaluation of agents' psychological or moral status based on cost have focused on tangible goods - physical obstacles such as distance or barriers or valuable resources such as toys or stickers. Our initial example of the friend who gives up her favorite tv show is both like and unlike these cases. It is like resource sharing because the tv show can be thought of as having value, like stickers or toys. However, it is unlike resource sharing in that the value is intangible rather than tangible, a mental state rather than an object. Less is known about how children's understanding of this, more psychological, type of cost plays a role in their social evaluations.

Several pieces of evidence suggest that understanding psychological cost may be challenging for young children. First, one recent study (Starmans & Bloom, 2016) looked at children's evaluation of inner moral conflicts. In this study, children of 3 to 8 years old and adults were asked to compare two characters who both ultimately acted morally, but one acted morally without experiencing inner conflict, while the other resolved an inner conflict between a self-interested desire and a moral desire in order to act morally. Starmans & Bloom (2016) found that although adults evaluated the conflicted character more favorably than the unconflicted character, children of 3 to 8 years old showed the opposite evaluation. This result shows that children do not recognize the moral virtue of resolving inner conflicts until after age 8. However, it leaves open the question of whether the conflict

itself was difficult for children to understand (having both a moral and selfish desire at once), or the psychological cost was difficult to understand (forgoing something one likes in order to act morally).

Second, much recent evidence has shown that during early and middle childhood children increasingly recognize the possibility and positivity of overcoming immediate self-interested desires. For example, between 4 and 7, children increasingly believe that one can choose to act contrary to personal desires (e.g., Kushnir et al., 2015). Children also increasingly predict that individuals will act against personal desires (e.g. play) to comply with moral rules (e.g. help brother) and would feel good about it (Lagattuta, 2005; Lagattuta, Nucci, & Bosacki, 2010). Similarly, they also increasingly predict that an individual will act towards higher-order goals (e.g. doing homework) rather than succumbing to immediate desires (e.g. watching cartoons) (Yang & Fyre, 2018) Therefore, it is likely that, during early and middle childhood, as children view forgoing immediate self-interested desires to be possible and positive, they may increasingly favorably evaluate someone who endures high psychological cost to do the right thing.

In two studies, we investigate how information about psychological costs affects children's social evaluations. Our first research question was, at what age can children evaluate someone who incurs higher psychological costs to fulfill social or moral obligations as more virtuous? In Study 1, we asked children and adults to compare two characters who ultimately did the right thing, but one incurred a larger psychological cost (i.e., forewent something she really likes) in order to do the right thing, while the other incurred a smaller psychological cost (i.e., forwent something she does not like). We closely followed the procedure of Starmans & Bloom (2016) but, importantly, we removed expressions of inner conflict from the procedure by mentioning moral actions without stating moral desires. We focused on children of 4 to 9 years old. Our second research question was how children make inferences on the agents' moral desires based on the information on psychological costs incurred to perform the moral action. Thus, after asking children to make evaluations, we also asked children to make inferences about the unstated moral desires of each character. Our final question was whether children's social evaluations may differ by the types of costs. Thus, in Study 2, we tested how children's evaluation of incurring psychological cost compare to their understanding of incurring physical cost.

Study 1

Method

Seventy-six 4- to 9-year-olds (4.02- 7.98, M = 5.80, SD = 1.06, 41 boys) from Ithaca, New York were recruited for this study. Mirroring the procedure in Starmans & Bloom (2016), we divided the children into three age groups: 4- to 5-year-olds, 6- to 7-year-olds, 8- to 9-year-olds. Specifically, 39 4- to 5-year-olds (4.02- 5.85, M = 4.99, SD = .52, 21 boys), 37 6- to 7-year-olds (6.00 - 7.98, M = 6.94, SD = .64, 17 boys) and 24 8- to 9-year-olds (8.03 – 9.65, M = 8.84, SD = .55, 11 boys) were included in the analyses. In addition, 92 adults were recruited from Amazon Mechanical Turk.

Each child was read four pairs of stories and shown accompanying pictures adapted from Starmans & Bloom (2016). See Figure 1 for an example of the stories. Each pair of stories described two characters who both performed a good action (e.g. helping her brother). One character (i.e., the "high psychological cost" character) incurred a higher psychological cost and forewent something she really liked in order to perform the good action. The other character (i.e., the "low psychological cost" character) incurred a lower psychological cost and forewent something she did not really like. Two story items (one Helping Story about helping siblings, one Honesty Story about telling truth to mom) were adapted from Starmans & Bloom (2017) and concerned moral obligations. We added two other pairs of stories about following rules (one Dishes Story about cleaning up dishes as mom asks, one Toys Story about playing the toy mom asks to play).

"High Psychological Cost" Character:
This is Ana, and this is Ana's brother. Ana's brother lost his favorite ball. He has been looking for it really hard, but he still hasn't found it. So he asked Ana to help him look for it. Helping people is the right thing to do. Ana's friends are playing right outside. Ana likes playing outside. She wants to go play outside right now.
But Ana helped her brother look for his ball. It was really hard for Ana to help her brother because she wanted to play outside. But Ana helped her brother anyway.

"Low Psychological Cost" Character:
This is Tiffany, and this is Tiffany's brother. Tiffany's brother lost his favorite ball. He has been looking really hard, but he still hasn't found it. So he asked Tiffany to help him look for it.
Helping people is the right thing to do. Tiffany's friends are playing right outside. But Tiffany doesn't like playing outside. She doesn't want to go play outside right now.
So Tiffany helped her brother look for his ball. It was really easy for Tiffany to help her brother because she didn't want to play outside. So Tiffany helped her brother.

Figure 1 Example of the images and scripts in Study 1.

All the characters were the same gender as the participants. The order of presenting the four stories was counterbalanced across participants. The order of presenting the high psychological cost character and the low psychological cost character was counterbalanced across story items for each participant. After hearing each pair of stories, the child was asked two remember check questions: "Who found it easy to do something good?" and "Who found it hard to do something good?" Children answered 95% of the trials correctly. We only included those trials where both remember check questions were answered correctly. Including those trials where the remember check questions were answered incorrectly did not change the pattern or significance of results reported here.

Following each story, we asked children two *social evaluation* questions. The first was (i.e., Prize question) "Which of the two characters would you give a prize to?" This was followed by a second question (i.e., Nicer question), "which one do you think is nicer?"

We then asked children a *moral desire rating* question for each character in each pair of stories: "How much do you think she (the "high cost" character) wants to do the right thing?" and "How much do you think she (the "low cost" character) wants to do the right thing?" For each question,

children were asked to use a 3-point rating scale ("a lot", "a little bit", "not at all") to infer the degree of moral desire.

The adults received identical stimuli and questions, but read through these materials themselves online, and the characters were not matched to adult participants' gender.

Results

Social Evaluation First, we examined our first research question that at what age can children evaluate someone who incurs higher psychological costs to fulfill social or moral obligations as more virtuous. See Figure 3.2 for results on children and adults' responses to the social evaluation questions. We conducted a binary logistic regression, with their responses ("low cost" character = 1, "high cost" character = 0) as the dependent variable and age group (4- to 5-year-olds, 6- to 7-year-olds, 8- to 9-year-olds, adults) as a between-subjects factor, and story item (helping, honesty, toys, dishes) and question (prize, nicer) as within-subjects factors. We found a significant main effect of age group (Wald $\chi^2(3, N = 192) = 71.08$, $p < .001$). Specifically, adults were more likely to choose the "high cost" character than either 6- to 7-year-olds Wald $\chi^2(1, N = 129) = 17.83$, $p < .001$, or the 4- to 5-year-olds, Wald $\chi^2(1, N = 131) = 62.65$, $p < .001$. The 8- to 9-year-olds were not significantly different from the adults, $p = .84$, and were more likely to choose "high cost" character than were either the 6- to 7-year-olds Wald $\chi^2(1, N = 61) = 8.79$, $p = .003$, or the 4- to 5-year-olds, Wald $\chi^2(1, N = 63) = 27.14$, $p < .001$. The 6- to 7-year-olds were also more likely to choose the character who incurred a higher psychological cost than the 4- to 5-year-olds, Wald $\chi^2(1, N = 76) = 6.94$, $p = .008$. No effects of questions or story item were found (p's > .06).

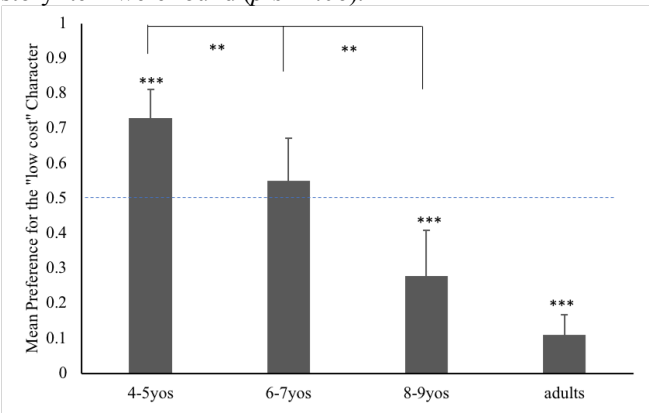

Figure 2. Children's and adults' mean preference for the "low cost" character in Study 1. Error bars represent 95% confidence intervals. Asterisks indicate significance of two-tailed t-tests. (**) $p < .01$, (***) $p < .001$.

Since no significant effects of question or story item were found, we averaged participants' responses in two dependent measure questions across four story items and ran two-tailed one-sample t-tests to compare to chance (0.5) for each age group. Adults significantly favored the "high cost" character ($M = .25$), $t(91) = -6.87$, $p < .001$, 95% $CI = [-.32, -.17]$. In contrast, the 4-to 5-year-olds significantly favored the "low cost" character ($M = .73$), $t(38) = 5.43$, $d =$, 95% $CI = [.14, .31]$. Responses of the 6- to 7-year-olds did not differ from chance ($M = .55$), $t(36) = .83$, $p = .41$, 95% $CI = [-.07, .18]$. The 8- to 9-year-olds significantly favored the "high cost" character ($M = .28$), $t(23) = .-3.06$, $p = .006$, 95% $CI = [-.37, -.07]$.

Moral Desire Ratings We then examined participants' ratings of the characters' moral desires (see Figure 3). We ran an ordinal GEE with age group (4-to 5-year-olds, 6-to 7-year-olds, 8- to 9-year-olds, adults) as a between-subject factor, character ("low cost" character, "high cost" character) and story item as within-subject factors. We found a significant main effect of character (Wald $\chi2(1, N = 192) = 221.45$, $p < .001$) that participants' ratings of moral desire were higher for the "low cost" character than the "high cost" character. We also found a significant main effect of story item (Wald $\chi2(3, N = 192) = 47.18$, $p < .001$). Specifically, participants' ratings of moral desire were lower for the Dishes story than the three other stories (p's < .004). No significant differences were found among other stories. We found no significant main effect of age group ($p = .08$) but found a significant interaction between age group and character (Wald $\chi2(3, N = 192) = 24.57$, $p < .001$). To further investigate the interaction, for each age group, we ran an ordinal GEE with character ("low cost" character, "high cost" character) and story item as within-subject factors. We found that although participants in all age groups rated higher moral desire for the "low cost" character than the "high cost" character (4- to 5-year-olds: Wald $\chi2(1, N = 39) = 31.93$, $p < .001$; 6- to 7-year-olds: Wald $\chi2(1, N = 37) = 73.61$, $p < .001$; 8- to 9-year-olds: Wald $\chi2(1, N = 24) = 44.70$, $p < .001$; adults: Wald $\chi2(1, N = 92) = 58.03$, $p < .001$), the difference were strongest among the 6- to 7-year-olds.

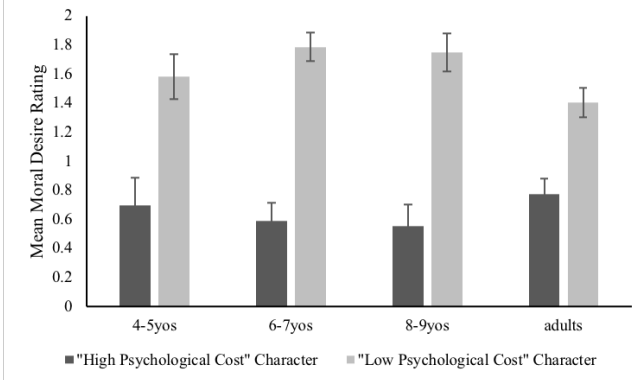

Figure 3. Mean moral desire ratings split by character and age group in Study 1. Error bars represent 95% confidence intervals.

Discussion

In Study 1, adults considered a person who incurred a higher psychological cost to do the right thing (e.g., help brother) more favorably than a person who incurred a lower psychological cost to do the same thing. We found a

developmental change in this evaluation among children. Four- to five-year-olds showed completely opposite evaluation from adults. With age, children increasingly showed a preference for the character who incurred a higher psychological cost to help.

Our results clarify age differences found in Starmans and Bloom (2016) in a few ways. First, in contrast to this prior study, when the difficulty was not explicitly stated as having conflicting desires (a self-interested desire and a moral desire) at once, 8- to 9-year old children gave adult-like favorable evaluations of the character who overcame the difficulty to act morally. Moreover, 6- and 7-year-olds were at chance, rather than favoring the easy action. The reversal from the adult pattern only appeared in the youngest group.

Both children and adults inferred that the person who incurred a lower psychological cost had stronger desire to do the right thing than the person who incurs a higher psychological cost. This suggests that neither children nor adults intuitively inferred coexistence of two conflicting desires (e.g., a self-interested desire and a moral desire).

Although ideally a direct replication and comparison to Starmans & Bloom (2016) would be more informative, we speculate that our results so far may together rule out moral conflict as the central understanding driving children's and adults' social evaluations. Instead, our findings suggest the importance of developing understanding the virtue of incurring costs to do the right thing in children's evaluations. To further investigate this developmental change, in Study 2, we look at how children's consideration of psychological costs may compare to their consideration of physical costs in social evaluations. We focused on the youngest children from study 1, 4- to 7-year-olds, since we found that their evaluations were significantly different from adults. We tested a group of adults as a reference group.

Study 2

Method

Data collection is still ongoing. We set our sample size as 36 children per age group (4- to 5-year-olds and 6- to 7-year-olds). So far, sixty-one 4- to 7-year-olds (4.00- 7.99, M = 5.32, SD = 1.17, 28 boys) from Ithaca, NY were recruited for this study. We divided the children into a younger group (4- to 5-year-olds) and an older group (6- to 7-year-olds). Specifically, 37 4- to 5-year-olds (4.00- 5.95, M = 4.89, SD = .58, 21 boys), 24 6- to 7-year-olds (M = 7.07, SD = .56, 6.03 - 7.99, 7 boys) were included in the preliminary analyses. addition, 101 adults took part in this study and were included in the analyses.

Participants were told four pairs of stories with accompanying pictures, each contrasting a "high cost" character (who incurred a high physical or psychological cost to do the right thing) with a "low cost" character (who incurred a low cost to do the right thing). Two pairs of the stories featured psychological costs and were the same as the Helping Story and the Dishes story in Study 1. The other two pairs of stories featured physical cost (see Figure 4). For example, in the Helping Story, the "high cost" character climbed up the stairs to picked up the ball for her brother, while the "low cost" character walked behind the sofa next to her and picked up the ball.

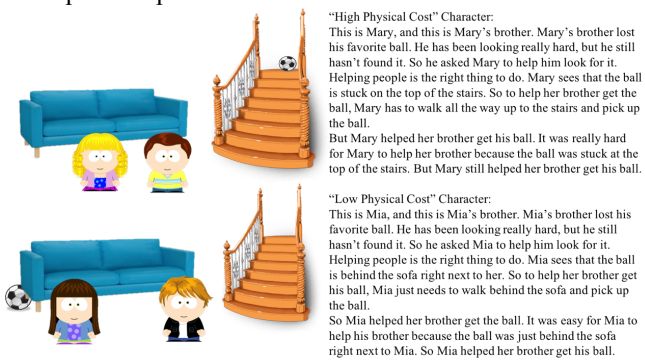

Figure 4 Example of the images and scripts featuring physical cost presented in Study 2.

All the characters were the same gender as the participants. The order of presenting the stories about psychological cost and stories about physical cost were counterbalanced across participants. The order of the high psychological cost character and the low psychological cost character were counterbalanced across stories for each participant. After hearing each pair of stories, the child was asked two remember check questions: "Who found it easy to do something good?" and "Who found it hard to do something good?" Children answered 93% of the trials correctly. We only included those trials where both remember check questions were answered correctly. Including those trials where the remember check questions were answered incorrectly did not change the pattern or significance of results reported here.

Following each story, children were asked the same two *social evaluation* questions (order counterbalanced) as in Study 1. One was (i.e., Prize question) "Which of the two characters would you give a prize to?" The other question (i.e., Nicer question) was "which one do you think is nicer?" We then asked children one *moral desire rating* question for each character using the same measures as Study 1.

The adults received identical stimuli and questions, but read through these materials themselves online, and the characters were not matched to adult participants' gender.

Results

Social Evaluations First, we examined participants' evaluation of the two characters (See Figure 5). We ran a binary logistic regression, with their responses ("low cost" character = 1, "high cost" character = 0) as the dependent variable and age group (4- to 5-year-olds, 6- to 7-year-olds, adults) as a between-subjects factor, and cost type (psychological vs. physical), story item (helping, dishes) and questions (prize, nicer) as within-subjects factors. We found a significant main effect of age group (Wald $\chi^2(2, N = 162) = 93.69$, $p < .001$). Specifically, adults were more likely to choose the "high cost" character than either the 6- to 7-year-

olds (Wald $\chi^2(1, N = 137) = 11.62$, $p = .001$), or the 4- to 5-year-olds (Wald $\chi^2(1, N = 125) = 83.69$, $p < .001$). The 6- to 7-year-olds were also more likely to choose the "high cost" character than the 4- to 5-year-olds (Wald $\chi^2(1, N = 61) = 25.06$, $p < .001$). We also found a significant main effect of cost type (Wald $\chi^2(1, N = 61) = 8.44$, $p = .004$). Specifically, participants were more likely to choose the "high cost" character in the physical stories than in the psychological stories. Interestingly, we also found a significant interaction between age group and cost type, Wald $\chi^2(2, N = 61) = 8.99$, $p = .011$. To further investigate the interaction, for each age group, we ran a binary logistic regression with responses ("low cost" character = 1, "high cost" character = 0) as the dependent variable and cost type (psychological vs. physical), story item (helping, dishes) and question (prize, nicer) as within-subjects factors. We found a marginal effect of cost type for 4- to 5-year-olds (Wald $\chi^2(1, N = 37) = 3.32$, $p = .068$), a significant main effect of cost type for 6- to 7-year-olds (Wald $\chi^2(1, N = 24) = 8.25$, $p = .004$), and no main effect of cost type for adults ($p = .66$). No significant effects question type or story item were found (p's > .25).

Since no significant effects of question type or story item were found, we averaged participants' responses in two dependent measure questions across two story items for each type of cost. We then ran one-sample t-tests to compare participants' responses in each type of story to chance (0.5) for each age group. Adults significantly favored the "high cost" character both for psychological stories ($M = .20$, $t(93) = -8.75$, $p < .001$, 95% $CI = [-.36, -.23]$) and physical stories ($M = .13$, $t(95) = -13.42$, $p < .001$, 95% $CI = [-.43, -.32]$). In contrast, the 4-to 5-year-olds significantly favored the "low cost" character both for physical costs ($M = .64$, $t(35) = 2.28$, $p = .029$, 95% $CI = [.02, .26]$) and psychological costs ($M = .75$, $t(36) = 5.16$, $p < .001$, 95% $CI = [.15, .35]$). The 6- to 7-year-olds significantly favored the "high cost" character for the physical stories ($M = .23$, $t(22) = -4.81$, $p < .001$, 95% $CI = [-.39, -.15]$) but their responses did not differ from chance for the psychological stories ($M = .40$, $t(22) = -1.18$, $p = .25$, 95% $CI = [-.27, .07]$).

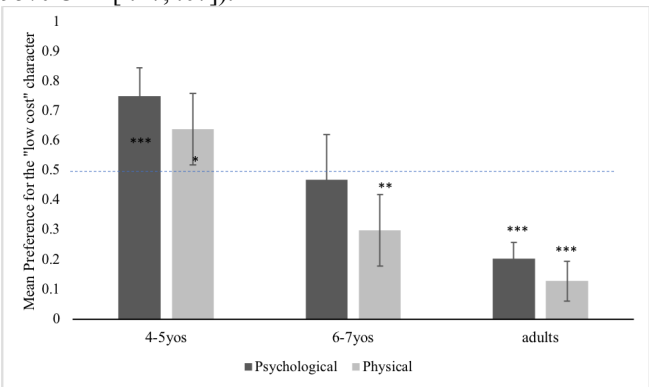

Figure 5. Children's and adults' mean preference for the "low cost" character in Study 2. Error bars represent 95% confidence intervals. Asterisks indicate significance of two-tailed t-tests. (**) $p < .01$, (***) $p < .001$.

Moral Desire Ratings We then examined participants' moral desire ratings for the characters (see Figure 6). We ran an ordinal GEE with age group (4-to 5-year-olds, 6-to 7-year-olds, adults) as a between-subject factor and character ("low cost" character, "high cost" character), cost type (psychological, physical) and story item (Helping, Dishes) as within-subject factors. We found a significant main effect of character (Wald $\chi^2(1, N = 158) = 88.03$, $p < .001$) that participants' moral desire ratings are higher for the "low cost" character than the "high cost" character. We also found a significant main effect of cost type (Wald $\chi^2(1, N = 158) = 4.98$, $p = .026$), that participants' moral desire ratings for the characters are higher in the psychological stories than the physical stories. We also found a significant main effect of story item (Wald $\chi^2(1, N = 158) = 32.74$, $p < .001$), that the moral desire ratings for the characters are higher in the Helping stories than the Dishes stories. Interestingly, we also found a significant interaction between character and cost type (Wald $\chi^2(1, N = 158) = 28.08$, $p < .001$). Follow-up analyses showed that participants rated stronger moral desire for the "low cost" character than the "high cost" character for both psychological cost (Wald $\chi^2(1, N = 158) = 78.21$, $p < .001$) and physical cost (Wald $\chi^2(1, N = 158) = 23.71$, $p < .001$), but the difference is stronger for psychological cost than for physical cost. We also found a significant interaction between age group and character (Wald $\chi^2(1, N = 158) = 28.08$, $p < .001$). Follow-up analyses showed that participants in all age groups rated stronger moral desire for the "low cost" character than the "high cost" character (4- to 5-year-olds: Wald $\chi^2(1, N = 37) = 33.25$, $p < .001$; 6- to 7-year-olds: Wald $\chi^2(1, N = 23) = 36.58$, $p < .001$; Wald $\chi^2(1, N = 98) = 15.67$, $p < .001$), but the difference is stronger among children than adults. Also, we found no significant main effect of age group ($p = .53$).

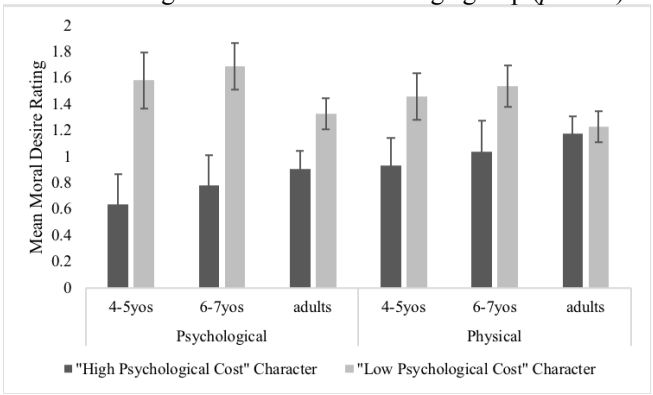

Figure 6. Mean moral desire ratings split by character, cost type and age group in Study 2. Error bars represent 95% confidence intervals.

Discussion

In Study 2, we looked at how children's considerations of psychological costs compare to their considerations of physical costs in social evaluations. Adults consistently demonstrated a favorable evaluation for someone who

incurred a high psychological or physical cost to do the right thing. Preschool-age children (4- to 5-year-olds) demonstrated an opposite evaluation from adults, favoring the person who incurred a lower psychological cost or physical cost. Most six- and seven-year-olds recognize the virtue of acting at a physical cost. Some of them also recognize the virtue of acting at a psychological cost. These results further support the idea that children's evaluation of moral virtue depends on their understanding of cost rather than conflict: Physical cost is incorporated early in development, and psychological cost later.

General Discussion

In this paper, we investigated children's consideration of costs in their social and moral evaluations. Prior studies have mostly focused on children's understanding of physical costs including physical obstacles or valuable resources. Across two studies, we show that young children may start out with an intuitive preference for individuals who find it easy to do something good, and that they gradually transition to an adult-like understanding that incurring costs to do something good is positive, praiseworthy and morally virtuous. Importantly, neither adults nor children inferred conflicting moral and personal desires spontaneously. This helps clear the findings in our study and findings in Starmans &Bloom (2016). It seems that children recognize the virtue of incurring costs before recognizing the virtue of resolving conflicting desires. Moreover, children's recognition of the positivity of incurring costs to do the right thing seems to develop in two stages: They first recognize the positivity of overcoming *physical* obstacles at around 6 to 7 years old, and then understanding the positivity of overcoming *psychological* obstacles at around 8 to 9 years old.

The difference we found between children's consideration of the psychological costs and physical costs add to prior work on children's understanding about costs. Understanding psychological costs is similar to understanding physical costs in that they both involve recognizing the possibility and positivity of making efforts and overcoming some kind of difficulty. However, they are also different in that understanding psychological costs relies on understanding that people may have different desires and that they need to make mental efforts to overcome the psychological obstacles, which may be part of higher-order theory-of-mind understanding (Lagattuta et al. 2015). Exploring interactions of understanding of costs and children's mental state understanding is an important direction for future work.

What underlies the development between ages 4 and 9? There are at least three possible explanations for this developmental change. First, it is possible that, as children age, they increasingly experience situations where they need to incur physical or psychological costs (for example, giving up something they really like) in order to achieve certain social or moral goals. Through such experience of they may gradually recognize the effort one needs to put in this process, and thus understand the virtue of incurring costs to do the right thing. Second, it is also possible that as children get older, they may be increasingly praised and encouraged for making efforts to overcome some physical or psychological difficulties to achieve certain goals by caregivers or teachers. The final possibility is that younger children may have a bias that someone who incurs a lower cost simply has higher competence, while only later they gradually understand that easiness is not necessarily the indicator for competence. This possibility is consistent with prior work in children's reasoning about ability showing that 4-year-olds judge someone who finds a task easy to be smarter than one who find the same task hard (Heyman, Gee, & Giles, 2003). These possibilities are certainly not mutually exclusive. It might be that children's first-person experience, the linguistic input they receive, and their increasingly mature understanding of competence together guide their development of an understanding of the virtue of incurring costs to do the right thing.

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