Running head: Children's decision-making

Children's decision-making:

When self-interest and moral considerations conflict

Arber Tasimi, Marcia K. Johnson, & Karen Wynn

Yale University

in press, *Journal of Experimental Child Psychology*

Word count: 2,486

Corresponding author:
Arber Tasimi
Department of Psychology
Yale University
2 Hillhouse Avenue
New Haven, Connecticut 06520
phone: 203.436.1415
e-mail: arber.tasimi@yale.edu

keywords: morality; social cognition; decision-making; cognitive development

Acknowledgments: We thank the children, families, and staffs of the following elementary schools: Frisbie, Kelley, Middlebury, Pomperaug, and Thalberg. The first author dedicates this work to the other two authors, the best (and kindest) doctoral advisors around.

Abstract

When children's self-interests are at odds with their moral considerations, what do they do? In the current study of 5- and 6-year-olds (N = 160), we asked (a) whether children would select the offering of a do-gooder over a neutral individual at a personal cost, (b) whether they would reject the offering of a wrongdoer over a neutral individual at a personal cost, and (c) whether these two types of decisions involve comparable levels of conflict. In the absence of material considerations, children preferred a nice to a neutral character, but this preference was easily overcome for material gain: Children accepted a larger offering from a neutral source over a smaller one from a nice source. In contrast, children's aversion to negative characters was largely unaffected by the same material consideration: They rejected a larger offering from a mean source in favor of a smaller one from a neutral source. Additionally, children's response times indicated that deciding whether or not to "sell out" to a wrongdoer for personal gain engenders conflict, but that deciding whether to take a lesser gain from a do-gooder does not. These findings indicate that children weigh both their own material interests and others' social behaviors when selecting social partners and, importantly, that an aversion to wrongdoers is a more powerful influence on these choices than an attraction to do-gooders.

Children's decision-making:

When self-interest and moral considerations conflict

Long before they learn to talk, children judge individuals by how they treat others. From the first few months of life, infants prefer those who help rather than harm third parties (Buon, Jacob, Margules, Brunet, Dutat, Cabrol, & Dupoux, 2014; Hamlin & Wynn, 2011; Hamlin, Wynn, & Bloom, 2007; Scola, Holvoet, Arciszewski, & Picard, 2015). Such preferences are evident at all ages (Cosmides, 1989; Dahl, Schuck, & Campos, 2013; Hardy & Van Vugt, 2006; Kenward & Dahl, 2011; Kurzban & Leary, 2001; Vaish, Carpenter, & Tomasello, 2010), and highlight the everyday human tendency to consider others as "good" or "bad" (Hamlin, 2013).

Despite the tendency to evaluate individuals based on their treatment of others, an open question is the developmental relationship between, and relative strengths of, the condemnation of antisocial behavior and the approbation of prosocial behavior. The dislike of wrongdoers is well documented: Individuals who behave badly toward others are deemed as undesirable social partners across a number of situations (Baumard, André, & Sperber, 2013; Bull & Rice, 1991; Raihani, Thornton, & Bshary, 2012). A liking of do-gooders is also well documented: Even before their first birthday, infants prefer helpful individuals to neutral ones (Hamlin, Wynn, & Bloom, 2007). Importantly, the relative strengths of these two tendencies are not well understood. For example, in some experimental paradigms, an aversion to wrongdoers surpasses an attraction to do-gooders; children are less likely to help harmful than neutral characters, but they help neutral and helpful characters at comparable rates (Vaish, Carpenter, & Tomasello, 2010). Consistent with this point, three-month-old infants prefer neutral over harmful characters, but show an equal liking for neutral and helpful characters (Hamlin, Wynn, & Bloom, 2010).

However, other studies raise the possibility that, in some situations, the approbation of good eclipses the condemnation of bad. For example, adults have been shown to reward good behavior more often than they punish bad behavior (Almenberg, Dreber, Apicella, & Rand, 2011; Rand et al., 2009).

The current study examines the relative strengths of children's attitudes toward positive and negative individuals in situations involving material considerations. With this approach, we exploit the fact that people don't just want to do good, they also want to do well—even from very young ages, humans are motivated to make decisions that afford the greatest material gain (Cheries, Mitroff, Wynn, & Scholl, 2008; Feigenson, Carey, & Hauser, 2002). How do children incorporate these distinct desires in their social decision-making, especially when they conflict? Recent work shows that school-aged children accept material sacrifices—but only up to a point––to interact with do-gooders rather than wrongdoers (Tasimi & Wynn, 2016). Children rejected two stickers from a wrongdoer in favor of one sticker from a do-gooder, but were more likely to accept the wrongdoer's stickers when the offer was larger. Thus, it seems that children base their social decisions on cost-benefit analyses weighing competing considerations.

Exploring the nature of children's social decisions when their material self-interests are pitted against their moral considerations can provide insight into the cognitive processes that underlie such decisions. Specifically, we seek to advance an understanding of how children prioritize different factors as they confront choices involving competing considerations. Thus, in the current investigation, we asked (i) whether children would select the offering of a do-gooder over a neutral individual at a personal cost, (ii) whether they would reject the offering of a wrongdoer over a neutral individual at a personal cost, and (iii) whether these two types of decisions involved comparable levels of conflict. As more acute moral dilemmas are associated

with longer decision times (Greene et al., 2001; Koenigs et al., 2007), we examined children's decision times as an index of conflict. Following previous work showing that 5- and 6-year-olds are willing to incur personal costs to interact with do-gooders over wrongdoers (Tasimi & Wynn, 2016), we focused on children of these ages.

Participants

160 children (72 girls; mean age = 6.07 years; range = 5.03-6.99 years) were recruited from the greater New Haven, Connecticut area and tested individually in a quiet room at their elementary school. Parents provided written informed consent; children provided oral assent.

Procedure

Children were randomly assigned to a Nice/Neutral Experimental condition (N = 40; 17 girls; mean age = 6.25 years) or a Mean/Neutral Experimental condition (N = 40; 18 girls; mean age = 6.22 years). In the Experimental conditions, children were shown photographs of two children, and were asked whose star stickers they wanted to accept. In the Nice/Neutral Experimental condition, a nice character offered one sticker while a neutral character offered two stickers (e.g., *"This is Charlotte. Charlotte is always being nice. This is Daniela. Daniela is always wearing shoes. Charlotte has one sticker and she wants to give you her one sticker. Daniela has two stickers and she wants to give you her two stickers. Whose do you want?"*). In the Mean/Neutral Experimental condition, a mean character offered two stickers while a neutral character offered one sticker (e.g., *"This is Charlotte. Charlotte is always being mean. This is Daniela. Daniela is always wearing shoes. Charlotte has two stickers and she wants to give you her two stickers. Daniela has one sticker and she wants to give you her one sticker. Whose do you want?"*). The stickers were placed in front of the character's picture, to represent that they were offering them to the child.

To assess choices and response times in the absence of profit considerations, an additional sample of children were randomly assigned to a Nice/Neutral Baseline (N = 40; 18 girls; mean age = 5.86 years) or a Mean/Neutral Baseline (N = 40; 19 girls; mean age = 5.94 years) condition. In the Baseline conditions, as in the corresponding experimental conditions, children were shown photographs of two children and were asked which character they preferred (e.g., Nice/Neutral Baseline condition: *"This is Charlotte. Charlotte is always wearing shoes. This is Daniela. Daniela is always being nice. Who do you like?"*; Mean/Neutral Baseline condition: *"This is Charlotte. Charlotte is always wearing shoes. This is Daniela. Daniela is always being mean. Who do you like?"*).

In all conditions, gender of characters was matched to gender of the child, and the following were counterbalanced across participants: (1) Name of neutral character (Craig/Daniela or Max/Charlotte); (2) Order of neutral fact (first or second). Responses were audio-recorded. Two independent coders blind to condition and to the study's hypotheses coded children's decision times from the recordings. Decision time was coded as the number of seconds it took the child to indicate a choice from the time the experimenter finished asking the question. Coders reached 98.11% reliability; their coded decision times were averaged for our analyses.

Results

Baseline Choices: As shown in Figure 1A, children strongly preferred the more positive character in each of the two Baseline conditions, selecting the do-gooder in the Nice/Neutral Baseline condition (33 of 40 children, $p < .001$ by a binomial test), and the neutral character in the Mean/Neutral Baseline condition (38 of 40 children, $p < .001$ by a binomial test). The

strength of children's preference for the more positive character did not differ between these two conditions (Fisher's exact test, $p = .15$).

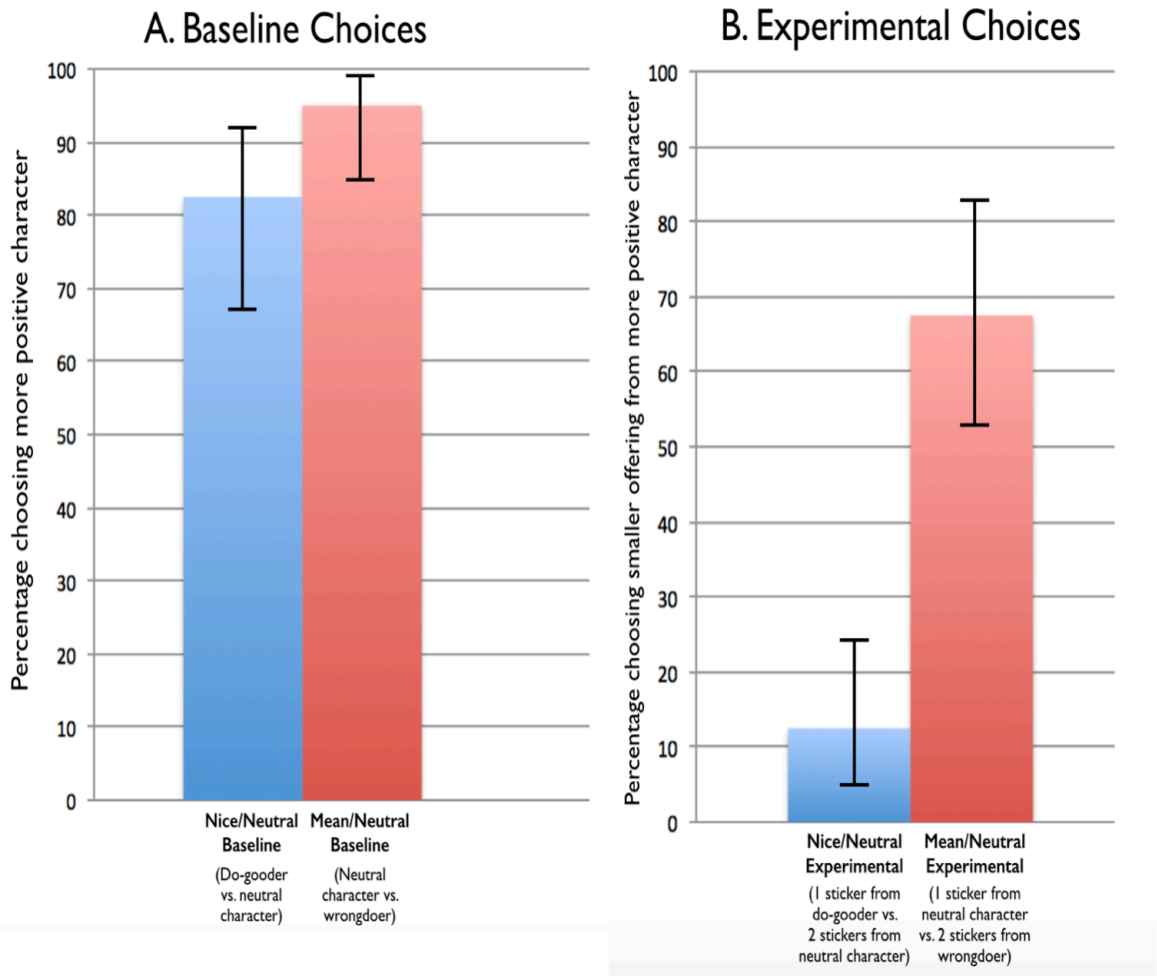

Figure 1. Percentages of children choosing the more positive character in the absence (A) or presence (B) of material considerations. Error bars represent 95% confidence intervals.

Experimental Choices: Children in the Nice/Neutral Experimental condition overwhelmingly chose the less-positive character making the larger offering (35 of 40 children chose two stickers from the neutral character than one sticker from the do-gooder, binomial probability, $p < .001$); see Figure 1B. In sharp contrast, children in the Mean/Neutral Experimental condition most often selected the more-positive character making the smaller

offering (27 of 40 children chose one sticker from the neutral character than two stickers from the wrongdoer, binomial probability, $p = .028$). The strength of children's preference for the more positive character differed in the two Experimental conditions, Fisher's exact test, $p < .001$.

Comparison of Experimental and Baseline Choices: In the Nice/Neutral contrasts, children's choice of the nicer character in the Experimental condition (5 of 40 children) was significantly reduced from the Baseline level (33 of 40 children; $p < .001$ by a Fisher's Exact test), indicating that children's decisions were strongly influenced by material considerations (indeed, their choices reversed from a baseline preference for the do-gooder to an experimental preference for the neutral character who offered more). In the Mean/Neutral contrasts, children maintained a preference for the neutral character in the Experimental condition (27 of 40), but this was lower than their Baseline preference for the neutral character (38 of 40, $p = .003$ by a Fisher's Exact test).

Decision Times: Children's decision times are shown in Table 1. An analysis of variance with condition (baseline, experimental), contrast (Nice/Neutral, Mean/Neutral), and gender (male, female) did not yield a main effect of condition, $F(1, 152) = 3.56$, $p = .061$, contrast, $F(1, 152) = .98$, $p = .32$, or gender, $F(1, 152) = .64$, $p = .42$. The expected condition x contrast interaction failed to reach significance, $F(1, 152) = 3.25$, $p = .073$. Despite the non-significant interaction, we looked separately at the results for each condition. In the Experimental condition, children took longer to make a decision in the Mean/Neutral contrast ($M = 3.12$s; $SD = 1.33$) than in the Nice/Neutral contrast ($M = 2.47$s; $SD = 1.22$), $t(78) = 2.26$, $p = .026$. By contrast, there was no difference in decision times between the Mean/Neutral ($M = 2.29$s; $SD = 1.63$) and Nice/Neutral ($M = 2.42$s; $SD = 1.34$) contrasts of the Baseline condition, $t(78) = .41$, $p = .68$. Further analyses show that while the presence of material considerations affected children's

decision times in the Mean/Neutral contrast, $t(78) = 2.51$, $p = .014$, they did not affect children's decision times in the Nice/Neutral contrast, $t(78) = .18$, $p = .86$.

An additional analysis of variance was conducted excluding the two participants whose decision times fell three standard deviations away from their group's mean. This analysis yielded a main effect of condition, $F(1, 150) = 6.09$, $p = .015$, but no effects of contrast, $F(1, 150) = .67$, $p = .41$, or gender, $F(1, 150) = .36$, $p = .55$. Importantly, this analysis also revealed a condition x contrast interaction, $F(1, 150) = 7.96$, $p = .005$. In the Experimental condition, children took longer to make a decision in the Mean/Neutral contrast ($M = 3.12$s; $SD = 1.33$) than in the Nice/Neutral contrast ($M = 2.38$s; $SD = 1.07$), $t(77) = 2.73$, $p = .008$. Notably, there was no significant difference in decision times between the Mean/Neutral ($M = 2.09$s; $SD = 1.10$) and Nice/Neutral ($M = 2.42$s; $SD = 1.34$) contrasts of the Baseline condition, $t(77) = 1.19$, $p = .24$. Further analyses show that while the presence of material considerations affected children's decision times in the Mean/Neutral contrast, $t(77) = 3.73$, $p < .001$, they did not affect children's decision times in the Nice/Neutral contrast, $t(77) = .16$, $p = .87$. Thus, the decision of whether or not to take more from a wrongdoer engendered more conflict than deciding whether or not to take less from a do-gooder.

	Nice/Neutral	**Mean/Neutral**
Baseline	2.42s (1.34)	2.29s (1.63)
Experimental	2.47s (1.22)	3.12s (1.33)

Table 1. Children's decision times (in seconds) in the Experimental and Baseline conditions, by contrast (Nice/Neutral, Mean/Neutral). Standard deviations are in parentheses. Decision times in

the Mean/Neutral Experimental condition were significantly greater than decision times in all other conditions, which did not differ from each other.

Discussion

The current findings show that children consider both material interests and moral considerations when making social decisions, and this integration is reflected in both their choices and their decision times. Notably, in this context, others' negative behaviors "spoke louder" than their positive behaviors in children's calculus: Children were more willing to incur personal costs to reject a wrongdoer than to affiliate with a do-gooder.

These results are consistent with other research finding a greater attention and responsiveness to negative than positive information in various ages across studies (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001; Vaish, Grossman, & Woodward, 2008). Indeed, a heightened responsiveness to negativity appears early in development: even three-month-old infants prefer neutral agents to wrongdoers, but show no preference for do-gooders to neutral agents (Hamlin, Wynn, & Bloom, 2010). The current study highlights an important functional consequence of this aversion: It can be powerful enough to lead children to resist the allure of profit. Of course, whether and why children choose to reject wrongdoers in the lab (and in the real world) likely depends on many things, including the nature and amount of the cost and the nature of the wrongdoers and do-gooders (e.g., in what ways they are bad/good, how extreme their behavior; see Tasimi & Gelman, 2016 for a similar point).

In investigating such questions, children's response times as well as their choices can be informative. In the current study, children's decision times indicated that deciding whether or not to forgo profit from a wrongdoer in favor of a neutral individual was more difficult than deciding

whether or not to forgo profit from a neutral character in favor of a do-gooder. This, like children's actual choices, suggests that children weighted negative social behavior more heavily in their decisions because they perceived a greater distinction between a wrongdoer and a neutral character than between a do-gooder and a neutral character. However, an alternative explanation is that children were simply more confused in the Mean/Neutral Experimental condition than in the Nice/Neutral Experimental condition. For example, it is possible that children in the Mean/Neutral Experimental condition needed more time to process the inconsistent information that was presented (a mean character being more generous than a neutral character). Critically, however, children in the Nice/Neutral Experimental condition also received inconsistent information (the nice character was less generous than the neutral character). Thus, it is unlikely that simply being confronted with—or confused by—out-of-character behavior is the cause of the difference in children's decision times between the two conditions. For this reason, we favor the conclusion that children's aversion to wrongdoers was stronger than their attraction to do-gooders.

Looking ahead, it is important that future work examines the reasons why children reject wrongdoers at a personal cost. One possibility (dislike) is that children find wrongdoers unappealing, so much so that they are willing to forgo their own self-interest. Another possibility (suspicion) is that children are dubious about the motives of wrongdoers—they may be confused as to why someone who behaves negatively towards others is behaving positively towards them. A third possibility (reputation management) is that children are concerned about being judged unfavorably for accepting a wrongdoer's offering. Given these different possibilities, children's explanations would be fruitful in understanding the potential reasons for their choices (Wellman,

2011). Investigating the stories children tell themselves (versus others) about wrongdoers should help clarify when and how they resolve moral conflict.

References

Almenberg, J., Dreber, A., Apicella, C. L., & Rand, D. G. (2011). Third party reward and punishment: Group size, efficiency and public goods. In N. M. Palmetti et al. (Eds.), *Psychology of Punishment.* Hauppauge, NY: Nova Publishers.

Baumard, N., André, J. B., & Sperber, D. (2013). A mutualistic approach to morality: The evolution of fairness by partner choice. *Behavioral and Brain Sciences*, *36*, 59-122.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*, 323-370.

Bull, J., & Rice, W. (1991). Distinguishing mechanisms for the evolution of cooperation. *Journal of Theoretical Biology*, *149*, 63-74.

Buon, M., Jacob, P., Margules, S., Brunet, I., Dutat, M., Cabrol, D., & Dupoux, E. (2014). Friend or foe? Early social evaluation of human interactions. *PLoS ONE, 9,* e88612.

Cheries, E. W., Mitroff, S. R., Wynn, K., & Scholl, B. J. (2008). Cohesion as a constraint on object persistence in infancy. *Developmental Science*, *11*, 427-432.

Cosmides, L. (1989). The logic of social exchange: Has natural selection shapes how humans reason? *Cognition*, *31*, 187-216.

Dahl, A., Schuck, R. K., & Campos, J. J. (2013). Do young toddlers act on their social preferences? *Developmental Psychology*, *49*, 1964-1970.

Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature*, *454*, 1079-1083.

Feigenson, L., Carey, S., & Hauser, M. (2002). The representations underlying infants' choice of more: Object files versus analog magnitudes. *Psychological Science*, *13*, 150-156.

Greene, J. D., Sommerville, R. B., Nystrom, L. E., Darley, J. M., & Cohen, J. D. (2001). An fMRI investigation of emotional engagement in moral judgment. *Science*, *293*, 2105-2108.

Hamlin, J. K. (2013). Moral judgment and action in preverbal infants and toddlers: Evidence for an innate moral core. *Current Directions in Psychological Science*, *22*, 186-193.

Hamlin, J. K., Wynn, K., & Bloom P. (2007). Social evaluation by preverbal infants. *Nature*, *450*, 557-559.

Hamlin, J. K., Wynn, K., & Bloom, P. (2010). Three-month-old infants show a negativity bias in social evaluation. *Developmental Science*, *13*, 923-929.

Hamlin, J. K., Wynn, K., Bloom, P., & Mahajan, N. (2011). How infants and toddlers react to antisocial others. *Proceedings of the National Academy of Sciences*, *108*, 19931-19936.

Hamlin, J. K., & Wynn, K. (2011). Five- and 9-month-old infants prefer prosocial to antisocial others. *Cognitive Development*, *26*, 30-39.

Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin*, *32*, 1402-1413.

Kenward, B., & Dahl, M. (2011). Preschoolers distribute scarce resources according to the moral valence of recipients' previous actions. *Developmental Psychology*, *47*, 1054-1064.

Koenigs, M., Young, L., Adolphs, R., Tranel, D., Cushman, F., Hauser, M., & Damasio, A. (2007). Damage to the prefrontal cortex increases utilitarian moral judgments. *Nature*, *446*, 908-911.

Kurzban, R., & Leary, M R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, *21*, 187-208.

Raihani, N. J., Thornton, A., & Bshary, R. (2012). Punishment and cooperation in nature. *Trends in Ecology and Evolution*, *27*, 288-295.

Rand, D. G., Dreber, A., Ellingsen, T., Fudenberg, D., & Nowak, M. A. (2009). Positive interactions promote public cooperation. *Science*, *325*, 1272-1275.

Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5*, 296-320.

Schmidt, M. F. H., & Sommerville, J. A. (2011). Fairness expectations and altruistic sharing in 15-month-old human infants. *PLoS One, 6*, e23223.

Scola, C., Holvoet, C., Arciszewski, T., & Picard, D. (2015). Further evidence for infants' preference for prosocial over antisocial behaviors. *Infancy, 20*, 684-692.

Tasimi, A., & Gelman, S. A. (2016). Dirty money: The role of moral history in economic judgments. *Cognitive Science*.

Tasimi, A., & Wynn, K. (2016). Costly rejection of wrongdoers by infants and children. *Cognition*, *151*, 76-79.

Vaish, A., Carpenter, M., & Tomasello, M. (2010). Young children selectively avoid helping people with harmful intentions. *Child Development*, *81*, 1661-1669.

Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. *Psychological Bulletin*, *134*, 383-403.

Wellman, H. M. (2011). Reinvigorating explanations for the study of early cognitive development. *Child Development Perspectives*, *5*, 33-38.

Yamagishi, T., Li, Y., Takagishi, H., Matsumoto, Y., & Kiyonari, T. (2014). In search of *homo economicus*. *Psychological Science*, *25*, 1699-1711.