Changing Children's Minds about Distributive Justice

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Abstract

How can social learning influence children's inclinations toward equality-based or merit-based fairness? To investigate this question, six- and seven-year-olds were first presented with a pre-test distribution task in which they divided eight stickers between two hypothetical children, one of whom was a more productive worker. Participants were then given brief, direct testimony that advocated either equality- or merit-based fairness (whichever was not preferred at pre-test), and that appealed either to emotions or reason. A novel experimenter then presented participants with a post-test distribution task. The results indicated that a majority of children changed their distribution patterns from pre-test to post-test after being provided with direct testimony. These changes in resource distribution were accompanied by marked changes in the kinds of explanations that children provided. This research indicates that children's preferences for different forms of just resource distribution can be heavily influenced by social communication.

Keywords: fairness; distributive justice; testimony; moral development

Introduction

The witch in Sondheim's Into the Woods instructs: "Careful the things you say; children will listen." This expresses a common thread of folk wisdom, reflecting the popular belief that children will readily absorb anything they are told – particularly when learning moral values. Although children are far from being passive sponges (Koenig & Sabbagh, 2013), research has demonstrated that they are indeed often credulous, believing what adults tell them even if it conflicts with their firsthand experience (Jaswal, 2013). In the present study, we investigated whether directly communicated information (henceforth, "testimony") from an adult could lead children to value one form of fairness (e.g., equality) above another (e.g., merit), as measured by third-party resource distributions. This contrast between equality-based fairness (often conceived as central to socialism) and merit-based fairness (associated with capitalism) has been prevalent throughout history and prominently fuels contemporary political debates and ideologies in the United States (Dworkin, 2000). It is therefore especially important to address the issue of how children might come to prefer one of these disparate moral worldviews.

The Development of Distributive Justice

Since Piaget (1932), developmental psychologists have demonstrated that children possess at least two distinct ideas of how resources should be properly apportioned: according to equality (also referred to as "parity") or according to merit (also referred to as "equity"). Much early research on the development of fairness beliefs was focused on the influences of cognitive maturation and logical/mathematical reasoning, positing that children pass through stable cognitive stages that lead to changes in fairness concepts (see Damon, 1977; Hook & Cook, 1979). This body of research yielded evidence that equality-based fairness is robust in middle childhood and is then replaced by merit-based fairness, which seems to naturally emerge during late childhood or early adolescence (Almås, Cappelen, Sørensen, & Tungodden, 2010; Damon, 1975; Piaget, 1932).

However, other research has yielded suggestive evidence for a less rigid view of the development of fairness beliefs, supporting theories that children's moral beliefs are shaped at least in part by learning from discourse transmitted by moral authorities within a given cultural milieu (e.g., Edwards, 1987; Shweder, Mahapatra, & Miller, 1987; Snarey, 1985). For example, children's distribution patterns are malleable, changing with context in addition to age (Huntsman, 1984; McGillicuddy-de Lisi, Watkins, & Vinchur, 1994; Sigelman & Waitzman, 1991). In addition, recent research has demonstrated that the concepts of equality and merit are available even to very young children. In looking time paradigms, infants are sensitive to both principles of equality and principles of merit (Sloane, Baillargeon, & Premack, 2012). Three- and four-year-old children have been found to apply principles of merit when distributing resources (Baumard, Mascaro, & Chevallier, 2012; Kanngiesser & Warneken, 2012; Nelson & Dweck, 1977).

The early emergence of both equality-based and merit-based fairness, together with the context-dependence of

distributive justice, suggests that favoring one form of fairness over another requires an explanation that incorporates both sociocultural and cognitive factors. Despite extensive cognitive developmental research on children's third-party resource distribution tendencies, research is lacking on the forms of social influence that shape these preferences. Could testimony bring about shifts in fairness preferences, leading children either to provide people with equal access to resources or to provide more industrious people with more resources? The present research investigates whether patterns of resource distribution are amenable to being changed through this ubiquitous form of social communication.

Teaching Children Moral Lessons

Moral lessons are often communicated to children through indirect forms of social communication, particularly allegorical storybooks and television shows. However, previous research has demonstrated that many of these interventions tend to fail, in part because stories cannot be easily tailored to a particular situation at hand, and thus require difficult forms of transfer (Mares & Acosta, 2008; Narvaez, Gleason, Mitchell, & Bentley, 1999; Walker & Lombrozo, 2017). In our own research, using the same pre-test and post-test reported here, we failed to find robust support for the hypothesis that storybooks can influence children's beliefs about distributive justice (Rottman, Young, Blake, & Kelemen, 2017). Only 23% of participants changed their pattern of resource distribution after hearing a lengthy illustrated storybook about a society of beavers who decided to distribute wood for building their dams in a way that conflicted with participants' pre-test distribution pattern. The ineffectiveness of these stories was unchanged across emotional and reasoned appeals and regardless of whether the stories were advocating equality-based or merit-based distributions.

Despite these negative findings, seemingly indicating the resilience of children's fairness beliefs, we hypothesized that children may readily learn from concise, more straightforward forms of communication (i.e., "testimony"). A number of studies have demonstrated that children's moral beliefs and prosocial behaviors can be influenced by a variety of forms of adult testimony (Rosenhan, Frederick, & Burrowes, 1968; Rottman, Young, & Kelemen, 2017; Rushton, 1975; Sagotsky, Wood-Schneider, & Konop, 1981; also see Eisenberg, Fabes, & Spinrad, 2006; Harris, 2012). Therefore, we investigated whether a brief direct statement made by an experimenter would affect children's fairness preferences.

Testimony ranges from being highly emotional to being highly reasoned. This distinction between emotional and reasoned appeals has been frequently emphasized in the literatures on persuasion (e.g., Petty & Cacioppo, 1986) and moral psychology (e.g., Haidt, 2001). To test whether appeals to emotions are more effective than appeals to reason (through explicit principles) in leading to belief change in the domain of distributive justice, we manipulated the format of the information that was provided to children, using either reasoned or affectively charged assertions.

Overview of Research

This research addresses the question of whether emotional and/or reasoned testimony can be an effective tool for shaping children's beliefs about fairness. Testimony that appealed to emotions considered the feelings of victims, whereas testimony that appealed to reason considered moral principles.

Participants were assigned to one of four conditions, which resulted from a 2 (Appeal: Emotional vs. Reasoned) X 2 (Fairness Type: Merit vs. Equality) design. We employed a pre-test/post-test intervention to determine whether direct testimony could alter the fairness preferences children already possessed. In order to measure fairness preferences, a third-person distribution task was used to factor out selfish considerations. When children stand to gain or lose from their distributions of resources, they tend to be strategically self-interested (Fehr, Bernhard, & Rockenbach, 2008; Shaw, Montinari, Piovesan, Olson, Gino, & Norton, 2014; Sheskin, Bloom, & Wynn, 2014; Steinbeis & Over, 2017) and do not always behave in accordance with their principles (Blake, McAuliffe, & Warneken, 2014). These considerations are not relevant to impartial third-person allocations, which may more directly reflect abstract beliefs about justice.

We tested six- and seven-year-old children because equality-based forms of distribution are heavily entrenched in early childhood (e.g., Sigelman & Waitzman, 1991) and are found to be a dominant response even in studies demonstrating applications of merit in early childhood (e.g., Baumard et al., 2012). By around the age of six or seven, children begin gravitating away from heavily weighting equality-based forms of distribution and moving toward merit-based forms of distribution (e.g., Damon, 1975; Hook & Cook, 1979; Leventhal et al., 1973).

Methods

Participants

Participants were 110 six- and seven-year-old children (47 female; M_{age} = 85.06 months; SD_{age} = 5.87 months) who were recruited from the greater Boston area via a large participant database and tested in a university laboratory (n = 38) or who were recruited and tested in local elementary schools and summer camps (n = 72).

Participants were randomly assigned to hear either an Emotional appeal or a Reasoned appeal. Because the study was intended to influence children's initial preferences for equality or merit, participants were assigned to the Equality or Merit conditions based on the preferences that they demonstrated in their pre-test distributions. This ensured that each participant was presented with an argument that ran contrary to his or her initial mode of allocation (i.e., equality-distributors at pre-test were assigned to one of the two merit conditions and merit-distributors at pre-test were

assigned to one of the two equality conditions). However, this non-random assignment meant that over-sampling was necessary in order to have sufficient sample sizes in each condition. A stopping rule decided prior to data collection dictated that testing would cease after a total of at least 16 children had been assigned to both the Equality and Merit conditions for the Emotional appeal and the Reasoned appeal. Because participants were more prone to equal than merit-based distributions at pre-test, a greater number of children needed to be tested before 16 participants were obtained in each condition: a total of 42 in the Emotional condition advocating merit, and a total of 27 in the Reasoned condition advocating merit. Excluding the additional 37 children (i.e., participants beyond the target sample size of 64) does not meaningfully affect the findings.

Materials and Procedure

In order to establish a baseline measure of responding, all participants were initially presented with a distribution task before hearing the testimony. The first experimenter then provided brief testimony advocating the opposing form of distributive justice, after which a second experimenter administered a second distribution task. The crucial dependent measure was whether participants distributed the resources based on equality (by giving four stickers to each child) or based on merit (by giving more stickers to the child who completed more of a task).

Pre-test/Post-test The distribution task, adapted from Leventhal, Popp, and Sawyer (1973), took the form of a timed "work task". Participants first completed this themselves in order to ensure that they understood the nature of the task, and they were told that time was up after they had completed exactly 50% of the task. Because this procedure was repeated in the pre-test and the post-test, two separate work tasks were used. These were functionally similar but differed in superficial properties (one involved adhering colored discs to a strip of colored paper, and the other involved stamping rubber stamps below corresponding animal pictures). The order of these two tasks was counterbalanced across subjects, as were the resources being distributed (smiley-face stickers or temporary tattoos).

After participants gained experience with the work task, they were told about two other children (matched for gender and age), who had participated earlier but needed to leave suddenly and were not able to receive any prizes. It was additionally revealed that one of these children had completed 25% of the task in the time allotted, while the other had completed 75% of the task. (This discrepancy was presented visually and through counting the number of discs or stamps that had been applied to each child's strip of paper. The ratio was 15:5 for the discs task and 12:4 for the stamps task.) At this point, participants were told that their help was needed in determining the right number of prizes to allocate to each child, and they were provided with eight resources to distribute into envelopes. To prevent demand effects during the post-test, a new experimenter administered the second task after the intervention had taken place. After participants had finished distributing resources, they were asked to explain their reasoning for their particular division of stickers or tattoos.

Intervention The Emotional and Reasoned testimony were short declarations (59 words) presented in conversational language, which appealed to recipients' feelings (e.g., "…dividing up stickers [in the way you demonstrated] makes these girls feel really upset…") or abstract moral principles (e.g., "…each girl should have as many stickers as she deserves based on what she did to earn them…"), respectively. For reasons of ecological validity, the testimony focused on the situation at hand. One example of the full, verbatim testimony is as follows:

> *Another way to divide up stickers is for the harder-working boy to get more stickers than the less hard-working boy. That's a much better way of dividing up stickers, because it would have made the boys much happier if they got exactly the amount they worked for. Dividing up stickers any other way makes these boys feel really upset.*

Results

Preliminary Results

Across both the pre-test and the post-test, over 90% of participants either divided stickers based on merit (i.e., they gave more stickers to the child who was shown to be more productive in the work task) or divided stickers equally. However, several participants ($n = 9$) gave a greater number of stickers to the less productive child during either pre-test or post-test. These children were excluded from all analyses, as they could not be readily classified as Merit or Equality distributors.

The 101 children who were retained in the sample were significantly more likely to be equality-distributors (68.3%) rather than merit-distributors (31.7%) at pre-test, as demonstrated by a one-sample binomial test, $p < .001$. Of the 32 merit-distributors, only 5 children at pre-test divided in exact proportion to the mathematical difference in productivity (i.e., a 3:1 ratio), again demonstrating that children's merit-based distribution is generally ordinal rather than exactly proportional. In line with prior research, six-year-olds were more likely to be equality-distributors (85.0%) than seven-year-olds (57.4%), which is a significant difference as demonstrated by an independent-samples Mann-Whitney U Test, $p = .004$. Distribution patterns at pre-test did not differ significantly by gender, $p = .686$. Importantly, the findings remain virtually the same when only the first 32 equality distributors are included in analyses.

Primary Results

Participants were coded as having changed (1) or not changed (0) their fairness distributions between equality and merit from pre-test to post-test. A one-sample binomial test demonstrated that testimony reliably led to changes in

children's distribution patterns from pre-test to post-test, p = .001 (see Figure 1 for frequencies in each condition). This effect of testimony did not change across age, as shown by an independent-samples Mann-Whitney U Test, p = .206. McNemar tests conducted for each of the four conditions resulting from the 2 X 2 design found significant changes in the frequencies of equality-distributors and merit-distributors in three of the four conditions: Reasoned Merit, p = .001; Reasoned Equality, p = .001; Emotional Equality, p =.039. The Emotional Merit testimony did not lead to a significant change in resource distribution, p = .227. Chi-square tests indicated that changes in resource distribution differed across the two kinds of Fairness, $\chi^2(1) = 4.128$, p = .042, demonstrating a tendency for children to be more easily swayed into endorsing equality than into endorsing merit, while there was no difference across the two kinds of Appeal, $\chi^2(1) = 0.773$, p = .379. Overall, then, these results show that children's fairness preferences are malleable, and can be robustly influenced through very brief testimony – particularly in cases when equality is preached.

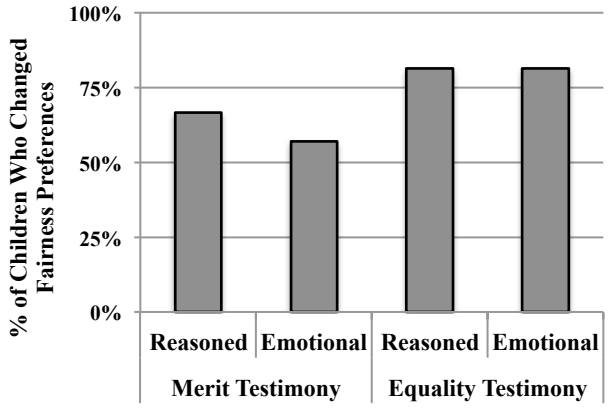

Figure 1: The percentage of participants in each condition who changed their patterns of resource distribution from the first distribution task (pre-test) to the second distribution task (post-test).

Justifications

Two naïve coders independently coded children's justifications for their resource divisions. Each justification was assigned a single code based on which of five predefined categories seemed most representative. The two coders demonstrated substantial agreement (Pre-test: κ = .752; Post-test: κ = .759). All disagreements were resolved through mutual discussion alongside the first author.

Overall, 59/68 (86.8%) of participants who changed their distribution patterns also changed the content of their justification for their distribution between pre-test and post-test. This held true for only 8/33 (24.2%) of participants whose distributions remained consistent between pre-test and post-test (see Tables 1 and 2). A chi-square test confirmed that participants who altered their distribution patterns from equality to merit or from merit to equality were much more likely to change the content of their justification from pre-test to post-test than participants whose distribution patterns remained constant, $\chi^2(1) = 38.892$, $p < .001$. The tendency for participants to change the content of their justifications did not differ across the two kinds of Fairness, $\chi^2(1) = 0.122$, p = .727, or across the two kinds of Appeal, $\chi^2(1) = 0.395$, p = .530.

Table 1: Frequencies of justification types between pre-test and post-test (split according to whether participants altered their pattern of resource distribution) for children provided with merit-based testimony.

Justification Type	Pre-Test Frequencies	Post-Test Frequencies	
		No Change	Change
Consideration of Outputs	7 (10.1%)	2 (7.4%)	21 (50.0%)
Consideration of Inputs	0 (0.0%)	1 (3.7%)	19 (45.2%)
Consideration of Welfare	19 (27.5%)	14 (51.9%)	0 (0.0%)
Consideration of Principles	37 (53.6%)	9 (33.3%)	2 (4.8%)
Other/ Uncodable	6 (8.7%)	1 (3.7%)	0 (0.0%)

Table 2: Frequencies of justification types between pre-test and post-test (split according to whether participants altered their pattern of resource distribution) for children provided with equality-based testimony.

Justification Type	Pre-Test Frequencies	Post-Test Frequencies	
		No Change	Change
Consideration of Outputs	29 (90.6%)	6 (100%)	5 (19.2%)
Consideration of Inputs	1 (3.1%)	0 (0.0%)	5 (19.2%)
Consideration of Welfare	0 (0.0%)	0 (0.0%)	8 (30.8%)
Consideration of Principles	0 (0.0%)	0 (0.0%)	8 (30.8%)
Other/ Uncodable	2 (6.3%)	0 (0.0%)	0 (0.0%)

Discussion

Overall, this research demonstrates that children's fairness preferences are susceptible to the influences of social communication. Pithy testimony led children to

rapidly shift their preferences for distributing resources according to principles of merit or equality. These findings indicate that shifts from favoring equality to favoring merit are not fully governed by cognitive maturation, but that these preference reversals can be enculturated. Both forms of reasoning may coexist in the minds of young children, and six- and seven-year-old children can flexibly shift their preferences for one or another based on the social inputs they receive – as long as these are provided through direct instruction and not through storybooks (Rottman, Young, Blake, & Kelemen, 2017). Contrary to the Piagetian beliefs that inspired much of the early work on children's resource distribution tendencies (e.g., Damon, 1977; Hook & Cook, 1979), children are not limited to thinking about fairness in a specific way as a result of stage-based constraints.

Shifts in children's fairness preferences were closely aligned with changes in their patterns of justifications, and the content of the justifications suggest that the changes in resource distribution were driven by changes in patterns of reasoning produced by the testimony. After being exposed to testimony advocating equality, participants' justifications very closely resembled the justifications provided by children who preferred equality at pre-test (primarily focusing on considerations of recipients' welfare and moral principles). After being exposed to testimony advocating merit, half of participants' justifications resembled the justifications provided by children who preferred merit at post-test (primarily focusing on considerations of outputs). Intriguingly, the other half of participants' justifications invoked considerations of inputs (e.g., ability, effort), which were conspicuously absent during pre-test. This suggests that, while six- and seven-year-olds do not tend to spontaneously justify merit-based distributions by appealing to differential inputs, interventions invoking these reasons seem to have a pronounced impact on children's decisions to allocate more resources to harder workers. More tentatively, it is possible that some children learned something new during the merit-based intervention, rather than switching their preferences to a latent form of fairness that was merely unexpressed at pre-test.

Despite research suggesting that emotional appeals (Haidt, 2001) or reasoned appeals to principles (Rottman, Young, & Kelemen, 2017) should be more effective in leading to moral change, participants were equally likely to alter their initial patterns of resource distribution across emotional and reasoned appeals. However, this research uncovered an effect of Fairness Type, such that testimony advocating for equality was more powerful than testimony advocating for merit. This imbalance may be explained by the finding that equality is a potent stable attractor in the moral domain (Baumard et al., 2012; Chernyak & Sobel, 2016; Shaw & Olson, 2012), thus holding greater sway on fairness preferences than appeals to merit.

There are several limitations to this study, which will be addressed in future research. First, although demand effects were substantially reduced by having two different experimenters providing testimony and administering the post-test measure, the potential suggestion that participants had done something wrong in the pre-test may have led some participants to distribute resources in the way they thought was expected. A follow-up study will present pre-recorded testimony that is less heavy-handed to reduce some of these potential demand effects. Future research will additionally reduce some of the discrepancies in the amount of transfer required between the storybooks in previous research (Rottman, Young, Blake, & Kelemen, 2017) and the testimony in the present research, which will allow for more direct comparisons of the effects of these different modalities of social communication.

Conclusion

Sondheim's Witch is correct in her plea for adults to be cautious of what they say, as children will heed their advice. The present research demonstrates that this is indeed true in the domain of fairness; children who were provided with brief testimony about the benefits of equality- or merit-based distribution readily changed the way they distributed prizes to third parties. It is therefore possible that children come to readily adopt fairness preferences – and perhaps eventually adopt economic ideologies resembling socialism or capitalism – by internalizing the testimony of adults. Data about whether and how exposure to particular messages during early childhood influence children's preferences will be an extremely important piece of knowledge to disseminate to parents, educators, and the general public, but it is crucial to continue conducting carefully controlled psychological research on this topic before policies and practices are developed.

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