

# **The Development of a Preference for Procedural Justice**

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## **Abstract**

Adults prefer fair processes, known as procedural justice, to equal outcomes, known as distributive justice. Adults and children are more likely to accept distributively unjust outcomes if the methods employed are procedurally just. The present study examines the extent of children's understanding of procedural justice by asking children to decide between just and unjust procedures that result in equivalent outcomes, as well as two just procedures that result in inequivalent outcomes. This paper also addresses whether children's preferences change when the outcome may benefit themselves. Results from children ages 4-8 years demonstrate that children robustly attend to and prefer procedural justice to distributive justice. However, young children are less likely to prefer methods that are procedurally just or that create distributively just outcomes when compared with a method that favors them. The findings are consistent with the account of fairness as a method by which to signal impartiality to others.

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## 1. Introduction

In January of 2015, a Yale University police officer mistakenly detained and held at gunpoint a Yale student, who the police stated “fit the description” of the suspect of a campus robbery. The student is the son of *New York Times* opinion columnist Charles Blow. In an article entitled, “Library, Then Held at Gunpoint,” Blow wrote about his son’s detainment. He stated, “Now, don’t get me wrong: If indeed my son matched the description of a suspect, I would have had no problem with him being questioned appropriately. School is his community, his home away from home, and he would have appreciated reasonable efforts to keep it safe. The stop is not the problem; the method of the stop is the problem.” Blow honed in on the unfair procedure as the culprit.

Throughout our lives, we regularly interact with authorities with the power to impact our daily experience: police, parents, teachers, admission committees, executive committees, supervisors. From the perspective of an authority, such as the police, work is more easily accomplished if individuals choose to comply with the authority, rather than to protest against it (Tyler, 2006). When do individuals choose to comply with the police or with any authority?

Many scholars have posited that individuals respond to authorities based on the outcomes they generate—a framework of distributive justice. According to this theory, individuals care about the equity or favorability of outcomes (Tyler, 2000). However, a robust body of legal psychology research indicates that individuals prefer to comply with those authorities that they consider to be *legitimate* (Tyler, 2006). This research demonstrates that legitimacy is best achieved not by threatening fearful punishments or by creating favorable outcomes, but by employing what Blow focuses upon: inherently fair procedures (Thibaut & Walker, 1975; Lind & Tyler, 1988; Tyler, 2006). This concept is known as *procedural justice*.

Understanding what individuals perceive as fair procedures can allow institutions to improve. In turn, institutions may heighten perceptions of their legitimacy and improve both attitudes towards those institutions and compliance with them (Tyler, Fagan & Geller, 2014).

Thus far, research regarding procedural justice has focused primarily on adult attitudes; how attitudes toward procedural justice develop is less well understood. For these reasons, examining the development of procedural justice in children is the focus of this work.

### *1.1 Procedural justice preference in adults*

Thibaut and Walker (1975) were the first to empirically study the psychology of procedural justice. Their work highlighted the importance of procedures as sources for conflict resolution. Through a series of experiments, they identified that individual satisfaction with outcomes is influenced by the individual's satisfaction with decision-making procedures. Thibaut and Walker's findings have been confirmed by numerous subsequent laboratory and field studies (Tyler & Lind, 1988; Tyler, 2000).

One striking illustration of the role of procedural justice is Tyler's 1987 survey of defendants in Chicago, Illinois traffic court. Since police officers may not appear at a traffic court hearing to explain the reason for a ticket, and judges often consider coming to court and missing work a sufficient punishment, defendants often have their case dismissed without a hearing. If defendants were attending only to the outcome, they should be happy with this result. However, Tyler found that defendants that did not have a hearing often left the court unhappy. Tyler contends that this result is best explained by a model of outcome satisfaction that is based on procedural fairness.

Psychologists have identified a number of factors that increase perceptions of procedural justice. These include a voice in the decision-making process; the degree to which authorities are considered ethical, impartial, honest, and motivated to be fair; opportunities for representation and for error correction; and quality of outcome (Tyler, Rasinski & Spodick, 1985; Lind & Tyler, 1988).

Perceptions of procedural justice make real world differences. Rasinski and Tyler (1986) found that citizens' judgments of whether U.S. presidential candidates would act procedurally

fair in office were significant predictors of voter choice. Sunshine and Tyler (2003) also demonstrated that the reactions of both white and minority citizens in New York to police officers, and citizens' willingness to cooperate with police officers, were influenced by the degree to which citizens considered the procedures of the police to be fair. Research has demonstrated that, when legal authorities are perceived to be procedurally fair, individuals respond not only with compliance, but also with voluntary deference to the decisions of those authorities (Tyler, 2006; Tyler & Huo, 2002).

### *1.2 Development of a distributive justice preference*

While literature addressing adult understanding of procedural justice is robust, little research has addressed why or how a preference for procedural justice emerges. The majority of research regarding children's understanding of fairness has focused on attitudes toward distributive justice. Below, the relevant existing research on distributive fairness in children is reviewed.

Research examining the development of children's perceptions of the fairness of outcomes is both diverse and abundant. Attentiveness to the fairness of outcomes emerges early in development, with children expecting equal resource distribution among third parties as young as infancy (Sloane, Baillargeon & Premack, 2012). Geraci and Surian (2011) have demonstrated that infants exhibit a significant preference for individuals who enact equal distributions. By 3-years of age, children direct a protagonist to distribute resources equally among third-parties, regardless of the relationship of the protagonist to the other parties, indicating knowledge that they should enact distributive justice (Olson & Spelke, 2008). This preference for equal outcomes is also known as *inequality aversion*.

Inequality aversion in the context of third-party distributions appears to be consistent with *disadvantageous inequality aversion* in a first-person context. Disadvantageous inequality aversion refers to a desire not to receive less than another (Fehr & Schmidt, 1999). Children

reject inequality in both contexts. For example, children ages 4-10 will reject unequal distributions on behalf of two third-parties, and when the child herself would be a disadvantaged recipient (Blake & McAuliffe, 2011; Sheskin, Boom & Wynn, 2014). Children will even choose to waste a resource by throwing the resource away, rather than choose to distribute a resource unequally (Shaw and Olson, 2012).

However, children do not display *advantageous inequality aversion* until ages 7-8. Advantageous inequality aversion refers to a preference not to receive more than another. For example, children younger than 8-years will accept unequal distributions when they are the advantaged party (Blake & McAuliffe, 2011). Children ages 3-4 will also actively distribute resources to themselves so that they are at an advantage (Fehr, Bernhard & Rockenbach, 2008). Young children will even take a cost in order to remain at a relative advantage (Sheskin, Bloom & Wynn, 2014). For example, children ages 5-6 prefer to give themselves seven tokens and a third-party receives zero tokens, rather than give eight tokens to both themselves and a third-party.

By 7-8 years children seem to have overcome what Sheskin, Bloom and Wynn (2014) refer to as “an initial social comparison preference for others to get less relative to oneself.” This is consistent with the findings that by 8-years of age children begin to reject both disadvantageous and advantageous unequal outcomes (Blake & McAuliffe, 2011). By ages 7-8, children will even choose to create an equal distribution between themselves and a third-party, rather than create an unequal distribution that advantages themselves (Fehr, Bernhard & Rockenbach, 2008).

Other factors can impact perceptions of the fairness of outcomes. Children are attentive to equality not only in reward quantity but also in reward quality (Sheskin et al., in press; Shaw & Olson, 2013). Furthermore, children ages 3-4 can take merit into account, and will distribute resources unequally when doing so is consistent with the effort of the recipients (Baumard, Mascaro & Chevallier, 2012).

Many researchers have contended that acting fairly is beneficial because it improves future reciprocity and generosity (Fehr, Bernhard & Rockenbach, 2008; Gintis et al., 2008). However, Shaw (2013) posits that fairness may be a consequence of a desire to appear impartial. The impartiality account predicts that individuals will treat others fairly, unless others will not know that they have been treated unfairly (Shaw & Olson, 2012). Recent work of Shaw and colleagues (2014) supports this hypothesis. Children were given a coin that they could flip in order to assign prizes of unequal quality to themselves and a third-party; crucially, only the child could view the result of the coin flip. Children assigned themselves the better toy at rates well above chance. The results demonstrated that children would behave unfairly as long as their unfairness would remain hidden from the experimenter.

The impartiality account also predicts that unequal outcomes can be considered fair if they are created using impartial methods (Shaw, 2013). As a result, this account has clear implications for the study of procedural justice, which is of significance to the current research. Thus, existing literature regarding procedural justice in children will now be discussed.

### *1.3 Development of a procedural justice preference*

The majority of research addressing procedural justice understanding in children has focused on its connection to legal socialization, the process by which children develop an understanding of and compliance with the law (Easton & Dennis, 1969; Fagan & Tyler, 2005). Cashman (1988) interviewed Australian children ages 11-17 to examine what factors influence their outcome satisfaction. She found that outcome satisfaction was related both to prior expectations about what the outcome would be and also to children's satisfaction with the degree to which they had a voice in the process, considered one aspect of procedural justice in adults (Tyler, Rasinski & Spodick, 1985). Hicks and Lawrence (1993) examined attitudes toward procedural justice in Australian high school students using hypothetical scenarios, which differed only in the harshness of the outcome that the juvenile in the scenario received. Similar



to Cashman, Hicks and Lawrence found that the outcome as well as the fairness of the procedure (for example, a voice in the procedure and an impartial judge) contributed to the students' satisfaction with the outcome. Their work suggests that adolescents share some adult-like attitudes toward procedural justice.

Gold and colleagues (1984) examined first- and fifth-graders' perceptions of procedural justice using hypothetical scenarios that varied in the degree to which fair procedures were followed. The authors found that children judged outcomes as less fair if certain aspects of a fair procedure were violated. For example, a mother's punishment of her child for breaking an item when she was not present in the room was judged to be less fair if the story indicated that an alternative culprit was possible, such as a pet.

Initial evidence suggests that understanding procedural justice development may also be important for preventing juvenile delinquency. For adolescents, involvement with deviant peer groups is a strong predictor of juvenile delinquency. In a 2007 study, Stuart and colleagues found that the degree to which adolescents judged their family as employing procedurally just methods in conflict resolution was related to their lack of involvement with deviant peer groups and peer conflict.

More recently, a few researchers have examined children's understanding of procedural justice distinct from its legal implications. In a study whose design is particularly relevant to the present research, researchers used either a fair or an unfair spinner to distribute stickers to triads of preschool-aged children (Grocke, Rossano and Tomasello, 2015). Experimenters placed either the fair or unfair spinner in the room, which children spun to determine how many stickers each student should receive, and left the room. Over the course of the experiment, researchers found that children were more likely to accept a distributively unfair outcome if a fair procedure (spinner) was used. Of note, researchers coded children's verbal reactions, which may have been shaped by their observation of the other (potentially disadvantaged) children's reactions to the outcomes.

In a study using a related design, Shaw and Olson (2014) asked for the judgments of children ages 5-8 as to whether an extra sticker should be distributed to two third-parties using a spinner, or whether the sticker should be thrown away. The relative partiality of the spinner varied across conditions. The alternatives were (1) both third-parties were represented equally on the spinner, (2) one third-party had greater representation on the spinner, and (3) one-third party represented the entire spinner.

Shaw and Olson found that children of all ages preferred spinning an impartial wheel, which resulted in a distributively unjust outcome, to throwing the resource away. The older children preferred throwing the resource away over spinning a biased wheel. This suggests that children ages 7-8 are sensitive to procedural justice. However, the younger group of children in their experiment performed at chance when choosing between the biased wheel and throwing the resource away. Similarly, young children performed at chance in their control condition. Several explanations are possible: (1) young children do not attend to procedural justice, (2) young children do not distinguish between the partiality of various procedures, (3) young children consider all procedures to be impartial and throwing the sticker away to be a lack of any procedure, or (4) young children may not have fully comprehended the experiment, perhaps because they failed to understand the randomness of a spinner (Metz, 1998; Piaget & Inhelder, 1975; Kuzmak & Gelman, 1986).

#### *1.4 Present study*

The current study examined the extent of children's attention to procedural justice using resource allocation tasks. Specifically, this research had four goals. First, the study attempted to replicate the previous finding that children would prefer to create distributive injustice among two third-parties if the method was procedurally fair, rather than throw the resource away, by using a different procedure from the previous Shaw and Olson study. Second, the study addressed whether children prefer a procedurally just method to a procedurally unjust method

when the outcomes are identical. Third, given previous research demonstrating that children make social comparisons when determining how to distribute resources between themselves and a third-party, the research examined whether children's preferences would change when they had a stake in the outcome. Fourth, children ages 4-10 were included in order to determine if a developmental trend emerged, similar to what is observed regarding children's preferences for distributive justice.

There were three hypotheses: (1) Among two fair procedures, children of all ages will prefer to conserve a resource even though it results in distributive unfairness, as previously demonstrated by Shaw and Olson (2014). (2) When children do not have a stake in the outcome, children of all ages will prefer the fair procedure to the unfair procedure, even when both procedures result in distributively unfair outcomes. (3) When children do have a stake in the outcome, the younger children will prefer an unfair procedure that advantages them to a fair procedure that does not.

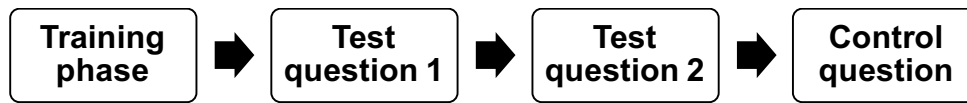
## **2. Method**

### *2.1 Participants*

One hundred and twelve students ages 4 to 10 ( $M_{\text{age}} = 80.7$  months;  $SD_{\text{age}} = 14.06$  months; 59 girls) attending preschool through second grade completed the study. These included five 4-year-olds, twenty-five 5-year-olds, thirty-eight 6-year-olds, twenty-two 7 year-olds, twenty 8-year-olds, and one 10-year-old. Participants were recruited from private religious schools in the Northeast area of Pennsylvania and were predominantly white. Four participants were excluded from the final analysis (two due to missing data, one due to incompleteness of the experiment, and one for falling outside of the relevant age range of 4-8 years), leading to a final sample of one hundred and eight.

## 2.2 Design and procedure

All participants were tested individually during the school day in rooms located proximate to school classrooms. Each participant took approximately 5 minutes to complete the study. The study employed a 2 (within-subject: first vs. third person) X 2 (partial within/between-subject: give vs. throw away resource) mixed design. Each child answered two of the four test questions preceded by an additional training phase at the start and followed by a standard control question at the end, as shown in Figure 1.



**Fig. 1.** Progression of the experiment for each participant.

Similar to Grocke and colleagues (2015), a training phase was employed in order to give children familiarity with the fair procedure and the unpredictability of its outcome, absent the choice of how to allocate resources. The fair procedure was to flip a coin-like object that was red on one side and blue on the other, hereafter referred to as the coin.

Test and control scenarios were adapted from Shaw and Olson (2014) and were resource allocation tasks in which children were asked what to do with an extra resource. Children were presented with two options and answers were forced choice. Consistent with previous research, stickers were used as the resource. To ensure that the children were interested in the sticker, each child was asked to choose her favorite kind of sticker from among five options. The chosen type of sticker was selected from the other stickers and used throughout the remainder of the experiment. Children were allowed to keep any stickers that they earned during the experiment.

Across all test questions, there were two recipients of the allocation; the identities of the recipients varied across questions. The two recipients were either two third-parties unknown the participant (third-person scenario), or one unknown third-party and the participant herself

(first-person scenario). The pairs of choices presented to children regarding how to allocate the resource also varied. One option always available to participants was to flip the coin (procedurally just but distributively unjust) to determine who received the resource. The second option was either to throw the extra resource away (procedurally and distributively just), or to give the extra resource to a recipient specified by the experimenter (procedurally and distributively unjust). The four test questions are depicted in Table 1.

**Table 1.** The four possible test questions.

Test question		
Person	Flip coin or give away resource	Flip coin or throw away resource
1 <sup>st</sup>	Flip or give to self (1-flip-or-give)	Flip or throw away (1-flip-or-throw)
3 <sup>rd</sup>	Flip or give to third party (3-flip-or-give)	Flip or throw away (3-flip-or-throw)

A within-subjects design was used for type of scenario (first- or third-person), in order to avoid pragmatic oddity related to distributing resources to oneself twice. A partial within/between-subjects design was used for question type, such that participants answered two of the four possible questions, which could be of the same or a different question type. This resulted in eight possible orderings. Each participant was randomly assigned to one of the eight.

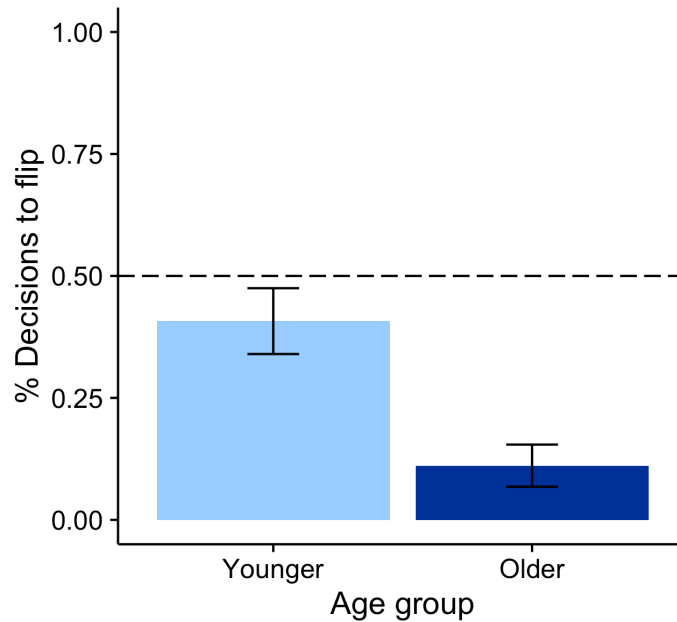
The last task was always the control condition, and was consistent across participants. It was presented last in order to assure that it did not impact test question results. In the control condition, one recipient had more resources at the outset than the other recipient (two compared to one). Children had a choice between giving a resource to a disadvantaged third-party, and flipping a coin to determine whether the advantaged or disadvantaged third-party would receive the resource. Here, flipping the coin could be viewed as partial, since recipients no longer had an equal amount of resources (Shaw & Olson, 2014). Consequently, it was predicted that if children were concerned with justice, children in the control condition should choose to

give the sticker to the disadvantaged party in the control condition rather than flipping the coin, which could produce even larger distributive unfairness.

### 3. Results

#### 3.1 Control condition

A Fisher's exact test revealed no significant main effect of gender on responses ( $p = .125$  with odds ratio 2.076). Consequently, results from the control condition were collapsed across gender. For purposes of analysis, participants were divided at the median into a younger age group ( $M_{\text{age}} = 69.6$  months;  $SD_{\text{age}} = 7.27$  months; 29 girls) and an older age group ( $M_{\text{age}} = 91.3$  months;  $SD_{\text{age}} = 7.64$  months; 29 girls). In the control condition, a t-test revealed showed significantly different responses between age groups, with 88.9% of the older age group choosing to give a resource to the disadvantaged party rather than flip the coin compared to 59.3% of the younger age group ( $p < 0.001$ ), as depicted in Figure 2. A binomial test revealed that the responses of the older age group significantly differed from chance ( $p < .001$ ), while the responses of the younger age group did not ( $p = 0.220$ ).

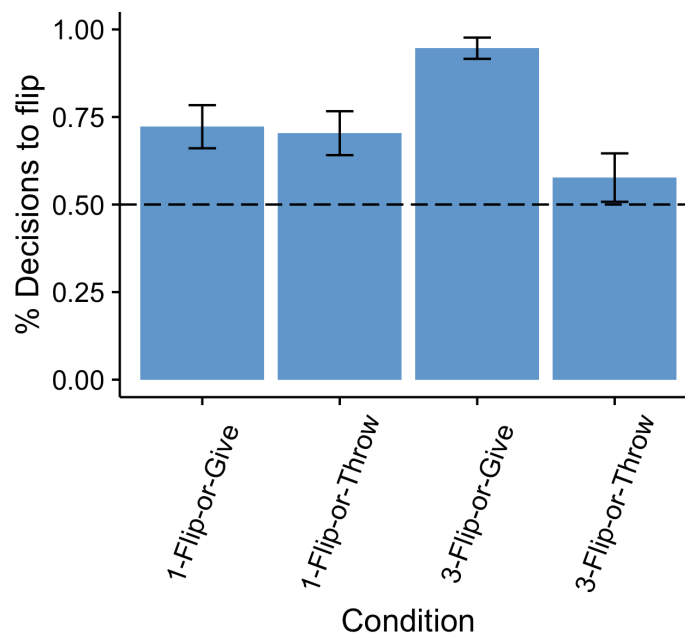


**Fig. 2.** Control condition responses by age group

### 3.2 Overall trends

A two-sided Fisher's exact test did not reveal a significant main effect of gender ( $p = .878$  with odds ratio 0.948) across the four conditions. Results were collapsed across gender. Two-sided Fisher's exact tests did reveal a significant main effect of the question type (flip-or-throw vs. flip-or-give), such that children were more likely to flip the coin in the flip-or-throw condition than in the flip-or-give condition ( $p = .001$  with odds ratio 2.842), but no main effect of the person (first vs. third) on children's responses responses ( $p = .438$  with odds ratio 1.335).

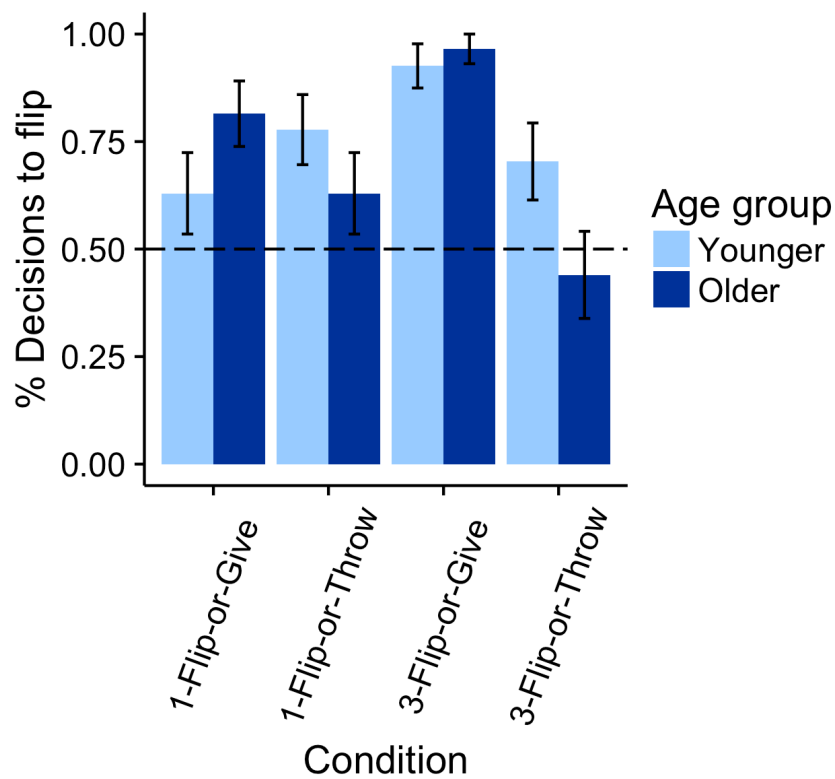
A two-sided binomial test reveals that children in both flip-or-give conditions preferred to flip the coin rather than to give the resource away to themselves or a third-party immediately (1-flip-or-give:  $p = .001$ ; 3-flip-or-give:  $p < .001$ ). Similarly, children in the 1-flip-or-throw condition preferred to flip the coin rather than to throw it away ( $p = .004$ ). By contrast, when children could not benefit or be harmed by the outcome, children in the 3-flip-or-throw condition did not demonstrate a preference between flipping the coin and throwing the resource away ( $p = .332$ ). These results are clearly demonstrated in Figure 3 below.



**Fig. 3.** Test condition responses for all ages.

### 3.3 Age trends

A two-sided Fisher's exact test did not reveal a significant main effect of gender on responses for either age group (younger:  $p = .378$  with odds ratio 1.518; older:  $p = .291$  with odds ratio 0.625). Therefore, results were collapsed across gender. Differences were observed based on age in several conditions. These differences can be observed in Figure 4 and are explained in more detail below.



**Fig. 4.** Test condition responses by age group.

In the 3-flip-or-give condition, children of all ages demonstrated a significant preference to flip the coin rather than to give the resource to a third-party (both age groups:  $p < .001$ ). In the 1-flip-or-give condition, binomial tests revealed that children in the older age group continued to show a significant preference to flip the coin rather than to take the resource for



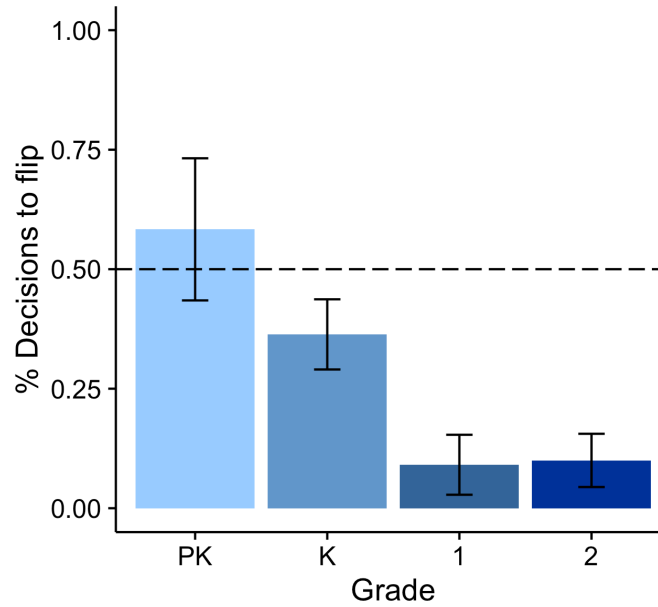
themselves ( $p = .002$ ). By contrast, younger children faced with the same choice were more likely to take the resource for themselves, and no longer demonstrated a significant preference between flipping the coin and taking the resource ( $p = .248$ ).

In the 3-flip-or-throw condition, children in both age groups did not demonstrate a significant preference between flipping the coin and throwing the resource away, though younger children trended toward flipping the coin (younger:  $p = .052$ ; older:  $p = .690$ ). When the children were potential recipients of the resource in the 1-flip-or-throw condition, two-sided binomial tests revealed that children in the older age group still performed at chance among the two conditions ( $p = .248$ ). However, children in the younger age group were more likely to flip the coin than to throw the resource away ( $p = .006$ ).

Between conditions, pairwise t-tests demonstrated that children in the older age group were significantly more likely to flip the coin in the 3-flip-or-give condition than in either of the flip-or-throw conditions (1-flip or throw:  $p = .011$ ; 3-flip-or-throw:  $p < .001$ ). A pairwise t-test showed that children in the older age group were also significantly more likely to flip the coin in the 1-flip-or-give condition than in the 3-flip-or-throw condition ( $p = .007$ ). There were no significant differences between conditions for the younger age group.

### 3.4 Analysis by grade

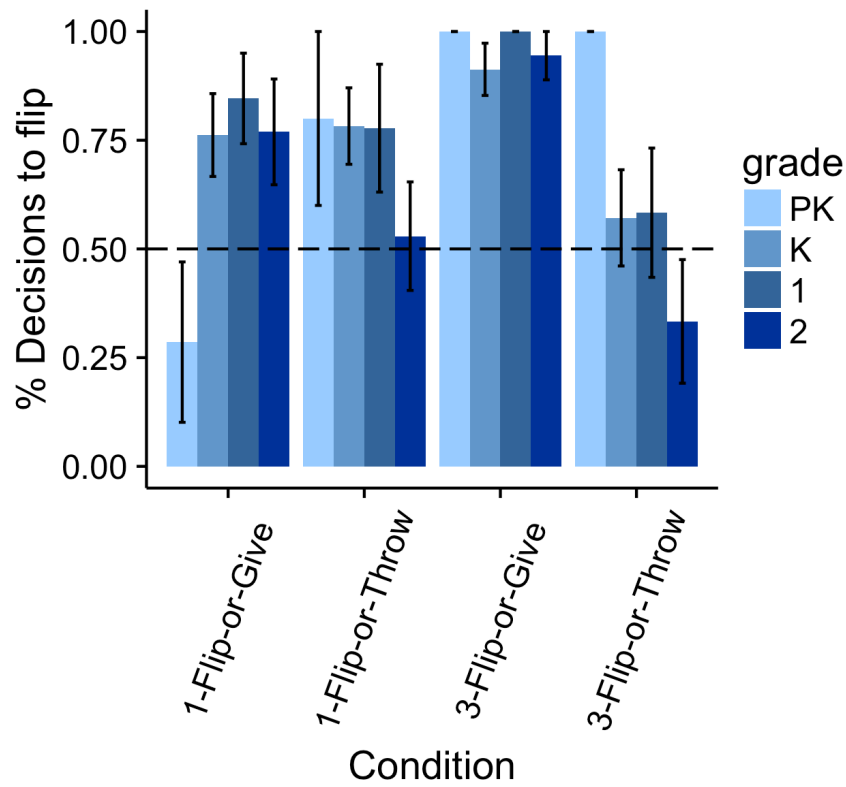
The data can also be analyzed by grade. This analysis is included here given its relevance to the legal socialization literature. The tests are of lower power but result in the same primary conclusions. In the control condition, two-sided binomial tests revealed that first- and second-graders preferred to create an equal outcome by giving the resource to the disadvantaged party (both grades:  $p < .001$ ), while preschoolers and kindergarteners did not significantly differ from chance in their choices (preschool:  $p = .774$ ; kindergarten:  $p = .096$ ). Figure 5 depicts this trend.



**Fig. 5.** Control condition responses by grade.

Moreover, in test condition 3-flip-or-give, children of all ages preferred to flip the coin (kindergarten, first and second grade:  $p < .001$ ; preschool:  $p = .063$ —though all 5 participants chose to flip, power was low). The principal distinction in this analysis can be observed in the younger age group. These differences are depicted in Figure 6 and described in detail below.

In condition 1-flip-or-give, preschoolers performed at chance between choosing to flip the coin and to give the resource to oneself ( $p = .453$ ), as did second graders ( $p = .092$ ). However, kindergarteners ( $p = .027$ ), and first graders ( $p = .022$ ) significantly preferred to flip the coin. In condition 3-flip-or-throw, children in nearly all grades did not significantly differ from chance in choosing between flipping the coin and throwing the resource away (kindergarten:  $p = .664$ ; first grade:  $p = .774$ ; second grade:  $p = .388$ ). The exception were preschoolers, who were more likely to choose to flip the coin ( $p = .016$ ). Similarly, in condition 1-flip-or-throw, children in nearly all grades performed at chance (preschool:  $p = .375$ ; first grade:  $p = .180$ ; second grade:  $p = 1$ ), with the exception of kindergarteners who were significantly more likely to choose to flip the coin ( $p = .011$ ).



**Fig. 6.** Test condition responses by grade.

### 3.5 Summary of results

Children of all ages significantly preferred to use a fair procedure (flipping a coin) rather than to give a resource away without employing a fair procedure in condition 3-flip-or-give, even though both options resulted in distributively unfair outcomes. When choosing between two fair procedures in the 3-flip-or-throw condition, one of which results in a distributively fair outcome (throwing the resource away) and one of which results in a distributively unfair outcome (flipping the coin), children did not demonstrate a significant preference between the two. Regardless of whether they were recipients of the resources, older children demonstrated consistent preferences. By contrast, when younger children had the potential to benefit from the outcome in condition 1-flip-or-give they performed at chance between flipping the coin and

taking the resource for themselves. In condition 1-flip-or-throw, younger children with a stake in the outcome additionally demonstrated a significant preference for flipping the coin to throwing the resource away. The results of the younger children must be interpreted with caution, since they performed at chance in the control condition.

## **4. Discussion**

### *4.1 General discussion*

The results of this study suggest that children of all ages attend to procedural justice more than to distributive justice, as predicted and demonstrated through the 3-flip-or-give condition. Consistent with what was predicted and with previous distributive fairness research, when younger children were faced with an opportunity to advantage themselves in the 1-flip-or-give condition, they no longer demonstrated a significant preference for either procedural or distributive fairness. However, inconsistent with prior research of Shaw and Olson (2014) and with predictions, in the 3-flip-or-throw condition children did not demonstrate a significant preference for either of the procedurally just methods, despite the different outcomes the methods produced. Nevertheless, the lack of a preference between these two procedurally just methods is consistent with a preference for procedural justice over distributive justice, which differed between flipping the coin and throwing the resource away.

Additionally, younger children in the 1-flip-or-throw condition demonstrated a significant preference for flipping the coin over throwing the resource away. This finding is consistent both with the Shaw and Olson (2014) result in the third-party condition, and with the explanation that the younger children prefer the chance to receive the resource rather than to assure the distributive fairness of the outcome. However, given the younger age group's chance performance in the control condition, all findings relating to the younger age group must be viewed with some caution. It is possible that children in the younger age group preferred flipping the coin not due to concerns about procedural fairness, but because they enjoyed

flipping the coin.

The results of this research are consistent with the impartiality account of fairness (Shaw & Olson, 2012; Shaw, 2013; Shaw & Olson, 2014). According to the impartiality account, distributive unfairness is only truly unfair if it is a result of a form of partiality. Children robustly chose an impartial method in the 3-flip-or-give condition, flipping a coin, instead of giving an extra resource to a third-party directly, though both methods resulted in distributive unfairness. Even when children could have given the resource to themselves in the 1-flip-or-give condition, neither age group ever demonstrated a preference for the partial procedure. Children made these choices despite the fact that both methods in both scenarios resulted in distributively unfair outcomes and had no immediate negative effect on the participant. Notably, giving the resource directly to a participant was never justified with an appeal to need or merit, which participants might think would justify an unequal distribution (Baumard, Mascaro & Chevallier, 2012). Additionally, giving the resource directly to a participant was never justified with an explicitly partial explanation (e.g. or you can give the sticker to Dan because I like Dan more). The primary difference among the options seems to be the appearance of partiality suggested by the lack of an impartial procedure.

This study did not replicate Shaw and Olson's (2014) finding that children preferred to use a fair procedure (a spinner) to throwing a resource away. Instead, it was found that children performed at chance between these two options in the 3-flip-or-throw condition. While this result was unanticipated, there are a few possible explanations. First, children's understanding of the randomness of, or the control one has over, coins may differ from their understanding of spinners. Second, the background of the participating children could explain observed differences. While data on socioeconomic status was not collected for this study, nor did Shaw and Olson report on the socioeconomic status of their participants, participants in this study attended private schools. It is possible that the participants of this study were of higher socioeconomic status than Shaw and Olson's participants, and were consequently less averse to

wasting a resource than participants of lower socioeconomic status. As one child volunteered, her own mother might resolve a dispute between her brother and herself over a resource by throwing it away.

#### *4.2 Limitations*

One limitation of this work was that all participants were students in private schools, and the majority of students were white. Previous work has made clear that such factors can impact results, and researchers must be careful about the extent to which they generalize results based on these populations (Henrich, Heine & Norenzayan, 2010). It is also unclear to what extent, if any, the religious education of the participants shaped their responses.

It is possible that placing the control condition last unduly impacted the results of the question. Children may have begun choosing to give the sticker to a participant rather than flipping the coin to decide who received it because they lost interest in flipping the coin on this third question; however, the timing seems unlikely. A related possibility is that children were familiar by this point with how the resources were typically distributed among participants (two for each participant, received one by one in alternation), and may have chosen to give the resource to the disadvantaged participant in order to complete the perceived pattern. Future research would need to be conducted with a larger sample size in order to conclusively confirm that order had no effect on control condition results.

#### *4.3 Future directions*

Of note is that children were asked what *should* we do rather than what do you *want* to do. This has proven to be a meaningful distinction for children in other contexts (Smith, Blake & Harris, 2013; Sheskin et al., in press). The use of *should* was useful for this context, as this research sought to examine children's emerging understanding of justice and how children employ justice-related principles. However, future research could examine what effect this

wording has on children's valuation of procedural justice.

Much research still needs to be conducted regarding the development of procedural justice. In order to understand the degree to which procedural justice is a cultural production or has an innate basis, attendance to the fairness of procedures must be examined more fully in other cultures, in infants, and in other species. Anecdotal evidence from this study also indicates that comparing children with and without siblings may illuminate the role of learning in attitudes towards procedural justice. This would expand upon initial findings of Fehr, Bernhard and Rockenbach (2008) that the "mere existence of siblings or birth order may have an important role in determining altruistic behaviours."

Given the potential role of the appearance of impartiality in guiding judgments, and the competing account of fairness as promoting generosity and reciprocity, future research might remove the experimenter from children's eyesight as in Grocke, Rossano and Tomasello (2015). It might also vary how well children know the recipients of the allocation, whether the recipients will learn of the participant's allocations, and whether the participant and the recipients of the allocation will cooperate in the future. Additionally, the current study examined children's attitudes toward procedural justice when in an arbitrator's role—that is, they were given the choice of what method to use. Future research could examine children's perceptions of others who employ fair or unfair methods that result in equal or unequal outcomes.

Finally, understanding procedural justice is useful given its relationship with compliance with the law. Previous research by Stuart and colleagues (2007) has suggested that juveniles who are not treated in a procedurally just way by their parents are more likely to become juvenile delinquents. The effect is correlational; however, we must address any avenue that could prevent adolescents from entering the criminal justice system. Future research could examine the causality of that link.

#### *4.4 Concluding remarks*

In a time in which the legitimacy of many authorities is being called into question, it is necessary to strive toward creating better, more just systems of authority. This begins with understanding what the public thinks makes those systems just and how that understanding emerges. This study added to the emerging field of research examining children's developing understanding of procedural fairness. The results demonstrate that children have a robust preference for procedural justice over distributive justice. However, there is much work yet to be conducting regarding the development of procedural justice as well as the process of legal socialization. It is important that developmental justice research consider in earnest attitudes not only toward distributive justice but also toward procedural justice.

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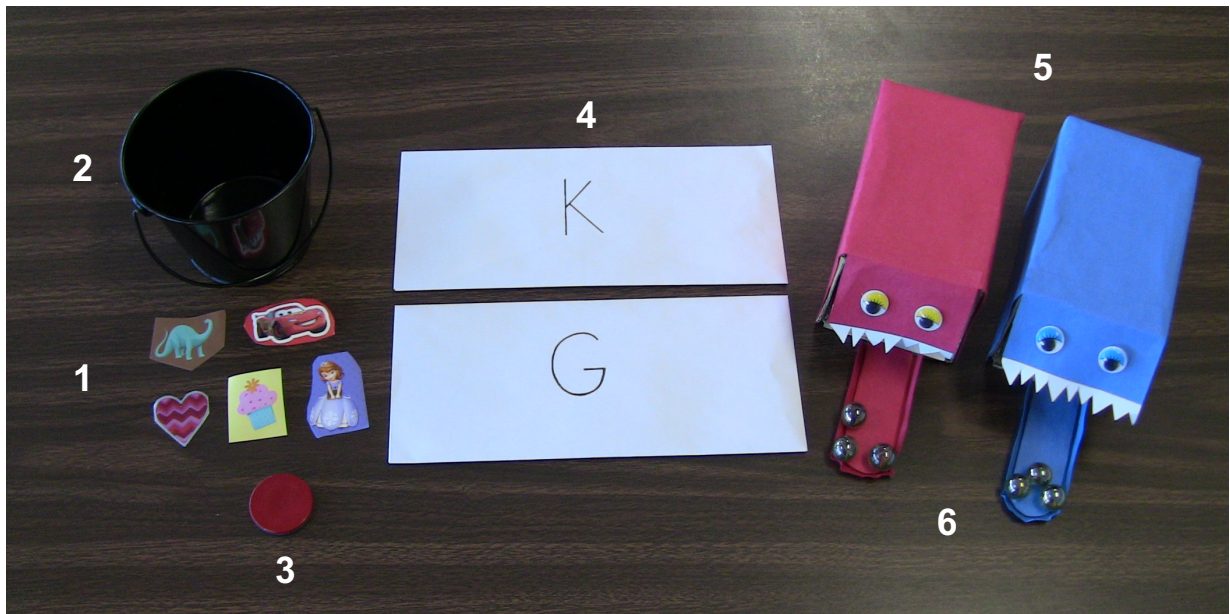
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## Appendix A - Materials



**Fig. 7.** The image above depicts the materials used in this study.

- (1) Depicts the types of stickers from which participants chose, which served as the resource throughout the remainder of the experiment.
- (2) Shows the trash used if the child chose to throw a resource away.
- (3) Shows the coin, with the red side facing up.
- (4) Shows two examples of the envelopes used to represent the recipients of the students' allocations. All other envelopes used were identical with the exception of the letter on the front.
- (5) Shows the “paper monsters” employed in the training phase.
- (6) Shows the marbles with which the children were asked to “feed” the “monsters” during the training phase.

## Appendix B - Vignettes

### 1. Training phase

“We’re going to play a game. Before we start the game, I need help feeding some monsters. Can you help me do that? To feed the monsters we’re going to use this [coin]. There’s a different color on each side. If I throw this in the air, can you tell before it hits the table what color it’s going to land on? Now we’re going to feed the monsters. I’m going to throw this in the air. If it lands on this side [show red side of coin] can you feed the red monster, and if it lands on this side [show blue side of coin] can you feed the blue monster? [Give participant 6 pieces of “food.” Flip coin 6X and allow child to give out food, pointing out and correcting mistakes]. Thanks! When I threw this in the air, did you know before it hit the table what color this was going to land on?”

### 2. Test questions

“Now we’re going to play the game. I’m going to ask you some questions—there are no right or wrong answers, I just want to know what you think!”

#### First person

Conditions: 1-flip-or-give / 1-flip-or-throw

The gender of the third party recipient was always matched to that of the participant, so that the third-party for male participants was Tom, and Anne for female participants.

“[Two envelopes, one blank and one with the letter T/A on it, are placed facing children.] You and another student did a great job helping me, so I want to give you both stickers as a reward. I have five stickers. I have one for Tom/Anne, and one for you. One for Tom/Anne, and one for you. [One sticker is placed on Tom/Anne’s or the participant’s corresponding envelope during each use of “one for.”] Uh oh! I have one left over. What should we do? We can either flip the coin and if it lands on red we’ll give it to Tom/Anne and if it lands on blue we’ll give it to you, or I can give the sticker to you/throw the sticker away and no one will get it. What should we do?”

#### Third person

Conditions: 3-flip-or-give / 3-flip-or-throw)

“[Two envelopes, one with the letter M and one with the letter D on it, are placed facing children]. Earlier today, two kids from another school named Mark and Dan did a great job cleaning up their rooms, and I want to give them stickers as a reward. I have five stickers. I have one for Mark, and one for Dan. One for Mark, and one for Dan. [One sticker is placed on Mark’s or Dan’s corresponding envelope during each use of “one for.”] Uh oh! I have one left over. What should we do? We can either flip the coin and if it lands on red we’ll give it to Mark and if it lands on blue we’ll give it to Dan, or I can give the sticker to Dan/throw the sticker away and no one will get it. What should we do?”

### *3. Control question*

“I just have a few more questions. Okay? [Two envelopes, one with the letter K and one with the letter G, are placed facing children]. Earlier today, two kids from another school named Kate and Grace did a great job doing their homework, and I want to give them stickers as a prize. I have four stickers. I have one for Kate, and one for Grace. One for Kate. [One sticker is placed on Kate or Grace’s corresponding envelope during each use of “one for.”] Uh oh! I have one left over. What should we do? We can either flip the coin and if it lands on red we’ll give it to Kate and if it lands on blue we’ll give it to Grace, or I can give the sticker to Grace. What should we do?”