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Children's Recognition of Fairness and Others' Welfare in a Resource Allocation Task: Age Related Changes

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Abstract

The present study investigated age-related changes regarding children's (N = 136) conceptions of fairness and others' welfare in a merit-based resource allocation paradigm. To test whether children at 3- to 5-years-old and 6- to 8-years-old took others' welfare into account when dividing resources, in addition to merit and equality concerns, children were asked to allocate, judge, and reason about allocations of necessary (needed to avoid harm) and luxury (enjoyable to have) resources to a hardworking and a lazy character. While 3- to 5-year-olds did not differentiate between distributing luxury and necessary resources, 6- to 8-year-olds allocated luxury resources more meritoriously than necessary resources. Further, children based their allocations of necessary resources on concerns for others' welfare, rather than merit, even when one character was described as working harder. The findings revealed that, with age, children incorporated the concerns for others' welfare and merit into their conceptions of fairness in a resource allocation context, and prioritized these concerns differently depending on whether they were allocating luxury or necessary resources. Further, with age, children weighed multiple moral concerns including equality, merit, and others' welfare, when determining the fair allocation of resources.

Keywords

Moral judgment; fairness; resource allocation; resource type; others' welfare

Over the past decade, research on resource allocation decisions in childhood has focused on the origins of children's use of equality and merit as allocation strategies, with recent findings revealing that children as young as 3- to 5-years of age are concerned with both merit and equality (Almås, Cappelen, Sørensen, & Tungodden, 2010; Baumard, Mascaro, & Chevallier, 2012; Fehr, Bernhard, & Rockenbach, 2008; Hamann, Bender, & Tomasello, 2014; Kanngiesser & Warneken, 2012). Research on resource allocation decisions in childhood has a long history in developmental science, dating back to Piaget's (1932) and Damon's (1977) research on distributive justice, which established that children demonstrate a concern for fairness, independent of authority influence, when evaluating peer-based stories about dividing up resources among peer groups (Damon, 1977; McGillicuddy-De Lisi, Daly, & Neal, 2006; Sigelman & Waitzman, 1991). These early studies, however, found

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that young children, 3- to 5-years-old, often focused on non-moral considerations (e.g., "Because I want it"), and not until age 6- to 8-years-old did children focus on equality and merit when allocating resources. Accordingly, the predominant focus of resource allocation research over the past decade has been determining the contexts in which young children (ages 3- to 5-years-old) are capable of using equality or merit-based allocation strategies.

This important focus on the origins of resource allocation in early childhood has resulted in relatively less attention to age-related changes past age 5 years, or to children's consideration of other moral criteria in addition to merit or equality, such as others' welfare, when making resource allocation decisions (for exceptions see Blake & McAuliffe, 2011; Olson et al., 2011). In some contexts, for example, the denial of resources results not only in unfair treatment or inequality but also in negative consequences to others' welfare. This can occur when the denial of resources results in a lack of access to commodities that are needed to develop or stay healthy. Given that children care about others' welfare from an early age (Jambon & Smetana, 2014; Killen & Rutland, 2011; Smetana et al., 2014), one aim of the present study was to investigate children's conceptions of fair resource allocation in a context where a lack of resources would result in negative consequences (harm) to the recipient who is denied resources.

Research on moral development has revealed that children explain moral transgressions such as the infliction of pain on another (e.g., hitting) as wrong because of the concern for others' welfare from a very early age. In fact, concern for the welfare of others is one of the first moral considerations that children readily understand, reason about, and apply (Smetana, Rote, Jambon, Tasopoulos-Chan, Vilalobos, & Comer, 2012). Surprisingly, however, few studies on resource allocation in childhood have focused on this aspect of how children evaluate the distribution of resources.

This may have to do, in part, with the types of resources that are typically used in resource allocation tasks. Most research with young children involves asking participants to allocate resources that are "luxuries," that is, resources that are nice to have but not harmful if absent (e.g., stickers, candy, small toys). While these types of resources are salient and desirable for young children, this focus on one type of resource may result in a limited portrayal of children's capacity to reason about different moral concerns, such as others' welfare, when distributing resources. That is, focusing exclusively on luxury resources may alter the priority given to equality or merit in allocation contexts, but provides little opportunity for consideration of others' welfare. Use of "luxury" resources alone may not allow for investigation of the full range of moral concerns that children bring to bear when considering the obligation to distribute fairly. Further "luxury" resources may be less related to the more dire consequences of unfair allocation that begin to appear in adolescence and adulthood when issues of livelihood and healthy well-being become relevant for resource allocation.

In the current study, we tested this question directly by investigating whether children reason about others' welfare (concerns for avoiding harm) when making decisions about the allocation of resources that are necessary for healthy development. We also tested whether children reason about other moral concerns, including merit and equality, when making

decisions about the allocation of resources that are enjoyable, but not necessary for healthy development. Thus, distinct from previous research in this area, the current study contrasted children's decisions about two types of resources: those that are needed to avoid harm, and those that are enjoyable but not necessary.

Previous research focus on children's allocation of luxury resources, in contrast to resources that are explicitly essential for healthy development, such as medicine, may be due, in part, to the expectation that children desire luxury more than necessary resources (e.g., candy is more desirable than medicine). Personal desire for a resource may provide a better motivation for children to care about how resources are being divided when asked to make allocation decisions. Further, past research has successfully documented children's application of fairness principles using these highly engaging resources. For example, Baumard et al. (2012) has shown that young children view distributing cookies to a hard-working child as more fair and meritorious than to a lazy child when the effort was related to the creation of the resource (e.g., baking cookies). Yet, this primary focus on luxury resources, to the exclusion of other types of resources that children encounter every day, likely underestimates the breadth of children's moral considerations in resource allocation contexts. In order to address this issue, we measured how children take different moral considerations into account when allocating "necessary", as opposed to "luxury" resources.

In addition, most developmental research has focused on either behavioral allocation of resources or reasoning about hypothetical vignettes, rather than using a method that includes behavioral allocations, judgments, and reasoning in the same context. A multi-method approach is needed in order to determine how children spontaneously allocate resources to others as well as how they reflect on various moral considerations relevant to the decisions. Reasoning data, for example, provide information about children' motivations and intentions, including whether they are weighing multiple considerations when making behavioral allocation decisions. Further, different views have been proposed regarding the relation between judgment and behavior (for a review, see Killen & Smetana, 2015). Thus, the present study utilized a multi-method approach in order to more fully compare children's behavior, judgments, and reasoning, with the goal of drawing conclusions regarding the role of resource type on children's consideration of others' welfare in an allocation paradigm.

Further, while some studies have shown that young children will allocate more resources to an individual based on merit, other studies have shown that children prefer equal allocations when given the opportunity (i.e., when they have an even number of items to distribute) (Baumard et al., 2012). Thus, more research is needed in order to understand children's use of merit in a resource allocation paradigm where enacting an equal allocation is possible and when meritorious allocations do not benefit the self. Demonstrating that children allocate resources meritoriously in third-party contexts where equal allocations are possible provides support for the argument that children actively prefer to allocate more to a meritorious recipient, and are not just allocating meritoriously because equality is not an option, or because they would benefit from such an allocation.

Thus, the present study was designed to systematically analyze how children allocate, evaluate, and reason about the distribution of necessary and luxury resources in a context

where recipients' relative merit was also a concern. In this context, children had to weigh three moral concerns: the concern for equality between the recipients, recipients' relative merit in a task requiring effort, and the necessity of the resource for the welfare of the recipients. We examined the extent to which children flexibly weigh the moral claims of equality, merit, and others' welfare when allocating resources. Specifically, we examined age-related changes in children's consideration of these two moral concerns. The age range of 3- to 8-years-old was chosen based on research demonstrating developmental changes in children's conceptions of fairness throughout childhood. The age groups of 3- to 5-years-old and 6- to 8-years-old were chosen based on research demonstrating the early emergence of merit understanding in 3- to 5-year-olds (Baumard et al., 2012; Hamann et al., 2013; Kanngiesser & Warneken, 2012), and later developing ability to weigh multiple concerns for fairness in 6- to 8-year-old (Damon, 1977; Sigelman & Waitzman, 1991).

Further, these age groupings were chosen because past research has typically examined children's conceptions of fairness within each of these age groups separately, whereas only a few studies have directly compared the two. While young children refer to concerns for others' welfare regarding acts of harm, it is an open question whether they will apply this form of reasoning to decisions regarding the allocation of resources, which requires coordinating competing considerations of merit and others' welfare. Thus, we focused on age-related changes regarding the consideration of merit and others' welfare concerns in a resource allocation task.

Present Experiment

To accomplish these goals, a resource allocation task was administered to all participants in which a vignette was described involving one character who worked hard and another character who was lazy. The resource to be allocated was either described as "luxury" or "necessary" (between-subjects). Children then: 1) allocated six novel resources between these two characters; 2) reasoned about their own allocation; 3) judged others' allocation strategies (merit and equality) for allocating the six resources; and 4) reasoned about their judgments of others' allocations.

Based on research indicating that children view ensuring others' welfare as a moral concern from early in development (Smetana et al., 2012), children's concern for merit develops throughout childhood (Damon, 1977; Sigleman & Waitzman, 1991), and that children's ability to coordinate multiple moral concerns, including others' welfare, in their moral judgments increases with age (Jambon & Smetana, 2014), we hypothesized that younger children would not differentiate between resource types (luxury versus necessary), but that, with age, children would allocate luxury resources more meritoriously than necessary resources. We expected this distinction for the older children due to their greater ability to coordinate the concern for the harm that would result from allocating necessary resources unequally with their fairness judgments about merit and equality. Further, we hypothesized that, with age, children would allocate more luxury resources to the hardworking recipient, even when they could divide resources equally.

Relatedly, we also hypothesized that, with age, children would have more positive judgments of meritorious allocations for luxury than for necessary resources and that children's judgments of equal allocations would be more positive for necessary than for luxury resources. Further, we hypothesized that children's judgments of allocations would align with their behavioral allocations. Specifically, we hypothesized that children who allocated resources meritoriously would judge meritorious allocations more positively than equal allocations, and vice versa for children who allocated resources equally. Finally, we hypothesized that children would reason about the welfare of the recipients more often when allocating and judging allocations of necessary resources relative to luxury resources. Taken together, we expected that, with age, children would be better able to consider the multiple moral concerns of recipients' relative merit and the harm to recipients' welfare that would result from a deficit of a necessary resource.

Method

Participants

Participants were 3- to 8-year-old children (N = 136) divided into two age groups for analyses. The younger age group consisted of 3- to 5-year-old children (n = 96; 41 females, M age = 4.75 years, SD = .77, age range: 3.22 to 5.99 years); the older age group consisted of 6- to 8-year-old children (n = 40; 18 females, M age = 7.29, SD = .82, age range: 6.05 to 8.99 years). Participants were recruited from five preschools and elementary schools serving low- to middle-income families in the Mid-Atlantic region of the United States. All children in the target age range were invited to participate. Written parental consent and children's verbal assent were obtained for all participants. Participant race/ethnicity was 70% European-American, 16% African-American, 10% Latino/a, and 4% Asian-American. One additional participant was interviewed but dropped from analyses because s/he did not respond to any of the measures; two additional participants were dropped from analyses because they had significant developmental delays, leaving the total sample included for analyses at 136 participants. The decision to split the sample in two groups, 3- to 5-year-olds and 6- to 8-year-olds was based on previous research indicating sensitivity to the value of a resource in 6- to 8-year-old children (Shaw & Olson, 2013), and research indicating that the ability to simultaneously weigh multiple moral concerns develops during this age period (Jambon & Smetana, 2014), and to facilitate comparisons of the findings with existing literature in the field, which is most often organized with respect to similar age groupings.

Procedure and Measures

Procedure—Participants were interviewed by trained research assistants in a quiet space at their school. Participants were seated at a table and informed that they would "hear some stories and look at some pictures". The vignettes were presented with cut out characters and resources (an image of a box with the letter "B" printed on the front). Children were introduced to the 6-point Likert-type scale, and a training session was conducted to ensure they understood how to use the scale (see Supplementary Materials). Likert-type scales have successfully been used in research on children's early moral development, with children as young as 3-years-old demonstrating the ability to use them to report their moral judgments (see Mulvey, Rizzo, & Killen, 2015 for an example, and see Killen & Smetana, 2015 for a

review). The experimental session took approximately 20 minutes, and then children were escorted back to their classrooms.

Pilot testing of characters: Based on previous research showing that demographic considerations (e.g., gender, ethnicity, race, handicapped status) often contribute to children's resource allocation decisions (Dunham, Baron, & Carey, 2011; Renno & Shutts, 2015), we conducted pilot testing to determine whether children would respond to non-human recipients similarly to recipients matched to the participants gender and ethnicity. A pilot study ($N = 32$) in which the characters were fictional children matched to the participants' gender and ethnicity revealed no significant differences in children's responses to human and non-human recipients; thus, the non-human characters were used to control for demographic variables.

Past studies have successfully used novel non-human characters to assess canonical and noncanonical understandings of harm, demonstrating that young children, and even infants, show concern for harm to non-human characters (Hamlin, 2013; Zelazo, Helwig, & Lau, 1996). Further, the use of non-human characters including animated animals and puppets is common in the literature on resource allocation in early childhood (Kanngiesser & Warneken, 2012; Kenward & Dahl, 2011; McCrink, Bloom, & Santos, 2010; Paulus & Moore, 2014). Thus, the use of non-human characters eliminated concerns for children's preferential allocation based on factors like race or gender, while establishing recipients who could experience harm.

Recipients: Participants were first told a brief introduction about two story characters, "Mug" and "Wump", to familiarize them with the characters and the task that the characters were going to do (find blickets). Participants were told the following vignette: *"Mug lives in a place called Bluestown and Wump lives in a place called Greensville. Even though they live far away, there are some ways that Mug and Wump are similar to us and there are some ways that they are different. One way that Mug and Wump are different is that they do not like/need some of the same things that we do."*

Resource type: The critical manipulation of the present study was a between-subjects manipulation of resource type. To accomplish this, the present experiment utilized novel resources called "blickets", which ensured that children did not draw upon their prior knowledge of, or personal preference or distaste for, specific resources (the term "blickets" has been used in many studies to introduce a novel object for assessments of reasoning, see Sobel & Kirkham, 2006). For a first study on this topic it was determined that using a novel resource, defined by the experimenter as luxury or necessary (with a manipulation check) was the most appropriate method to use because it did not involve determining what types of actual resources children view as necessary or luxury.

In the present study, the randomly assigned resource type conditions varied only by the experimental description of "blickets". In the luxury condition blickets were described as being enjoyable to have (things that Mug and Wump "like"), but not necessary to avoid harm, whereas in the necessary condition blickets were described as being necessary to avoid harm (things that Mug and Wump "need").

In the luxury condition, blickets were described as follows: *"Mug and Wump like blickets. If Mug and Wump have blickets they are happy and they have a lot of fun. But, if Mug and Wump do not have a lot of blickets, they can still be happy and have a lot of fun because they can play with other things!"*

In the necessary condition, blickets were described as follows: *"Mug and Wump need blickets. If Mug and Wump have blickets they are able to be healthy. But, if Mug and Wump do not have a lot of blickets it hurts them a lot and they will get very sick!"*

In both the luxury and necessary resource conditions, participants were told that neither recipient had any resources at present, and that they would have to find resources.

Merit Vignette: Participants were then told the following introduction: "*Now, Mug and Wump go to one of the special forests. This forest has blickets in it, but blickets are really hard to find. When Mug and Wump find blickets, they go into this bag over here [in front of the child]. Look, Mug finds a blicket and Wump finds a blicket.*"

This introduction ensured that children viewed both characters as being capable of finding blickets, but possessing no blickets at present. To demonstrate that the resources did not belong to either character, the experimenter placed two blickets – representing those found by Mug and Wump – into a neutral bag. It is important to note that throughout the vignette resources were never located near the characters and were never described as belonging to either recipient. This was done to control for any first possession bias (Friedman, Van de Vondervoort, Defeyter, & Neary, 2013).

After the introduction, participants were read the following vignette: *"Let's say that on a different day Mug and Wump go to a new special forest to look for blickets. On this day, Mug and Wump do not have any blickets. If Mug and Wump do not get a lot of blickets, they will [get hurt and feel very sick/have to find something else to play with]! Mug decides not to look for blickets. Instead, Mug is lazy and does not work to find any blickets. Mug did not find any blickets because he was lazy. Wump decides to go out and look for blickets. Wump works really hard looking for blickets and finds a lot blickets. Wump found a lot blickets because he worked really hard."*

Manipulation check: Following the story, participants were asked two memory questions about which character found blickets and which character was lazy. These memory questions served to test for any difficulties in younger children's ability to remember the consequences of not having blickets. All participants answered both memory questions correctly, and thus, none were excluded from the sample.

Resource Allocation Task: The *Resource Allocation Task* consisted of two assessments: 1) *Resource Allocation* and 2) *Reasoning for Resource Allocation*. In the first assessment, *Resource Allocation*, participants were asked "Can you show me how many blickets you think Mug and Wump should each get?" Participants were then given six blickets to allocate between Mug and Wump; participants were told that these were the only 6 resources, and all participants allocated all 6 resources. The word "should" was used in accordance with

terminology used in the literature on children's conceptions of fairness, defined as participants' obligatory expectations regarding how individuals "should" treat one another (see Killen & Smetana, 2015 for a review). In the second assessment, *Reasoning for Resource Allocation*, participants were asked "Can you tell me why you think Mug should get [X] and Wump should get [Y]?" Participants than gave their answer verbally, while the research assistant recorded it for later content coding (see below for coding system).

Evaluation of Multiple Allocation Strategies Task: The *Evaluation of Multiple Allocation Strategies Task* consisted of two assessments regarding a hypothetical child's allocations, each followed by a reasoning probe ("Why?"): 1) *Judgment of Meritorious Allocation*: evaluation of 1 resource to Mug and 5 resources to Wump ("How OK or not OK is it for Sam to give more to Wump because he worked harder?"), 2) *Judgment of Equal Allocation*: evaluation of 3 resources to Mug and 3 resources to Wump ("How OK or not OK is it for Alex to give Mug and Wump the same amount because they both like/need them?").

Data Coding and Reliability

Allocation and judgment measures—For the *Resource Allocation Task*, the number of blickets allocated to the hardworking character was recorded on a 0 to 6 scale. For the *Evaluation of Multiple Allocation Strategies Task*, judgments were recorded on a Likert-type smiley face scale with values ranging from 1 = "really not OK" to 6 = "really OK".

Reasoning measures—Reasons provided in the *Resource Allocation Task* and the *Evaluation of Multiple Allocation Strategies Task* were coded for quantitative analyses into four content categories based on previous research which has used these coding categories when analyzing children's reasoning about moral and social issues (see Killen, Mulvey, Richardson, Jampol, & Woodward, 2011; Smetana, 2006; Turiel, 2002; Wainryb & Recchia, 2014), and based on extensive pilot data. The four codes were: 1) *Equality* (references to the equal treatment of individuals, such as, "They should get the same amount", "They should both get 3 so it's equal"), 2) *Merit* (references to the merit, deservedness, or relative work of the characters, such as, "She should get more because she worked hard and she was just lazy", "Wump worked really hard for the blickets"), 3) *Others' Welfare* (references to the welfare of the characters, such as, "They'll get very sick if they don't get any and that would be bad", "She'll only stay alive for a little bit", "So they can both be healthy"), and 4) *Other* (other undifferentiated or global statements such as, "It's OK", "I don't know"). An additional coding category assessing children's references to the luck of the characters was included in the initial coding scheme, as research has indicated that children consider luck when allocating resources (Olson, Banaji, Dweck, & Spelke, 2006). No participants, however, referenced the luck of the characters when reasoning about their allocations or judgments, thus, this category was dropped from the coding scheme.

The coding of open-ended reasoning responses was conducted by two coders blind to the hypotheses of the study. On the basis of 25% of the interviews ($n = 34$), Cohen's $\kappa = .84$ for inter-rater reliability. Less than 5% of the participants used more than one code.

Data Analytic Plan

Design—The design was a 2 (Age Group: 3–5 years, 6–8 years) by 2 (Resource Type: Luxury, Necessary) design with Age Group and Resource Type as between–subjects factors. All participants completed the *Resource Allocation Task* and the *Evaluation of Multiple Allocation Strategies Task*. Tasks were comprised of behavioral and reasoning assessments (described above).

Allocation and judgment responses were analyzed using 2 (Age Group) by 2 (Resource Type) ANOVAs with age and resource type as between–subjects factors. To interpret interaction effects, Bonferroni post-hoc tests were conducted. Reasoning responses were analyzed using 2 (Age Group) × 2 (Resource Type) × 3 (Reasoning: Equality, Merit, Others' Welfare) mixed effects ANOVAs examining both between- and within-subjects effects. The use of mixed ANOVAs for reasoning data is a widely used approach due to the fact that responses are coded as 0, 0.5, and 1.0 (no use, partial use, and full use of a code) which results in seemingly "missing" data (because 0 = no use of the category), however, codes of 0 are predicted for certain conditions. Other models (e.g., logistic, loglinear) are not appropriate for this type of analysis plan, and may confound the coding scheme with seemingly "missing" data (see Posada & Wainryb, 2008 for a full explanation of this data analytic approach). No significant differences were found for participant gender as a variable in analyses; thus, gender was excluded from all further analyses.

Results

Children's Resource Allocations

In order to test our hypotheses regarding resource type, a 2 (Age Group) × 2 (Resource Type) ANOVA was conducted with the number of resources allocated to the hardworking character as the dependent variable (see Figure 1). A main effect for Resource Type was found, $F(1, 132) = 5.96$, $p = .016$, $\eta_p^2 = .04$. Explaining this main effect was an interaction between Age Group and Resource Type, $F(1, 132) = 3.90$, $p = .05$, $\eta_p^2 = .03$. Older children allocated more luxury resources than necessary resources to the hardworking character ($p = .01$). Younger children, however, did not differ in their allocations of luxury resources and necessary resources to the hardworking character. Older children also allocated more luxury resources to the hardworking character than did younger children, $p = .03$. Thus, our hypothesis was confirmed: With age children allocated more luxury resources than necessary resources to the hardworking character.

Reasoning for Resource Allocations

The overall proportional distribution for the forms of reasoning used by children when explaining their resource allocation decision was *Merit* ($M = .28$), *Equality* ($M = .28$), and *Others' Welfare* ($M = .22$). Analyses were conducted to test the hypothesis that children would reference others' welfare more frequently when explaining their allocation of necessary resources than when explaining their allocation of luxury resources.

A 2 (Age Group) × 2 (Resource Type) × 3 (Reasoning) ANOVA with repeated measures on the last factor was conducted to examine differences in reasoning about children's allocation

strategy (see Table 1). Consistent with our hypotheses, an interaction between Resource Type and Reasoning was found, $F(2, 268) = 8.00$, $p < .001$, $\eta_p^2 = .06$. Children referenced others' welfare more frequently when allocating necessary resources than when allocating luxury resources, $p < .001$. Children did not differ, however, in their use of merit or equality reasoning for luxury resources or for necessary resources. A main effect for age was not found.

Children's Judgments of Multiple Resource Allocation Strategies

Judgment of meritorious allocation strategy—In order to test the hypothesis that children would evaluate the meritorious allocation strategy more positively for luxury than for necessary resources and that older children, specifically, would differ in their judgments of a meritorious allocation of luxury versus necessary resources, a 2 (Age Group) × 2 (Resource Type) ANOVA was conducted with evaluation of the meritorious allocation strategy as the dependent variable (see Table 2). A main effect for Resource Type was found, $F(1, 132) = 7.54$, $p = .007$, $\eta_p^2 = .05$. Children judged meritorious allocations to be more OK for luxury than for necessary resources. These results support our hypothesis that meritorious allocations are evaluated more positively for luxury than for necessary resources. Contrary to our hypotheses, however, a main effect for Age was not found, nor was an interaction of Age and Resource Type.

Reasoning for judgment of meritorious allocation strategy—In order to test for differences in reasoning between children who judged the meritorious allocation strategy to be acceptable versus children who judged it to be unacceptable, participants' responses on the six-point Likert-type scale were dichotomized to "OK" or "Not OK" based on a mid-point split of 3.5. In order to test the hypothesis that children who evaluated the meritorious allocation strategy positively ("OK") would focus on the merit and deservedness of the story characters, whereas children who evaluated the meritorious allocation strategy negatively ("Not OK") would focus on the welfare of the characters when judging meritorious allocations of necessary resources and equality for meritorious allocations of luxury resources, a 2 (Judgment of Meritorious Allocation Strategy: "OK", "Not OK") × 2 (Resource Type) × 3 (Reasoning) ANOVA with repeated measures on the last factor was conducted (see Figure 2). To maintain necessary power, age was not included in the analyses.

A main effect for Reasoning, $F(2, 264) = 10.41$, $p < .001$, $\eta_p^2 = .07$, an interaction between Resource Type and Reasoning, $F(2, 264) = 4.65$, $p = .01$, $\eta_p^2 = .03$, and an interaction between Judgment of Meritorious Allocation Strategy and Reasoning, $F(2, 264) = 52.27$, $p < .001$, $\eta_p^2 = .28$, were found. Explaining these effects, an interaction was found between Judgment of Meritorious Allocation Strategy, Resource Type, and Reasoning, $F(2, 264) = 4.04$, $p = .019$, $\eta_p^2 = .03$. Children who judged meritorious allocations to be "OK" referenced *Merit* when considering both luxury and necessary resources, and did so more than children who judged meritorious allocations to be "Not OK" ($p < .001$). Children who judged meritorious allocations to be "Not OK" referenced *Equality* more when they considered this allocation strategy for luxury resources than for necessary resources ($p = .014$), and referenced *Others' Welfare* more when considering the meritorious allocation

strategy for necessary resources than for luxury resources ($p < .001$). Children who judged meritorious allocations to be "Not OK" also referenced *Equality* and *Others' Welfare* more than did those who judged them to be "OK" ($ps < .001$).

In sum, not only did children evaluate the meritorious allocation of luxury resources positively, but those who found it to be an acceptable means of distributing resources primarily referenced the merit and deservedness of the story characters. Children who judged the meritorious strategy to be "Not OK" based their evaluation on a concern for equality when judging allocations of luxury resources and on a concern for the welfare of the story characters when judging allocations of necessary resources.

Judgment of equal allocation strategy—In order to test the hypotheses that younger children would evaluate the equal allocation strategy more positively than older children would, and that children evaluating allocations of necessary resources would view the equal allocation strategy more positively than children evaluating allocations of luxury resources would, a 2 (Age Group) × 2 (Resource Type) ANOVA was conducted with evaluation of the equal allocation strategy as the dependent variable (see Table 2). Main effects for Age Group, $F(1, 132) = 4.75$, $p = .031$, $\eta_p^2 = .04$, and Resource Type, $F(1, 132) = 4.03$, $p = .047$, $\eta_p^2 = .03$, were found. Consistent with our hypotheses that judgments of equal allocations of luxury resources and necessary resources would differ with age, an Age Group by Resource Type interaction explained these main effects, $F(1, 132) = 5.16$, $p = .025$, $\eta_p^2 = .04$. Older children judged equal allocations of necessary resources more positively than equal allocations of luxury resources ($p = .012$), whereas younger children did not differ in their judgments of equal allocations of luxury and necessary resources. Older children also judged equal allocations of luxury resources less positively than did younger children ($p < .001$). Younger and older children did not, however, differ in their judgments of equal allocations of necessary resources.

Reasoning for judgment of equal allocation strategy—In order to test for differences in reasoning between children who judged the equal allocation strategy to be "OK" for necessary resources versus children who judged it to be "OK" for luxury resources, participants' responses on the six-point Likert-type scale were first dichotomized to "OK" or "Not OK" based on a mid-point split of 3.5. Less than 15% (16 out of 136) of children reported than equal allocations were "Not OK"; thus, these children were excluded from the following analyses. When children reasoned about why the equal allocation strategy was "OK", they most frequently referenced *Others' Welfare* ($M = .39$) and *Equality* ($M = .36$).

Testing the hypothesis that children's positive judgments of the equal allocation strategy ("OK") would focus on the equality of the distribution when luxury resources were being allocated and the welfare of the story characters when necessary resources were being allocated, a 2 (Age Group) × 2 (Resource Type) × 3 (Reasoning) ANOVA with repeated measures on the last factor was conducted (see Table 3). This revealed an interaction between Resource Type and Reasoning, $F(2, 2322) = 9.595$, $p < .001$, $\eta_p^2 = .08$. Children referenced *Others' Welfare* more when explaining why the equal allocation strategy was acceptable for necessary resources than when explaining why it was acceptable for luxury

resources (p = .002), and referenced *Equality* more when explaining why the equal allocation strategy was acceptable for luxury resources than when explaining why it was acceptable for necessary resources (p = .008). Few references to *Merit* were recorded in either condition. No age effects were found.

Taken together, not only did children evaluate the equal allocation strategy positively, but their reason for endorsing an equal allocation differed based on the type of resource being allocated. Equality was a primary concern when considering an equal allocation of luxury resources, and others' welfare was a primary concern when considering an equal allocation of necessary resources.

Judgments of Meritorious and Equal Allocations by Children's Allocation

In order to test the hypothesis that children's judgments of allocation strategies would be related to their own allocations, a 2 (Age Group) × 2 (Allocation: Equal, Meritorious) × 2 (Judgment of Allocation: Equal, Meritorious) ANOVA with repeated measures on the last factor was conducted. This analysis revealed a main effect of Judgment of Allocation, $F(1,130) = 43.05$, $p < .001$, $\eta_p^2 = .25$, and an Allocation by Judgment of Allocation interaction, $F(1,130) = 73.27$, $p < .001$, $\eta_p^2 = .36$. Explaining these effects, an Age Group by Allocation by Judgment of allocation interaction was also found, $F(1,130) = 15.57$, $p = .012$, $\eta_p^2 = .05$ (see Table 4). Younger and older children who allocated resources equally judged equal allocations more positively than meritorious allocations (ps < .001). For children who allocated meritoriously, older, but not younger, children judged meritorious allocations more positively than equal allocations ($p = .026$). Younger children who allocated meritoriously did not differ in their judgments of equal and meritorious allocations.

Discussion

This study provided novel evidence regarding children's behavior, judgments, and reasoning about the fair allocation of resources. We found that, with age, children allocated resources differently depending on the implications of their decision for the welfare of the resource recipients. Specifically, older children allocated luxury resources more meritoriously than necessary resources, whereas younger children did not differ in their allocations of luxury and necessary resources. Older children also allocated luxury resources more meritoriously than did younger children. Thus, with age, children began to consider both merit and others' welfare in a resource allocation context.

A central novel finding was children's differentiated responses, with age, when allocating and judging allocations of resources identified as "luxury" or "necessary." This is important given that the majority of studies on resource allocation in childhood ask children to distribute "luxury" resources (e.g., candy, stickers, toys). Only a small number of studies focus on necessary resources, which is surprising given that necessary resources are highly relevant to moral decision-making and reasoning from childhood through adulthood.

Others' welfare in children conceptions of fairness

This study extends research on moral development by documenting children's concern for others' welfare in a resource allocation context. Importantly, we found that both younger and

older children judged meritorious allocations less positively for necessary than for luxury resources, and reasoned more about others' welfare for necessary than for luxury resources. That is, even when one resource recipient was known to have worked harder than another, children considered the implications of an unequal allocation of necessary resources and adjusted their judgments and behavior to account for the welfare of the resource recipients. This concern for others' welfare when allocating resources described as necessary for the recipients' health and wellbeing emerged across children's behavioral allocations, reasoning, and judgments of alternative allocation strategies.

Together, these results suggest that children's incorporation of others' welfare into their conceptions of fair resource allocation begins early, with the first evidence of this distinction found in children's judgments and reasoning about allocations. Children also demonstrated nuanced consideration of both allocation strategy (i.e., merit-based or equal allocation) and resource type in their explicit reasoning and judgments of allocations. When considering allocation of necessary resources, children reasoned about the welfare of the recipients. When considering allocations of luxury resources, however, children reasoned about the merit and deservedness of the recipients as well as the concern for equality.

These findings highlight the importance of research using multiple measures to evaluate children's conceptions of fairness in resource allocation. Assessments of children's judgments of and reasoning about potential allocations may reveal concerns for others' welfare earlier in development than behavioral measures alone, as evaluative and reasoning measures offer children the opportunity to recognize strategies as legitimate or fair before they are able to integrate this knowledge with their own actions in a behavioral paradigm.

Children's developing concern for merit

With age, children differed in their concern for merit between luxury and necessary resources. While allocations of necessary resources involve the additional consideration of others' welfare, merit and equality claims are most relevant for allocations of luxury resources. This study found that, while younger and older children did not differ in their allocations of necessary resources (preferring equality in this context), older children allocated luxury resources more meritoriously than did younger children. Further, older children demonstrated an increasing recognition of merit in their judgments.

One important piece of evidence for the development of merit as a central moral consideration in children's reasoning about resource allocation was revealed in children's increasing recognition that other allocation strategies, including equality, may not be fair when one recipient has worked harder than another. Specifically, older children judged equal allocations of luxury resources to be less fair than younger children. Thus, these results suggest that children's developing understanding of merit also lead them to view equal allocations of luxury resources as less fair. Importantly, this understanding is dependent upon the type of resource being allocated, and the consequences of the allocation for the welfare of the recipients. Age-related increases in concern for merit were not found when children allocated necessary resources.

In this study, multiple cues to merit were given to the participants in order to maximize the potential for children to pick up on merit as a criterion for fairness. That is, the meritorious character was both harder working and more successful than the non-meritorious character. Similarly, the present experiment had both an explicitly meritorious character and an explicitly non-meritorious (lazy and unsuccessful) individual. While the present results suggest that children as young as 3-years-old incorporate the concern for merit into their conceptions of fairness, future research should investigate the development of children's understanding of each merit cue (effort, production, etc.) individually, to better understand children's conceptions of merit-based fairness as a whole.

Emergence of multiple moral concerns in children's conceptions of fair resource allocation

Overall, these findings contribute to research in moral development indicating that, with age, children's use of multiple forms of moral reasoning reflects their developing ability to consider multiple concerns when making moral judgments (Jambon & Smetana, 2014; Killen & Smetana, 2015; Turiel, 1983). While recent research has emphasized the early emergence of moral considerations in young children's resource allocation decisions, and previous models of development argued that children progress from a focus on selfish desires to strict equality to merit and equity in a stage-like sequence (Damon, 1977), the present findings provide a different perspective. Rather than adhering strictly to one approach (e.g., diving equally or meritoriously), children weigh multiple moral concerns early in development. That is, children do not apply their moral concerns uniformly across all allocation situations. Rather, they take into consideration the implications of different allocation strategies for the welfare of resource recipients.

Specifically, these results suggest that, by 6 years of age, children are not solely focused on issues of others' welfare and equality, but also incorporate concerns for merit when allocating resources. Both younger and older children reasoned about their own allocation decisions, and judged others' decisions, with reference to multiple criteria, including the merit and deservedness of the characters, the concern for equality, and the concern for others' welfare, depending on the type of resource being allocated. For instance, when judging equal allocations of luxury resources, children primarily referenced the concern for equality, but when judging equal allocations of necessary resources, children primarily referenced their concern for the welfare of the recipients. These results suggest that multiple moral considerations coexist in a context-dependent fashion from early in development, and highlight children's concern for others' welfare as a highly salient moral consideration in some resource allocation contexts.

Expanding beyond the focus of previous research on children's allocation of luxury resources (e.g., stickers, candy, toys), the present findings suggest that, with age, children's conceptions of fairness for the allocation of luxury resources differ from their conceptions of fairness for the allocation of necessary resources. This distinction, as reflected in multiple allocation, evaluation, and verbal reasoning measures, suggests that, rather than automatically applying one moral principle (e.g., equality, merit) across contexts, children incorporate information about the consequences to recipients when determining how to

allocate resources from as early as 6- to 8-years-old. These findings indicate that children can and do consider others' welfare, in addition to principles of merit, when allocating resources. Future research should therefore consider the specific type of resource being allocated when assessing children's conceptions of fairness and allocation of resources.

Given that research to date has not examined what resources children view to be luxury and necessary, the present study utilized novel resources in order to experimentally control for individual differences regarding preferences and knowledge of specific resources (e.g., toys, stickers, medicine, food). While this provides an important first step in understanding how children incorporate resource type into their conceptions of fairness, future research should investigate children's developing conceptions of what constitutes luxury and necessary resources, and how the understanding of resources influences children's allocation decisions. While we predict that the distinction between luxury and necessary resources will hinge upon whether or not the resource is needed to avoid some form of harm, further research is needed to test this empirically.

Another area for future research to examine is children's ability to recognize that certain resources may be more necessary for some individuals than others. One area in which this manifests is in the context of an inequality between recipients (e.g., when one recipient has an excess of necessary goods, while another has none). Another is recipient-specific necessary goods, such as when one recipient has an ailment that requires medicine while the other does not. It is possible that children younger than 6- to 8-years-old would incorporate the concern for others' welfare in these contexts. Assessing these questions will provide further insight into how children incorporate the concern for others' welfare into their conceptions of fairness.

Relations between children's allocations and judgments

The present study also investigated the relation between children's own resource allocation decisions and their judgments of other potential allocation strategies. Older children's judgments of allocation strategies matched their own behavioral allocation, regardless of whether they allocated equally or meritoriously. That is, children who allocated meritoriously judged meritorious allocations more positively than equal allocations, and vice versa for children who allocated equally. Contrary to recent suggestions in the literature that children's judgments about how resources should be allocated diverge from their actual behavior in allocation contexts, we argue that, in this context, the connection between judgments and allocation decisions is close, and reflects children's integration of different moral concerns for fairness between early and middle childhood (for a related discussion of this issue, see Blake, McAuliffe, & Warneken, 2014; Killen & Smetana, 2015).

Past research regarding the relations between behavior and judgment are mixed, with some studies demonstrating a positive relationship (Turiel, 2008) and others revealing discrepancies between what children judge to be fair and what they do behaviorally (Blake, McAuliffe, & Warneken, 2014; Smith, Blake, & Harris, 2013). Discrepancies between fairness judgments and sharing behavior may be due, in part, to the role of relative advantage and the manner in which resources are acquired (Blake, McAuliffe, & Warneken, 2014). The present study extends this work, and provides evidence for discrepancies due to

the complex task of weighing multiple considerations when making resource allocation decisions. Future research on children's beliefs about sharing and actual sharing behavior should account for conceptions of fairness regarding ownership and first-possession, which are recognized as early as 3- to 5-years-old (Friedman et al., 2013), and may also contribute to what makes such decisions complex.

Limitations and considerations for future directions

The present study manipulated resource type, while controling for demographic information about the recipients, in order to test differences in children's conceptions of fairness based on resource type. It is important, however, for future research to examine how recipient characteristics like group membership might interact with resource type when children allocate resources. For example, children allocate resources differently to strangers and family members (Moore, 2009; Olson & Spelke, 2008), minimal in-group and out-group members (Dunham et al., 2011), and consider race and gender when allocating resources (McGillicuddy-De Lisi et al., 2006; Renno & Shutts, 2015). Incorporating type of resource with these demographic variables could be quite interesting. Novel questions would concern whether children take such factors into account for necessary but not luxury resources differently, based on the demographics of the recipients. Further, the extent to which stereotypic expectations enter into who deserves necessary resources would be important to investigate.

Finally, another area that requires additional attention is children's developing conceptions of inequality-based fairness. While recent research has begun to demonstrate that children's concern for preexisting inequality emerges in early childhood (Li, Spitzer, & Olson, 2014; Paulus, 2014), a systematic investigation of children's conceptions of fairness in a resource allocation context that allows for both equal and equitable allocations is warranted. Further, the results of the present study suggest that a paradigm that assesses children's judgments of allocations and reasoning regarding allocations, in addition to children's own allocations of resources provides a method for assessing the age-related complexities of children's developing conceptions of fairness.

Given that children's conceptions of fairness differed for luxury and necessary resources in the present study, it is also imporant for future research to examine how resource type influences children's conceptions of inequality-based fairness. While children in the present study were explicitly told that each resource *recipient* did not have any resources prior to their allocation, and participants did not reference scarcity or abundance in their reasoning for their allocations or judgments, it remains possible that children assumed conditions of scarcity for necessary resources, and conditions of abundance for luxury resources. That is, since children in the luxury condition were told that the recipients could, "play with other things" if they did not receive blickets, whereas children in the necessary resources were not told about other options if recipients did not receive blickets, it is possible that children interpreted the overall contexts differently. We argue that the description of these conditions was important to emphasize in an initial study on children's differentiation between luxury and necessary resources, as they may contribute to what constitues a "luxury" or "necessary" resource. However, future research should examine this issue further to determine if children

allocate luxury and necessary resources differently under conditions of scarcity and abundance.

Conclusion

In conclusion, children's differential allocation of necessary and luxury resources provides a window into their conceptions of fair allocation when inequality has a negative implication for others' welfare. This study revealed that young children recognize others' welfare and potential harm as valid criteria for ensuring fair allocation of resources from as early as 3–5 years of age, as indicated in their evaluations of others' allocation strategies, and reasoning about fairness and others' wellbeing. With age, children demonstrate increasing capacity to integrate this concern with their concern for merit into their allocations and judgments of allocations. Rather than focusing strictly on merit when judging the fair way to distribute resources between two recipients, this study revealed that, between the ages of 3 and 8 years, children begin to flexibly apply different moral criteria for ensuring fair allocation, weighing merit and the implications for others' welfare as a result of a resource allocation. These findings bode well for enabling children to begin to consider the needs of others when allocating resources fairly, a fundamental source of moral decision-making throughout the lifespan.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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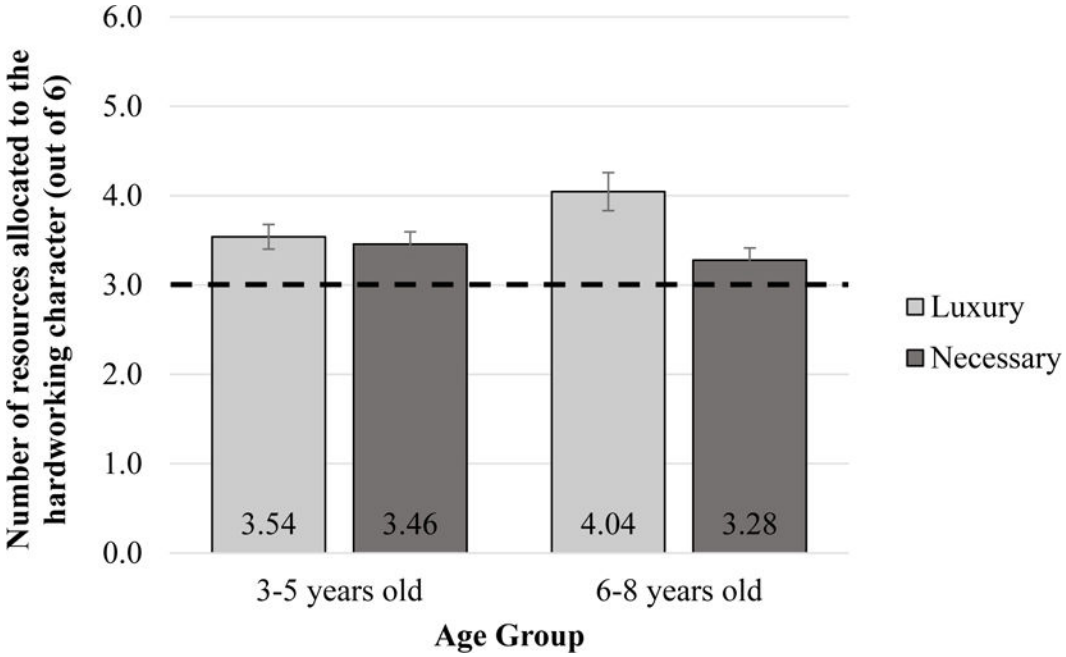

Figure 1.

Mean number of luxury and necessary resources allocated to the hardworking character (out of 6). Error bars represent standard errors of the means.

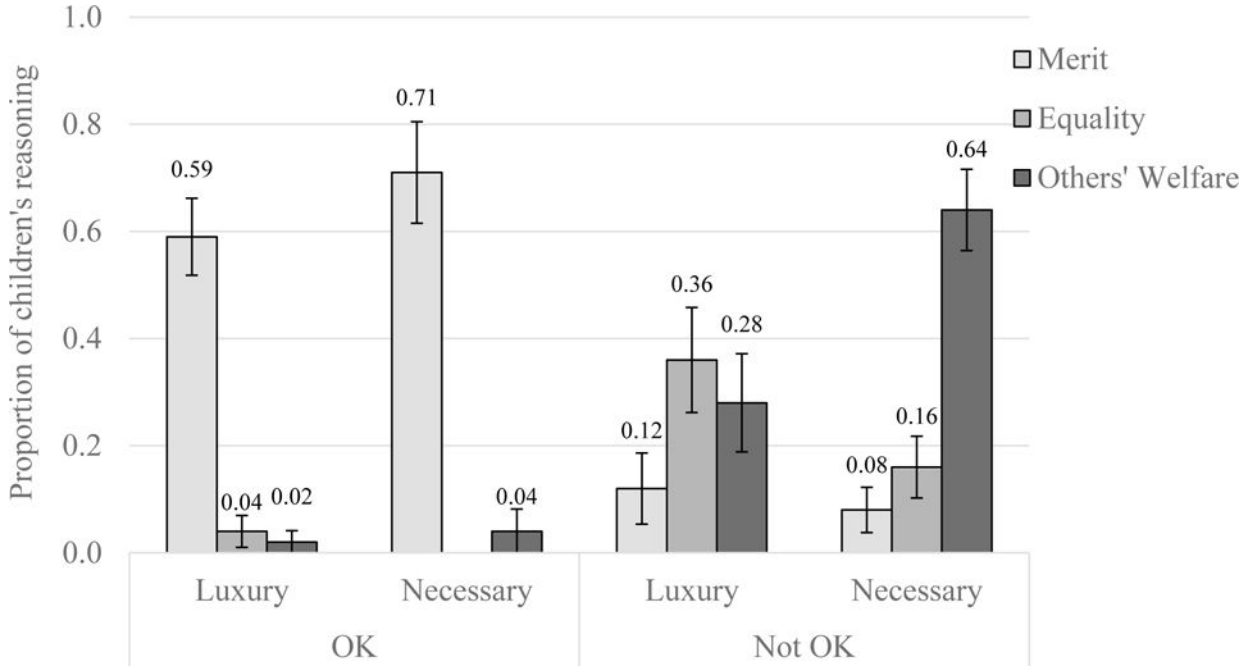

Figure 2.

Proportion of children's reasoning regarding their judgment of meritorious allocations referencing Merit, Equality, and Others' Welfare by resource type (Luxury, Necessary) and judgment (OK, Not OK). Error bars represent standard errors of the means.

Table 1

Means (and Standard Deviations) for Reasoning about Own Allocation by Resource Type

	Equality		***Merit***		***Others' Welfare***	
Resource Type	*M*	*SD*	*M*	*SD*	*M*	*SD*
Luxury Resources	.31	(.46)	.35	(.48)	.06	(.24)
Necessary Resources	.24	(.41)	.20	(.41)	.40	(.48)

Table 2

Means (and Standard Deviations) for Judgments of Allocations by Resource Type and Age

	Meritorious Allocation		Equal Allocation	
	M	***SD***	***M***	***SD***
Younger Children				
Luxury Resources	3.66	(2.07)	5.54	(1.11)
Necessary Resources	2.98	(2.24)	5.48	(1.17)
Older Children				
Luxury Resources	4.23	(1.69)	4.50	(1.71)
Necessary Resources	2.78	(1.93)	5.50	(1.04)

Note. Judgments ranged from 1 = really not okay to 6 = really okay.

Table 3

Means (and Standard Deviations) for Reasoning about Judgment of Equal Allocation by Resource Type

	Equality		***Merit***		***Others' Welfare***	
Resource Type	***M***	***SD***	***M***	***SD***	***M***	***SD***
Luxury Resources	.47	(.49)	.02	(.13)	.26	(.42)
Necessary Resources	.24	(.42)	.02	(.13)	.53	(.49)

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Table 4

Means (and Standard Deviations) for Judgments of Allocations by Allocation and Age

	Judgment of Equal Allocation		Judgment of Meritorious Allocation	
	M	***SD***	***M***	***SD***
Younger Children				
Equal Allocators	5.82	(.65)	2.76	(2.08)
Meritorious Allocators	5.07	(1.36)	4.57	(1.83)
Older Children				
Equal Allocators	5.78	(.60)	2.39	(1.56)
Meritorious Allocators	3.82	(1.67)	5.18	(.95)

Note. Judgments ranged from 1 = really not okay to 6 = really okay.