

Children Rectify Inequalities for Disadvantaged Groups

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Children's decisions regarding the allocation of societal resources in the context of preexisting inequalities were investigated. African American and European American children ages 5 to 6 years ($n = 91$) and 10 to 11 years ($n = 94$) judged the acceptability of a medical resource inequality on the basis of race, allocated medical supplies, evaluated different resource allocation strategies, and completed a measure of status awareness based on race. With age, children were increasingly aware of wealth status disparities between African Americans and European Americans, and judged a medical resource inequality between groups more negatively. Further, with age, children rectified the resource inequality over perpetuating it, but only when African American children were disadvantaged. With age, children also referenced rights when reasoning about their judgments concerning the disadvantaged African American group. When European American children were disadvantaged, children did not systematically allocate more resources to one group over another. The results are discussed in terms of social inequalities, disadvantaged status, moral judgments, and intergroup attitudes.

Keywords: racial attitudes, resource allocation, equality rights, social inequality, social status

Children from different racial backgrounds often experience differential access to societal resources like quality health care, education, and housing, because of complex economic and social factors. Inequalities like these are often rooted in a history of biased resource allocation. Surprisingly, however, little is known regarding the origins and development of the attitudes and behaviors that perpetuate unequal resource allocation between groups. Although children's own judgments and reasoning reflect the development of their moral conceptions of equality, rights, and protection of others' welfare (Killen & Smetana, 2015; Turiel, 2006), recent studies also indicate that intergroup attitudes bear on children's resource allocation decisions (Cooley & Killen, 2015; Mulvey, Hitti, Rutland, Abrams, & Killen, 2014). Less is known, however, about the extent to which intergroup biases enter into judgments about resource allocation when recipients differ with regard to their moral claims over resources. Group-based inequalities in access to societal resources based on disadvantaged status, for example, may be perpetuated early in life, placing children

without access to necessary resources at risk for long-term negative physical, cognitive, and social developmental outcomes (Bradley & Corwyn, 2002; Shonkoff, Boyce, & McEwen, 2009).

Few studies have investigated children's decisions about resource allocation in interracial contexts, and almost nothing is known about how children allocate necessary societal resources like quality health care, education, or housing, in such contexts. The goals of the current study were to determine (a) how decisions about the allocation of a societal resource in a context of preexisting race-based inequality change with age, and (b) what factors contribute to children's decisions to rectify or perpetuate an inequality of this type, including potential differences in allocation decisions based on recipients' racial group membership and awareness of overarching economic status differences between racial groups. Thus, we investigated children's decisions, evaluations, and reasoning pertaining to the allocation of resources in a context where resource inequality was linked with recipient racial group membership.

Resource Allocation in Intergroup Contexts

Research indicates that young children sometimes demonstrate biases in interracial resource allocation contexts, allocating more resources to members of their racial ingroup (e.g., Renno & Shutts, 2015). Further, older children's stereotypic assumptions about race and deservedness have been shown to impact how they allocate resources to productive and needy recipients (e.g., McGillicuddy-De Lisi, Daly, & Neal, 2006). Yet children do not always allocate unequally. In many contexts, children strongly prefer equal allocation between recipients (Damon, 1975; Shaw & Olson, 2012; Sigelman & Waitzman, 1991). Recent research also indicates that children as young as 4 to 5 years of age can take into consideration the relative needs of others, giving more resources like stickers to those who have less to begin with (Li, Spitzer, & Olson, 2014; Paulus, 2014). With age, children increasingly seek to correct

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inequalities by giving more resources to an individual with less (Kienbaum & Wilkening, 2009; Schmidt, Svetlova, Johe, & Tomasello, 2016).

Thus, rather than an either/or decision whereby children either prioritize their ingroup or adhere to fairness principles like equality or giving more resources to those with less, an integrative theoretical approach is needed. Drawing on the social domain theory perspective on moral development and children's concern for fair treatment of others (Smetana, Jambon, & Ball, 2014; Turiel, 2006) and developmental social identity theories emphasizing understanding of group dynamics (Abrams & Rutland, 2008; Nesdale, 2004; Verkuyten, 2007), the social reasoning developmental model has demonstrated that group identity is a fundamental factor in children's reasoning about the fair allocation of resources (Killen, Elenbaas, Rizzo, & Rutland, 2016; Killen & Rutland, 2011).

For example, research using this model has revealed that children support an individual who advocates for equal resource allocation between groups, even when unequal resource allocation would benefit that individual's group (Cooley & Killen, 2015). That is, in both early and middle childhood, children judge equal resource allocation between groups positively, and reason about the importance of fairness. With age, however, children also recognize that if a group stands to benefit from unequal resource allocation, that group would not like an individual who advocates for equality (Mulvey et al., 2014). Specifically, children's increasing awareness of group dynamics, including the norms to which social groups adhere, lead them to recognize that group affiliations sometimes generate expectations for allocation behavior that differ from children's own focus on fairness.

Less is known, however, about children's judgments and reasoning in resource allocation contexts when recipient groups have received different amounts of resources in the past, and do not share the same group membership, such as race or ethnicity. In a context like this, children may reason, with age, about the importance of rectifying the previous inequality by giving more resources to the group that had received less, or they may reason about the importance of allocating resources equally between groups. Further, they may take the specific identity of the recipient groups into account. Related research indicates that, with age, children in the United States context are increasingly aware that racial/ethnic minority groups (e.g., African Americans, Latinos) are more likely to be the targets of exclusion and inequality than are European Americans (Bigler, Arthur, Hughes, & Patterson, 2008; C. S. Brown, Mistry, & Bigler, 2007; Crystal, Killen, & Ruck, 2008; Hughes, 2011; McKown & Strambler, 2009). This may impact children's judgments and reasoning in a context of resource inequality between African Americans and European Americans, as it adds an additional layer of complexity to the question of how best to allocate subsequent resources. Thus, the social reasoning developmental model (Killen & Rutland, 2011) guided our hypotheses, because of its dual emphasis on children's concern for fair treatment of others as well as understanding of intergroup dynamics (as outlined below).

Resource Allocation and Rights

Notably, unlike the resources used in much of the previous research in this area (i.e., familiar and desirable goods like candy and stickers), in this study, we tested children's responses to

inequalities of a necessary, societal resource: medical supplies. Our focus on this type of resource brings to the forefront related research on children's understanding of rights issues. For example, children often endorse their own nurturance rights, or rights to adequate care including emotional support from parents and protection from physical harm, as well as self-determination rights including the right to autonomous decision-making, from as young as 9 to 10 years of age (Ruck, Tenenbaum, & Willenberg, 2011). Understanding of individuals' and groups' rights to societal resources in a broader sense, including the detrimental impact of violating such rights, develops in middle childhood and adolescence (Helwig, Ruck, & Peterson-Badali, 2014).

Although most research in this area has focused on the extent to which children and adolescents endorse their own and other's rights, such as the right to visit a doctor when ill, or the right to go to school, understanding rights like these can be linked back to children's own decisions about the allocation of resources. The responsibility to provide children with access to societal resources like medical care and education does not rest on parents alone. Accordingly, children's responses to a social resource inequality and their stated support of their own and others' rights in such contexts may be related, as both pertain to moral conceptions of fairness and justice. Few studies, however, have examined the intersection of these two important components of children's moral development by investigating children's conceptions of how to allocate societal resources like educational or medical supplies.

Status Awareness in Resource Allocation Decisions

Resource inequality based on racial group membership alone would therefore appear to be in direct conflict with children's developing conceptions of fair resource allocation and of individuals' rights to certain resources. One further social factor that may influence children's judgments and reasoning about resource allocation in such contexts is knowledge about groups' relative status. Children's developing awareness of the societal links between race, wealth, and access to resources may impact how they decide to allocate resources in the context of a race-based inequality.

Different from their potential ingroup biases, children's awareness of overarching racial inequalities reflects their developing knowledge of race and status. From as early as 5 years of age, children in the United States are more likely to associate familiar low-status jobs (e.g., fast food worker, janitor) with African Americans than with European Americans (Bigler, Averhart, & Liben, 2003). By 7 years of age children associate different markers of wealth (e.g., large houses, expensive toys) with different racial groups, linking more wealth with European Americans than with African Americans (Newheiser & Olson, 2012). It may be that increasing awareness of race and status would encourage children to consider moral conceptions of fairness and equality, prompting them to rectify a race-based inequality of resources. Or it may be that increasing awareness of race and status would encourage children to endorse the status quo, prompting them to perpetuate a race-based inequality of resources. Gaining a clear picture of how children's developing conceptions of race and status contribute to their decisions about how to allocate resources will shed light on the origins and development of the attitudes and behaviors that perpetuate or rectify unequal resource allocation between groups.

Additionally, one limitation of previous research on resource allocation pertains to the racial makeup of most participant samples, and how this may relate to children's developing awareness of race and status. The majority of previous studies in this area have included samples of primarily European American children. One issue with this approach is that any observed resource allocation in favor of the participant's ingroup cannot be disentangled from preferential allocation to the (generally) resource-advantaged group. This is an important distinction because related research suggests that children positively evaluate and prefer to associate with those who have more resources (Horwitz, Shutts, & Olson, 2014; Li et al., 2014).

The Current Study

The goals of the current study were to determine (a) how decisions about the allocation of a societal resource in a context of preexisting race-based inequality change with age, and (b) what factors contribute to children's decisions to rectify or perpetuate an inequality of this type. We investigated 5- to 6- and 10- to 11-year-old African American and European American children's allocation of medical supplies to racially homogenous hospitals serving African American or European American children and judgments regarding different allocation strategies after seeing a sequence of unequal allocations based on race. The ages of 5 to 6 and 10 to 11 years were chosen because previous research indicates that reasoning and behavior related to rectifying resource inequalities between individuals and groups emerges during this time period (Damon, 1975; Li et al., 2014), with more developed theories of economic inequality formed later in adolescence (Flanagan et al., 2014). The stimuli depicted groups of African American and European American children, and African American and European American children were sampled to establish a balanced design with the potential to disentangle ingroup preference and preference for a (generally) well-resourced group on children's resource allocation decisions.

Participants allocated medical resources and judged different allocation strategies in light of a sequence of unequal distributions (experimentally manipulated) in which either (a) hospitals serving African American children received fewer supplies than European American hospitals, or (b) hospitals serving European American children received fewer supplies than African American hospitals. We provided no explanation for the experimental inequality in order to allow children to interpret it with no external prompting to consider broader disparities between African Americans and European Americans. We specifically investigated children's allocation of medical supplies because this context reflects a widespread racial inequality in the United States and many other countries (Shonkoff et al., 2009). Importantly, resource allocation decisions are a common part of children's everyday social interactions (Killen & Smetana, 2015), and children as young as 5 to 6 years of age are also able to recognize denial of medical care as unfair (Helwig & Jasiobedzka, 2001). No studies, however, have tested children's allocation of medical supplies. Thus, investigating age-related changes in children's allocation of medical supplies in a context of preexisting inequality has the potential to reveal children's concern for rights and fairness on a broader scale than that usually addressed in research on resource allocation in childhood.

We directly examined the impact of children's awareness of social status differences between African Americans and European Americans on their allocation decisions and judgments, and examined status awareness in terms of children's associations of race with external, observable markers of wealth. Wealth is linked with access to quality medical care (Yoshikawa, Aber, & Beardslee, 2012), thus we chose a measure of status awareness directly pertaining to the resource to be allocated.

We predicted the following: (H1) children would be increasingly aware of broader-level wealth disparities between African Americans and European Americans (in favor of European Americans) with age (e.g., Bigler et al., 2003); (H2) children would evaluate the resource inequality presented in the experimental context increasingly negatively with age (e.g., Mulvey et al., 2014); and (H3) with age, children would justify their increasingly negative evaluations with reference to children's rights to adequate medical resources, as previous research indicates that explicit references to rights increases with age (e.g., Ruck et al., 2011).

Regarding resource allocation preferences, we predicted that (H4) with age children would increasingly prefer an allocation strategy that involved rectifying the inequality over one that perpetuated it when hospitals serving African American children were disadvantaged, with no age-related changes in resource allocation preferences when hospitals serving European American children were disadvantaged. We predicted that (H5) age-related changes in allocation preferences when hospitals serving African American children were disadvantaged would be mediated by children's increasing awareness of wealth disparities between African Americans and European Americans and increasingly negative evaluations of the resource inequality. That is, for H4 and H5, we predicted that with age, children would increasingly take recipient group membership into account, integrating their knowledge of broader resource disparities between African Americans and European Americans (as assessed in the separate associative measure of race and wealth) with their negative judgments of the medical resource inequality when evaluating resource allocation strategies. When European American hospitals were disadvantaged, however, changing attitudes about race and wealth and evaluations of the resource inequality were not expected to mediate children's allocation preferences with age. That is, children were expected to respond differently to the inequality based on whether the disadvantaged group had a societal history of exclusion from access to resources.

Furthermore, we predicted that (H6) with age, children would allocate more hospital supplies to the disadvantaged group when they had the opportunity to give out resources themselves, particularly in the context where African American hospitals were disadvantaged. This expectation was based on children's increasing awareness of race and status as well as negative evaluations of the resource inequality, and supported by research indicating that, with age, children are increasingly aware that racial/ethnic minority groups are more likely to be the targets of exclusion and discrimination than racial/ethnic minority groups (e.g., C. S. Brown, 2006).

One reason for creating a balanced design with regard to participant and recipient racial group membership was to avoid the limitations of previous work on resource allocation with majority European American samples, in which preferential allocation to the ingroup cannot be disentangled from preferential allocation to

a (typically) well-resourced group. The design of this study allowed us to test for ingroup bias in European American children's decisions, which has been shown to emerge by 3 to 5 years of age (e.g., Renno & Shutts, 2015), as well as in African American children's decisions. Other research on the denial of resources, however, suggests that ingroup bias may not play as strong a role in children's judgments and reasoning in rights-related contexts (e.g., Helwig & Jasiobedzka, 2001). In line with this work, we predicted that, in the context of a medical supply inequality, children would focus on addressing the preexisting disparity of necessary resources. Thus, we focused our hypotheses regarding group membership on *recipient* group membership rather than *participant* group membership, as described above.

Method

Participants

Children in kindergarten ($n = 91$; 5–6 years, $M = 5.96$ years, $SD = .34$ years) and fifth grade ($n = 94$; 10–11 years, $M = 11.10$ years, $SD = .65$ years) participated ($N = 185$). The sample was relatively evenly divided by gender (46 male and 45 female kindergartners; 42 male and 52 female fifth graders) and by race (43 African American and 48 European American kindergartners; 50 African American and 44 European American fifth graders).

Participants were recruited from eight racially diverse public and private elementary schools serving the same socioeconomic communities: middle- to low-middle-income families in the Mid-Atlantic region of the United States. No information on individual parental educational attainment or income level was available. Across all schools, the racial composition of the school population ranged from approximately 20% to approximately 40% African American students and approximately 10% to approximately 50% European American students. The average response rate across schools was approximately 70%. Written parental consent and children's verbal assent were obtained for all participants.

Procedure

Participants completed measures independently (older children) or were interviewed by a trained experimenter (younger children) in a quiet space at their school. Participants were seated in front of a laptop where they witnessed the experimental inequality, completed the *Wealth Status Awareness Task*, and then completed the *Resource Allocation Task*. All stimuli and measures were presented using MediaLab v2012 (Empirisoft Corporation), which facilitated presentation of the vignettes using photos and animations to engage children's attention. The entire experimental session took approximately 25 min. Pilot testing was conducted before data collection to ensure that the youngest participants would be able to follow the procedure, remain engaged, and complete the range of assessments.

Measures

Experimental inequality. Participants witnessed four pairings linking racial group membership and distribution of medical supplies. For each pairing, the following appeared on the laptop screen: two photographs of prototypic hospitals, two groups of

four children's photographs (aged 5–11 years, evenly divided by gender), and the words "These are two hospitals in the same city. There are the same number of kids who go to both hospitals. Here are some of the kids who go to this hospital. And here are some of the kids who go to this hospital." One group of children was African American, and one group was European American. Next six boxes of medical supplies (photographs superimposed on images of standard brown cardboard boxes) and the words "In these kids' hospital, every room has six boxes of [X] to use when the kids get sick" appeared under one group of children, and one box of medical supplies and the words "In these kids' hospital, every room has one box of [X] to use when the kids get sick" appeared under the other group. Resources were presented in a fixed order across the four trials: medicine, bandages, thermometers, stethoscopes.

Participants witnessed new hospitals and new groups of children across all four trials, but the number of boxes of resources associated with each racial group varied systematically. Half of the participants always witnessed the African American groups receiving fewer medical supplies, and half of the participants always witnessed the European American groups receiving fewer medical supplies. Assignment to context was randomized across participants; the side of the screen on which each racial group appeared was counterbalanced across the four pairings.

Resource allocation task. All hospitals, groups of children, and resources reappeared on the screen along with the words "Earlier you saw how hospital supplies got divided up between lots of different hospitals. And the same number of kids went to each hospital." With regard to the hospitals that had received more resources, the words "These hospitals have more supplies than the other hospitals" appeared.

Evaluation of resource inequality. A 4-point smiley face Likert-type scale appeared on the screen, accompanied by the question "How okay or not okay is that?" Children responded by pointing to or clicking one of the buttons corresponding to each point on the scale: 1 = *really not okay* to 4 = *really okay*.

Justification for evaluation of resource inequality. Children were then asked: "Why do you think it's [X]?" Older children provided a justification by typing directly into a free response field, and younger children dictated their response to the experimenter. Children's open-ended justifications were coded for analyses into one of five conceptual categories based on previous research on resource allocation, intergroup attitudes, and rights (Mulvey et al., 2014; Ruck et al., 2011). The five categories were (a) *Rights* (references to children's rights to adequate medical care; e.g., "Everyone is of the same value, just because the other hospitals are African-American doesn't mean that they deserve more health supplies"), (b) *Equality* (references to how all hospitals should have equal numbers of supplies; e.g., "It's the same amount of kids and if there's the same amount of kids there should be the same amount of supplies"), (c) *Others' Welfare* (references to the harm to others' wellbeing that might result from a deficit of medical supplies; e.g., "If a lot of kids get sick the doctors and nurses can't cure them because they don't have that much supplies"), (d) *Maintaining Status Quo* (references to maintaining the unequal system established by the experimental inequality; e.g., "That's how I've seen it, they always get one and they always get six"), and (e) *Ingroup Preference* (references to one's own racial group receiving more resources; e.g., "They're my skin color and

they're not my skin color"). Open-ended responses that did not fit into one of the five conceptual categories were coded as "Other." The coding of open-ended responses was conducted by two coders blind to the hypotheses of the study. Interrater reliability was determined using a subset of 25% of the data ($n = 47$ participant protocols); Cohen's $\kappa = .86$ for interrater reliability.

Resource allocation. The following appeared on the laptop screen: two new photographs of hospitals and groups of children, seven boxes of medical supplies, and the question "If you were in charge of a city and you had seven boxes of hospital supplies to give out, how should you give them out between these two hospitals?" One group of children was African American, and one group was European American. The boxes of medical supplies contained all four resources previously viewed. Next, eight buttons with numbers appeared on the screen, representing all of the possible divisions of the seven boxes of medical supplies between the two hospitals. Children allocated resources by pointing to or clicking one of the buttons. Thus, the number of boxes of medical supplies that participants allocated to the hospital serving children from the experimentally disadvantaged group was recorded on a 0 to 7 scale.

Evaluation of resource allocation strategies. Children's resource allocation decision disappeared from the screen, and the same two photographs of hospitals and groups of children reappeared, accompanied by a 4-point smiley face Likert-type scale. With regard to the advantaged group, the following question was posed: "What if the person in charge of the city gave more boxes to this hospital because they always got more before? How okay or not ok would that be?" Children indicated their evaluation of the Perpetuate allocation strategy by pointing to or clicking one of the buttons corresponding to each point on the scale: 1 = *really not okay* to 4 = *really okay*. Then the same question was posed in regards to the disadvantaged group: "What if the person in charge of the city gave more boxes to this hospital because they always got less before? How okay or not ok would that be?" Children indicated their evaluation of the Rectify allocation strategy in the same manner. For analyses, a difference score was created by subtracting children's evaluation of the Perpetuate strategy from their evaluation of the Rectify strategy. This established a scale ranging from -3 to $+3$, for which higher scores indicated greater relative preference for rectifying the inequality over perpetuating the inequality.

Wealth status awareness task. All material markers of wealth were drawn from previous research on children's associations of belongings with wealth (e.g., Horwitz et al., 2014). Participants completed three trials of their associations of race and wealth markers. For each trial, four images (with no human figures) representing wealth markers appeared on the screen, from left to right in descending order (wealthiest to poorest), in a fixed order across trials: Trial 1 – houses, Trial 2 – cars, Trail 3 – children's bedrooms. The images were accompanied by the words "Here are four houses/cars/kids' bedrooms." Then two photographs of children and the words "This kid lives in one of these houses/rides in one of these cars/sleeps in one of these bedrooms. And this kid lives in one of these houses/rides in one of these cars/sleeps in one of these bedrooms" appeared on the screen. One child was African American, and one child was European American; target children were matched on age and gender. Target gender was randomized

between participants. Participants saw new target children across all three trials.

With regard to each target, children were asked: "Which house does this kid live in/car does this kid ride in/bedroom does this kid sleep in?" Participants matched the target child with one of the wealth markers displayed by pointing to or clicking a button. Target children could not both be matched to the same wealth marker. Target child race order was counterbalanced between subjects; half the sample matched African American targets first, and half of the sample matched European American targets first. For analyses, the average wealth status assigned to African American targets and to European American targets was calculated across the three trials, and a difference score was created by subtracting the average for African American targets from the average for European American targets. This established a scale ranging from -3 to $+3$, for which higher scores indicated greater perceived wealth status in favor of European Americans.

Results

Wealth Status Awareness

To test our hypothesis that children's Wealth Status Awareness would increase with age (H1), we regressed Wealth Status Awareness (range: -3 = greatest perceived disparity in favor of African Americans to $+3$ = greatest perceived disparity in favor of European Americans) on Age (1 = 10–11 years, 0 = 5–6 years) and Race (1 = African American, 0 = European American). The overall multiple regression model was significant, $R^2 = .11$, $F(2, 182) = 11.52$, $p < .001$. Additionally, the coefficient for Age was significant; children perceived increasing wealth disparity between African Americans and European Americans (in favor of European Americans) with age, $b = .57$, $p < .001$, $\beta = .27$; and the coefficient for Race was significant; European American children perceived greater wealth disparity between African Americans and European Americans (in favor of European Americans) than did African American children, $b = -.48$, $p = .002$, $\beta = -.22$. We added an Age \times Race interaction term in a second step, but this did not result in a significant increase in variance explained.

To determine how children's associations of wealth with the African American and European American targets individually changed with age, we conducted a separate analysis of average wealth status associated with each set of targets using t tests. Younger children did not differentiate between the wealth status of either set of targets, $t(90) = -1.16$, $p = .25$, $M_{European\ American} = 2.62$, $SD = .70$, $M_{African\ American} = 2.75$, $SD = .64$. That is, 5- to 6-year-olds did not associate either racial group with higher wealth than the other. Wealth associations for the African American targets decreased with age, $t(183) = 2.77$, $p = .006$, $M_{5-6Years} = 2.75$, $SD = .64$, $M_{10-11Years} = 2.50$, $SD = .63$, whereas wealth associations for the European American targets increased with age, $t(183) = -3.07$, $p = .002$, $M_{5-6Years} = 2.62$, $SD = .70$, $M_{10-11Years} = 2.90$, $SD = .56$. Finally, older children (10–11 year olds) associated the European American targets with higher wealth than the African American targets $t(93) = 4.16$, $p < .001$, $M_{European\ American} = 2.90$, $SD = .56$, $M_{African\ American} = 2.50$, $SD = .63$.

Thus, H1 was supported: Children were increasingly aware of wealth disparities between African Americans and European Americans (in favor of European Americans) with age. Five- to

6-year-olds did not differentiate between the two groups, but with age, wealth associations decreased for African Americans and increased for European Americans, such that 10- to 11-year-olds associated significantly higher wealth with European Americans than African Americans.

Evaluation of Resource Inequality

To test our hypothesis (H2) that children would evaluate the resource inequality more negatively (as more “not okay”) with age, we regressed Evaluation of the Resource Inequality (range: 1 = *really not okay* to 4 = *really okay*) on Age (1 = 10–11 years, 0 = 5–6 years) and Race (1 = African American, 0 = European American), testing separate models for the context in which African American hospitals were disadvantaged and the context in which European American hospitals were disadvantaged. When African American hospitals were disadvantaged, the overall multiple regression model was significant, $R^2 = .16$, $F(2, 82) = 7.74$, $p = .001$, and the coefficient for Age was significant; children evaluated the resource inequality more negatively with age, $b = -.74$, $p < .001$, $\beta = -.37$. Likewise, when European American hospitals were disadvantaged, the overall multiple regression model was significant, $R^2 = .07$, $F(2, 95) = 3.47$, $p = .04$, and the coefficient for Age was significant; children evaluated the resource inequality more negatively with age, $b = -.53$, $p = .01$, $\beta = -.26$. Coefficients for Race were not significant in either model, nor were Age \times Race interaction terms. Thus, H2 was supported: Children evaluated the resource inequality more negatively with age.

Reasoning About Evaluation of Resource Inequality

We used a Fisher’s exact test of independence (preferable to the χ^2 test when some cells have expected counts less than five) to test our hypothesis (H3) about children’s reasoning for their Evaluation of the Resource Inequality, focusing on the three most commonly referenced conceptual categories: Rights, Equality, and Others’ Welfare. The majority of participants (88%) gave justifications that fit into one of these conceptual categories; the final sample size for this analysis was $n = 162$.

We compared children’s justifications for their evaluations of the inequality across Age (10–11 years, 5–6 years) and Race (African American, European American), testing separate models for the context in which African American hospitals were disadvantaged and the context in which European American hospitals were disadvantaged. When African American hospitals were disadvantaged, the test was significant, Fisher’s exact = 15.77, $p < .001$. Follow-up z tests with Bonferroni correction for multiple comparisons indicated that a greater proportion of older children than younger children mentioned Rights and a smaller proportion of older children than younger children mentioned Others’ Welfare (both $ps < .05$). The proportion of participants referencing Equality did not differ significantly with age. When European American hospitals were disadvantaged, however, the test was not significant, Fisher’s exact = 1.82, $p = .48$. No significant effects emerged for Race in either model, nor did Age \times Race interactions emerge, thus, to simplify the presentation of the results given the small cell sizes for some categories, Table 1 displays children’s reasoning for their Evaluation of the Resource Inequality at 5–6 years and 10–11 years, collapsed across participant race.

Table 1
Children’s Reasoning for Their Evaluations of the Resource Inequality

Resource	African-American hospitals disadvantaged		European-American hospitals disadvantaged	
	5- to 6-year olds	10- to 11-year olds	5- to 6-year olds	10- to 11-year olds
Rights	.00*	.23*	.03	.10
Equality	.33	.46	.53	.56
Others’ welfare	.67*	.31*	.44	.34
<i>N</i>	39	39	34	50

Note. Numbers reflect observed proportions.

* Age-related difference in the proportion of participants referencing the conceptual category at $p < .05$.

H3 was partially supported: Children increasingly justified their negative evaluations of the resource inequality with reference to children’s rights to adequate medical care, but only when African American hospitals were disadvantaged. When European American hospitals were disadvantaged, children did not differ with age in their references to rights.

Preference for Rectifying Versus Perpetuating the Inequality

To test our hypothesis regarding children’s preference for the Rectify allocation strategy versus the Perpetuate allocation strategy (H4), we regressed children’s preference for Rectify over Perpetuate (range: $-3 =$ strong preference for perpetuate to $+3 =$ strong preference for rectify) on Age (1 = 10–11 years, 0 = 5–6 years) and Race (1 = African American, 0 = European American), testing separate models for the context in which African American hospitals were disadvantaged and the context in which European American hospitals were disadvantaged. When African American hospitals were disadvantaged, the overall multiple regression model was significant, $R^2 = .08$, $F(2, 82) = 3.75$, $p = .03$. Additionally, the coefficient for Age was significant; children increasingly preferred Rectify over Perpetuate with age, $b = .74$, $p = .02$, $\beta = .26$. When European American hospitals were disadvantaged, however, the overall multiple regression model was not significant, $R^2 = .05$, $F(2, 94) = 2.46$, $p = .09$. Children did not increasingly prefer Rectify over Perpetuate with age, $b = .52$, $p = .05$, $\beta = .20$. No significant effects for Race or Age \times Race interactions emerged in either model. Thus, H4 was supported: When African American hospitals were disadvantaged (but not when European American hospitals were disadvantaged) children increasingly preferred the Rectify allocation strategy to the Perpetuate allocation strategy with age.

Mediation Model for Allocation Strategy Preference

We used Preacher and Hayes’ (2008) bootstrapping method to test our mediation hypothesis (H5). Bootstrapping generates an empirical approximation of the sampling distribution of a statistic by repeated random sampling (with replacement) from the original sample and then uses this distribution to calculate p values and construct confidence intervals for the indirect effect. Note that unlike regular CIs, bootstrap CIs can be

asymmetrical because they are based on an empirical estimation of the sampling distribution of the indirect effect. A 95% CI containing zero reflects a nonsignificant effect. In this analysis, we used 5000 bootstrap samples.

We tested the indirect effect of Age (1 = 10–11 years, 0 = 5–6 years) on preference for rectifying versus perpetuating the inequality (range: -3 = strong preference for perpetuate to $+3$ = strong preference for rectify), controlling for Race (1 = African American, 0 = European American) to remain consistent with the multiple regression models for children's evaluations of these strategies presented above. We tested separate models for the context in which African American hospitals were disadvantaged and the context in which European American hospitals were disadvantaged. A correlation matrix for the relevant variables is provided in Table 2.

When African American hospitals were disadvantaged, the total indirect effect was significant, bootstrap estimate = .7022, 95% CI [.3255, 1.2198], as displayed in Figure 1. As demonstrated by CIs that do not contain zero, both indirect effects were significant: the indirect effect of Wealth Status Awareness was significant, bootstrap estimate = .2549, 95% CI [.0656, .5763], and the indirect effect of Evaluation of the Resource Inequality was significant, bootstrap estimate = .4474, 95% CI [.1716, .8176]. Contrasting the two indirect effects revealed that neither was significantly stronger than the other, bootstrap point estimate of contrast = $-.1926$, 95% CI [$-.5611$, .1455]. Thus both Wealth Status Awareness and Evaluation of the Resource Inequality exerted significant indirect effects, controlling for the other variables in the model, but neither variable exerted a stronger effect than the other. Further, Race of the participant was not a significant covariate.

When European American hospitals were disadvantaged, the total indirect effect was not significant, bootstrap estimate = .1082, 95% CI [$-.1321$, .4214], as displayed in Figure 2. Additionally, Race of the participant was not a significant covariate. This means that even though children's Wealth Status Awareness increased with age and their Evaluation of the Resource Inequality became more negative with age (as seen in the multiple regression models above, as well as in Figure 2), their preference for the Rectify allocation strategy over the Perpetuate allocation strategy did not increase with age when European American hospitals were disadvantaged, and the mediation model did not explain their responses.

H5 was supported: When African American hospitals were disadvantaged (but not when European American hospitals were disadvantaged), the association of Age with preference for Rectify over Perpetuate was mediated (or explained) by children's increasing Wealth Status Awareness and increasingly negative evaluations of the resource inequality.

Resource Allocations

To test our hypothesis regarding children's resource allocation decisions (H6), we regressed children's Resource Allocation (range 0–7 boxes to the disadvantaged group) on Age (1 = 10–11 years, 0 = 5–6 years) and Race (1 = African American, 0 = European American), testing separate models for the context in which African American hospitals were disadvantaged and the context in which European American hospitals were disadvantaged. When African American hospitals were disadvantaged, the overall multiple regression model was significant, $R^2 = .11$, $F(2, 82) = 4.80$, $p = .01$. Additionally, the coefficient for Age was significant; children allocated more resources to the disadvantaged group with age, $b = .71$, $p = .006$, $\beta = .29$. The coefficient for Race of the participant was not significant. When European American hospitals were disadvantaged, however, the overall multiple regression model was not significant, $R^2 = .00$, $F(2, 94) = .31$, $p = .73$. Children's resource allocations to the disadvantaged group did not change with age, $b = .13$, $p = .59$, $\beta = .06$, or vary significantly by Race of the participant. For both contexts, we then added an Age \times Race interaction term in a second step, but this did not result in a significant increase in variance explained in either context.

H6 was supported: When African American hospitals were disadvantaged (but not when European American hospitals were disadvantaged) children allocated more hospital supplies to the disadvantaged group with age. Separate t tests of children's mean allocations to the disadvantaged group at 5 to 6 and 10 to 11 years revealed that younger children did not allocate significantly more resources to the disadvantaged group than would be expected by chance when African American hospitals were disadvantaged, $t(43) = -1.28$, $p = .21$, $M = 3.23$, $SD = 1.41$, or when European American hospitals were disadvantaged, $t(45) = .77$, $p = .44$, $M = 3.63$, $SD = 1.41$. Older children, however, allocated significantly more resources to the disadvantaged

Table 2
Correlations Among All Variables

Variable	African-American hospitals disadvantaged ($n = 85$)						European-American hospitals disadvantaged ($n = 97$)					
	1	2	3	4	5	6	1	2	3	4	5	6
1. Age	—	—	—	—	—	—	—	—	—	—	—	—
2. Race	.06	—	—	—	—	—	.06	—	—	—	—	—
3. Wealth status awareness	.28**	-.21	—	—	—	—	.22*	-.20*	—	—	—	—
4. Evaluation of inequality	-.26**	.15	-.06	—	—	—	-.26*	.00	-.04	—	—	—
5. Preference for rectify over perpetuate	.25*	-.14	.32**	-.44**	—	—	.19	-.11	-.01	-.28**	—	—
6. Resources allocated to disadvantaged hospital	.30**	.13	-.05	-.13	.12	—	.06	.06	.01	-.01	.18	—

Note. For age: 1 = 10- to 11-year-olds, 0 = 5- to 6-year-olds; for race: 1 = African-American, 0 = European-American; for wealth status awareness: -3 = greatest perceived disparity in favor of African-Americans to $+3$ = greatest perceived disparity in favor of European-Americans; for evaluation of inequality: 1 = really not okay to 4 = really okay; for preference for rectify over perpetuate: -3 = strong preference for perpetuate to $+3$ = strong preference for rectify; for resources allocated to disadvantaged hospital: range 0 to 7 boxes.

* $p < .05$. ** $p < .01$.

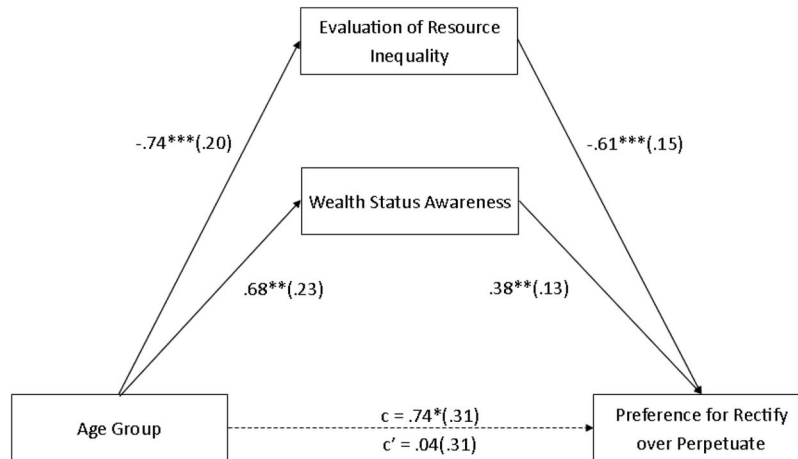


Figure 1. African American hospitals disadvantaged: Mediation model for the indirect effect of Age Group on preference for the Rectify allocation strategy over the Perpetuate allocation strategy through Evaluation of Resource Inequality and Wealth Status Awareness, controlling for Race of the participant. Unstandardized regression coefficients and SEs are provided. * $p < .05$. ** $p < .01$. *** $p < .001$.

group than would be expected by chance when African American hospitals were disadvantaged, $t(40) = 3.46$, $p = .001$, $M = 3.95$, $SD = .84$, but not when European American hospitals were disadvantaged, $t(50) = 1.63$, $p = .11$, $M = 3.76$, $SD = 1.12$. Please see Table 3 for a summary of mean allocations.

Discussion

Social inequalities profoundly affect children's lives, but very little research has examined the developmental origins of the attitudes and behaviors that support rectifying or perpetuating such disparities. Although previous research has indicated that children are aware of social status differences based on race (e.g., Bigler et al., 2003), the novel findings of this study revealed that children did not perpetuate this status difference. In fact, with age, children

preferred to give more resources to a societally disadvantaged group, and reasoned about children's rights to adequate medical care (Helwig et al., 2014). These findings are especially important given the alternative possibility: that increasing awareness of race and status would encourage children to endorse the status quo, prompting them to perpetuate a race-based inequality of resources. On the contrary, in this context of an inequality of societal resources, age-related increases in children's knowledge linking race, wealth, and status enabled them to consider not only the importance of equal access to medical care, but the possibility that a historically disadvantaged group's status entitled them to a greater share of resources.

Thus, this study provided the first direct evidence for why children reject racially biased inequalities of societal resources but

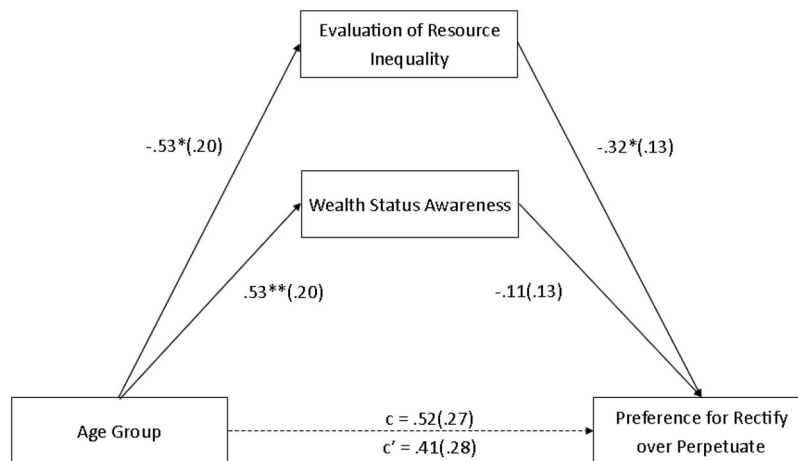


Figure 2. European American hospitals disadvantaged: Mediation model for the indirect effect of Age Group on preference for the Rectify allocation strategy over the Perpetuate allocation strategy through Evaluation of Resource Inequality and Wealth Status Awareness, controlling for Race. Unstandardized regression coefficients and SEs are provided. * $p < .05$. ** $p < .01$.

Table 3
Means (and Standard Deviations) for the Number of Resources Children Allocated to the Disadvantaged Group

African-American hospitals disadvantaged				European-American hospitals disadvantaged			
5- to 6-year olds 3.23 (1.41)		10- to 11-year olds 3.95 (.84)		5- to 6-year olds 3.63 (1.14)		10- to 11-year olds 3.76 (1.12)	
African-American	European-American	African-American	European-American	African-American	European-American	African-American	European-American
3.40 (1.57)	3.08 (1.28)	4.10 (.72)	3.81 (.93)	3.57 (1.44)	3.70 (.76)	3.93 (1.12)	3.57 (1.19)

have differing perspectives regarding the fair means of addressing interracial disparities when historically disadvantaged groups received less versus when historically advantaged groups received less. Specifically, age was associated with both greater awareness of wealth disparities and more negative evaluations of the resource inequality, which in turn were associated with greater preference for the Rectify allocation strategy over the Perpetuate allocation strategy when African American hospitals were disadvantaged. When European American hospitals were disadvantaged, however, changing attitudes about race and wealth and evaluations of the inequality did not mediate children's allocation preferences with age. These results support our hypotheses regarding differences in children's responses to inequality based on whether the disadvantaged group has a societal history of exclusion from access to resources.

Extending previous research on resource allocation from the social reasoning developmental perspective (e.g., Cooley & Killen, 2015; Mulvey et al., 2014), these results support an integrative approach to understanding children's developing responses to inequality. Drawing on our theoretical model (Killen & Rutland, 2011), we interpret our findings as an indication that, with age, children were able to take into consideration not just immediate resource inequalities between groups, but overarching societal inequalities as well. That is, with age, children were able to integrate their moral judgments about resource inequality, including reasoning about others' welfare and equality, with their increasing knowledge of intergroup dynamics on a broader scale. In line with related research indicating that, with age, children are increasingly aware that racial/ethnic minority groups (e.g., African Americans, Latinos) are more likely to be the targets of exclusion and discrimination than European Americans (Bigler et al., 2008; C. S. Brown et al., 2007; Crystal et al., 2008; Hughes, 2011; McKown & Strambler, 2009), these findings highlight children's growing ability to adjust their response to inequality with respect to the social history of the recipient groups in question.

Children's open-ended justifications for their increasingly negative evaluations of the inequality corroborate this conclusion; children who witnessed African American hospitals disadvantaged increasingly referenced children's rights to medical care with age, whereas children who witnessed European American hospitals disadvantaged did not differ with age in their references to rights (and, in fact, rarely referred to rights explicitly). Although this reasoning partially supports our hypothesis regarding age-related increases in consideration of rights, it is notable that this age-related change was only observed for children who witnessed African American hospitals receiving fewer resources. We interpret older children's explicit references to rights and deservedness in this context as an indication that, in line with their resource

allocation preferences, children perceived this context as especially salient with respect to rights issues. As one fifth grader put it: "The other hospital will struggle more than the 'white' hospital, which is unfair and reminds us of the civil rights time." Thus, in addition to concerns for others' welfare and wellbeing, which have been consistently noted in research on children's reasoning about nurturance rights (e.g., Lahat, Helwig, Yang, Tan, & Liu, 2009), it is likely that seeing African American hospitals receiving fewer resources encouraged children to consider rights in a broader, more explicitly social and historical sense.

These findings are a novel extension of research on children's moral judgments about resource allocation, and they provide a new context for inquiry and application. Specifically, younger and older children's frequent references to the importance of protecting others' welfare (in both conditions), as well as older children's references to rights in one condition, highlight an important contrast between this study on children's allocation of societal resources and the majority of past work, which has focused on allocation of small, familiar resources like candy or stickers. Although some recent work has examined the extent to which resource value moderates children's allocation decisions (e.g., Blake & Rand, 2010), few studies have examined the intersection of children's understanding of rights to resources by investigating their conceptions of how to allocate societal resources like medical supplies. Our findings indicate that, with age, children are able to consider much more than an immediate inequality of familiar resources, as has been the focus of previous work (e.g., Li et al., 2014; Paulus, 2014). Rather, their conceptions of rights, status, and fairness are brought to bear on their decisions in light of social inequalities. This study opens up a new avenue for research on moral judgment: that is, how children apply moral concepts of rights and others' welfare to decisions regarding social inequalities, particularly in the context of resource allocation.

Interestingly, children's own racial group membership was not a significant predictor of their allocation behavior or preferences in this study, even when they witnessed their racial ingroup receiving fewer resources. These results may at first seem surprising given previous research on children's racial ingroup bias in resource allocation contexts (e.g., Renno & Shutts, 2015), as well as the potential for children to allocate preferentially to their ingroup even in a context of inequality. However, denial of resources is considered a moral transgression in childhood and adulthood (Smetana et al., 2014; Turiel, 2006), and it is likely that the importance of adequate medical supplies for ensuring child wellbeing overpowered children's tendency to distribute more resources to their social ingroup. Supporting this interpretation, emerging research also drawing on the social reasoning developmental model indicates that, by 6 to 8 years of age, children

recognize that unequal distribution of resources that are needed to avoid harm has negative implications for individuals' welfare (Rizzo, Elenbaas, Cooley, & Killen, 2016). Previous studies also suggest that ingroup bias is less influential in children's judgments and reasoning in rights-related contexts (e.g., Helwig & Jasiobedzka, 2001). Thus, when resource recipients vary only on the dimension of racial group membership, children may exhibit preferential allocation to their ingroup, but when issues of rights and others' welfare are at stake, findings from this study suggest that children focus on addressing inequality rather than advantaging their ingroup.

Yet, although children did not exhibit racial ingroup bias in their allocation decisions, *recipient* or *target race* was a relevant factor in children's responses to the medical resource inequality. The relevance of recipient race was reflected in condition-based differences in children's resource allocation behavior, preferences, and reasoning. Further, age-related increases in children's awareness of economic status inequalities were an important predictor of children's preference for rectifying the inequality when African Americans were at a disadvantage. Interestingly, although children of both racial backgrounds perceived increasing wealth disparity between the two racial groups with age, the magnitude of the perceived gap was larger for European American participants than for African American participants. Several theories suggest that people are motivated to see themselves and their group in a positive light (see R. Brown, 2000). As research indicates that children positively evaluate and prefer to associate with individuals and groups who are depicted as higher in wealth (Horwitz et al., 2014), association with a group identified as lower in wealth may be less desirable for children. Thus, African American participants may have been more hesitant than their European American peers to associate African American targets with lower wealth than European American targets. Though this difference by participant race pertained to the magnitude of the effect (rather than the presence/absence or direction of the effect), the question of why European American participants perceived a larger wealth gap between than did their African American peers deserves further investigation.

Future Directions

Future research in this area should investigate children's conceptions of how to fairly allocate other types of societal resources like quality education and safe housing, to investigate the generalizability of children's decisions regarding the allocation of societal resources. It would also be beneficial for future studies to draw on children's reasoning about nurturance rights, which provides further evidence of the ways in which children articulate their concern for fair access to resources, including medical care.

As well, research could further investigate the joint and separate roles of recipient and child race and socioeconomic status on resource allocation in this context. Low-income families are more likely to face challenges pertaining to inconsistent care, difficulty in obtaining health insurance, and even limited access to healthy food (Kochhar, Fry, & Taylor, 2011). Although this study controlled for SES background, using only one economic category (middle- and low-middle-income children), future research would benefit from inclusion of participants who personally experience the inequality depicted as well as those at the upper end of the

economic distribution. In addition to measures of participants' family income, parental educational attainment could be considered in future work, as recent studies show that adolescents from families with higher levels of parental education are more likely to reason about economic inequality in terms of structural factors (e.g., circumstances of one's birth, discrimination; Flanagan et al., 2014). Children's responses to resource disparities may likewise be linked with family education, potentially through increased discussion of policies and political issues.

Additionally, future research could consider the role of participant racial identity, in addition to parentally described racial group membership, for children's judgments and reasoning in response to resource disparities. Moreover little published research to date has moved beyond racial group membership to explore how the facets of racial identity (e.g., commitment, exploration) may relate to children's resource allocation decisions in interracial contexts. Further, research indicates that the racial diversity of children's social environments, including elementary school environments, contributes to inclusive and egalitarian racial attitudes (e.g., Crystal et al., 2008; McGlothlin & Killen, 2010). As all participants in the current study attended racially diverse schools, future research could investigate potential differences in resource allocation preferences and reasoning between children attending diverse versus homogeneous schools.

Finally, changing social norms regarding intergroup resource allocation may be one step for interventionists and policymakers to take in the effort to equalize access to societal resources and opportunities (Cooley & Killen, 2015; Mulvey et al., 2014; Nesdale & Lawson, 2011). Further understanding of children's own conceptions of how inequalities come about are also needed, however, to determine how best to frame such policies. Related research indicates that, while younger children sometimes erroneously link wealth or a surplus of resources with factors like hard work or luck alone, between middle childhood and adolescence, children increasingly recognize that inequality can also be driven by societal factors (e.g., insufficient educational or job opportunities; Chafel & Neitzel, 2005; Flanagan et al., 2014).

Conclusions

Endorsement and perpetuation of social inequality is not inevitable. Although social hierarchies promote unequal access to societal resources on the basis of group membership, this study provides evidence that children often reject such unjust distributions. With age, children's increasing awareness of inequalities linked to race coupled with their increasingly negative evaluations of such differential treatment explain their increasing preference for rectifying a resource inequality that deprives a historically disadvantaged group of societal resources. Importantly, age-related changes with regard to inequalities disadvantaging the historically disadvantaged group (African Americans) were observed in children's evaluations, judgments, attitudes, reasoning, and behavior, suggesting significant developmental change in this domain between the ages of 5 to 6 and 10 to 11 years. Through further investigation of the origins and development of behaviors and reasoning that promote protection of groups' rights to resources, research can identify the kinds of experiences and environments that will help children (and adults) construct a society in

which all groups have equal access to vital resources and equal opportunity to benefit from them.

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