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Head Start Children's Moral Reasoning Predicts Aggressive Forms and Functions

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Abstract
This short-term longitudinal study examined how economically-impoverished children's moral reasoning predicts specific aggressive subtypes. Children ($N = 106$, $M_{age} = 52.78$ months, 51% boys, ethnically diverse backgrounds) from urban Head Start programs completed a structured story-interview pertaining to moral reasoning and judgement of accidental harm. Six months later, teachers reported children's aggressive forms and functions. Findings support that impoverished children in some ways follow similar patterns as more affluent children, yet diverge in important, ecologically-relevant ways. Use of psychological harm reasoning strategies corresponded with less reactive aggression, and use of rule adherence strategies corresponded with less physical-proactive aggression. Findings suggest that conventional reasoning and care-oriented reasoning may work as a buffer to reduce specific aggressive behaviors for impoverished preschool children.

Keywords Moral reasoning · Aggression · Poverty · Early childhood

Introduction

From a young age, children readily identify and evaluate harmful actions as wrong, even when actions are permitted by authority or rule alterations (Killen & Smetana, 2015). Yet, young children perpetrate harmful acts, contrasting their beliefs and social norms (Card et al., 2008). Such discrepancies are common in young children, however relatively little research has investigated children's moral reasoning and aggressive behaviors in concert (Arsenio & Lemerise, 2004; Baker & Liu, 2021; Jambon & Smetana, 2018, 2020). Moreover, no studies have examined these relations in children living in economic deprivation—a context that may impact the relative prioritization of specific moral concerns (e.g., equity versus harm), and therefore how child reason about moral events (Dubois et al., 2015; Jovic, 2020).

The incongruence between moral reasoning and moral behavior in young children has important implications for their development, and examining these patterns offers practical outcomes for educators and parents. For example, preschool-age children who explain moral concerns based on psychological harm (e.g., "they'll be sad") show lower levels of specific types of aggression compared to children who explain moral concerns based on justice and equity (e.g., "that's not fair"; Baker & Liu, 2021). By attending to children's specific misbehaviors with developmentally-sensitive strategies informed by context, parents and educators can respond to children and guide them to consider more adaptive strategies—for instance, by referencing psychological harm ("that would really hurt their feelings, wouldn't it?") instead of general references to order or rules ("we don't hit our friends").

This paper seeks to examine children's moral reasoning and aggressive behaviors in a two time-point, cross-sequential design, specifically in an economically-impoverished urban community. Guided by Social Domain Theory (Smetana, 2006), and incorporating aggressive forms and functions (Ostrov et al., 2013, 2014), this study seeks to consider how children's moral reasoning about accidental harm (Killen et al., 2011) predicts their aggressive behavior at 6-month follow-up, specifically for children from economically-impoverished urban areas.

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Social Domain Theory and Young Children's Moral Reasoning

Children's moral understanding undergoes predictable change during early childhood. During this time, Social Domain Theory (SDT; Smetana, 2006) outlines that children develop emerging capacities to evaluate and disentangle concerns of morality (related to harm, beneficence, welfare, and justice) from concerns of social conventions (social norms and rules). Younger preschool-age children judge a transgression as wrong based on conventional violations, whereas older preschoolers evaluate transgressions based on violations of morals (Baker et al., 2021, b; Baker, D'Esterre, et al., 2021). With age, children judge transgressions more severely and are more likely to consider multiple domains in their evaluations (Baker et al., 2021b, 2021c; Baker, D'Esterre, et al., 2021; Smetana & Ball, 2018; Smetana et al., 2018).

Importantly, SDT posits that this process is informed by social interactions within the home and community (Jambon & Smetana, 2018; Rottman & Young, 2015). Understanding of moral norms and concerns is developed by engaging fluidly with important authority figures in children's lives, such as teachers and parents modeling intended behavior and explaining with sensitivity the reasoning for moral norms (Smith et al., 2017). Although some moral concerns are universal (e.g., harm), there is some discussion on boundaries between moral versus conventional concerns across cultures (e.g., many Asian subcultures consider obedience to be a moral concern; Haidt et al., 1994; Nisan, 1987), or the priority of moral concerns versus family interdependence (e.g., non-European Americans are more likely to consider compliance to parents and rules, over moral reasons, compared to White Americans; Phinney et al., 2005).

Forms and Functions of Children's Aggression

Similar to the shift in moral evaluations and reasoning seen in preschool, children's aggressive behaviors during early childhood also undergo a shift in the form—that is, behavioral manifestation—of aggressive behaviors. More precisely, between ages 2 to 6 years, children show decreasing levels of physical aggression (i.e., aggression that causes or threatens to cause physical harm; e.g., pushing), yet show an increase in relational aggression (aggression used to harm social relationships, e.g., name-calling) during late toddlerhood, and then relatively stable levels of relational aggression throughout early childhood (Casas & Bower, 2018). This shift from almost exclusively relying on physical aggression to incorporating more relational aggression is thought to occur due to both socialization and maturational mechanisms (O'Toole et al., 2017; Swit et al., 2018). These changes result in late-preschool-age children using more nuanced approaches to inflict harm or seek retribution, such as choosing to exclude a peer instead of pushing.

Aggressive behaviors also serve one or more functions, or purposes. When children are aggressive in order to gain or maintain power or social status, this behavior is referred to as *proactive* aggression, which can be thought of as "cold blooded" aggression (Jambon & Smetana, 2018). Interestingly, proactive aggression is often associated with positive outcomes at this age; proactive transgressors often have better emotion regulation skills and experience less peer rejection (Ostrov et al., 2013). In contrast, *reactive* aggression is "hot blooded", that is retaliatory and in response to real or imagined provocation, and often motivated by emotional dysregulation. Reactive transgressors are perceived by peers as immature, and may have difficulty in emotional regulation skills and executive functioning (Arsenio et al., 2009; Ostrov et al., 2013).

In conceptualizing aggression, considering both forms and functions in an integrated approach offers strong ecological validity and empirical utility (Ostrov & Crick, 2007). First, both forms and functions exist concurrently in all aggressive behaviors, and so this perspective allows researchers to assess the full scope of child aggression (Ostrov & Crick, 2007). Second, this approach allows researchers to better parse differences between subtypes of aggression, to be described in a moment (Baker & Liu, 2021; Ostrov et al., 2013, 2014; Poland et al., 2016). The form-by-function integration captures four distinct subtypes of aggression: physical-proactive, physical-reactive, relational-proactive, and relational-reactive (Ostrov et al., 2013, 2014; Poland et al., 2016). By integrating the two dimensions, researchers have revealed important differences in cognitive antecedents and social outcomes of each subtype. For example, children who display physical-reactive aggression, but not physical-proactive, tend to show greater anger dysregulation and poorer inhibition, whereas children who display more relational-proactive aggression show the opposite pattern (i.e., increased emotional control and less anger; Ostrov et al., 2013; Poland et al., 2016).

Moral Reasoning and Aggressive Behavior

These distinctions in aggressive subtypes have also been found to be salient when exploring children's moral reasoning patterns. It is worth noting that much of this research has not considered aggressive forms and functions in concert—rather, studies typically study forms *or* functions (Hawley & Geldhof, 2012; White et al., 2013). The forms of aggression are evaluated by children quite differently. Children view

physical aggression as uniformly wrong (Jambon & Smetana, 2020; Murray-Close et al., 2006), and even when physical harm involves both moral and conventional concerns, children evaluate it based on physical harm being wrong (rather than evaluating it based on not following rules, or victim perspectives; Killen et al., 2011; Smetana, 2006). When evaluating relational transgressions, children are less severe in their judgments and are more likely to consider that relational aggression violates social order, a conventional concern (Rutland et al., 2010). Relational aggressors hold greater social capital, are more popular, and are less likely to be punished by parents and teachers (Swit et al., 2018). Preschool-age children who report feeling guilty about moral transgressions also show lower levels of physical, but not relational, aggression (Jambon & Smetana, 2020). As for aggressive functions, children who display greater proactive aggression tend to struggle when distinguishing between moral and conventional concerns—that is, they evaluate both moral and conventional concerns as inalterability (Jambon & Smetana, 2018). Proactive transgressors are often social manipulators, and are thought to use their adept social skills to conceal their difficulty with the moral domain (Baker & Liu, 2021; Hawley & Geldhof, 2012). In comparison, children who engage in reactive transgression are thought to be cognitively immature in terms of inhibition and emotion (White et al., 2013), but demonstrate robust understanding of distinctions between moral and conventional concerns (Jambon & Smetana, 2014; Jambon et al., 2019; Orobio de Castro et al., 2012).

In one study that has examined forms and functions of aggression in concert with moral reasoning, findings were generally consistent with those that parsed forms from functions. Baker and Liu (2021) examined middle-class, predominantly European-American children's reasoning strategies about accidental events and their concurrent aggressive subtypes, using the form-by-function integrated approach. Accidental events of harm offer a unique opportunity to examine individual differences in children's cognitive reasoning capacities, as compared to events of straightforward moral harm (e.g., pushing), as they more clearly contain both moral and conventional concerns, and have been found to be more robustly explained by children's cognitive functioning than straightforward events (Baker et al., 2021, b; Baker, D'Esterre, et al., 2021). In general, Baker and Liu (2021) found that children who reasoned about care-oriented moral domain strategies (e.g., psychological harm) tended to show lower rates of all types of aggression, especially in early preschool (age 3). They argued that reasoning about victims' psychological harm engaged mental state understanding and empathy, which is supported by previous researchers (Baker et al., 2021b, 2021c; Baker, D'Esterre, et al., 2021; Ball et al., 2017). In other words, cognitive advancements that engage perspective taking and sympathetic concern should correspond with decreases in aggressive behavior, but is perhaps specific to proactive and physical aggression (Jambon & Smetana, 2014, 2020; Jambon et al., 2019).

Additionally, Baker and Liu (2021) found that justice-oriented strategies (i.e., property damage and resource distribution) and conventional domain strategies (e.g., rule adherence) tended to be associated with greater levels of physical reactive aggression and relational-reactive aggression at all ages. As reactive aggression may be considered morally justified, researchers have argued that reactive aggression may not in fact reflect cognitive immaturity, as some have claimed, but rather a strong moral code (Baker & Liu, 2021; Jambon et al., 2018). In other words, children who evaluate issues based on retribution may believe that reactive aggression is an appropriate behavior. In many circumstances, particularly in environments with greater risk of physical harm or threat, such behavior is condoned or taught by parents and caregivers ("if someone hits you, you hit them right back"; Kim et al., 2019).

Moral Reasoning and Aggression in Poverty

Most studies have examined the intersections of morality and aggression in middle-class or socioeconomically diverse communities (Baker & Liu, 2021; Baker et al., 2021, b; Baker, D'Esterre, et al., 2021; Jambon & Smetana, 2014, 2020; Jambon et al., 2019; Killen et al., 2011; Orobio de Castro et al., 2012). While not without value, research from economically advantaged children often presents an idealized interpretation of findings, which may limit generalizability to children from historically-disinvested communities (see Frankenhuis & Nettle, 2020, for review). That is, environmental differences for children reared in poverty compared to other children yield differences in child development, including cognitive and behavioral development (b; Baker, D'Esterre, et al., 2021). These differences in functioning are reasonable given the differences in environment (Frankenhuis & Nettle, 2020).

Young children from impoverished communities differ from their affluent counterparts in the severity of and attendance to moral evaluations. Although young children across all income levels can distinguish between moral and conventional concerns, low-income children view conventional concerns as having the same immutability as moral concerns (Caravita et al., 2012)—in contrast, children from more affluent samples typically view only moral norms as firm and unable to be changed, but judge conventional norms as more flexible. Individuals from economically-impoverished communities also evaluate moral transgressions less severely and adjudicate less severely compared to affluent children, and show greater deference to authority when evaluating moral transgressions (Ball et al., 2017).

There is also divergence in the salience awarded to specific concerns across communities, particularly for resource distribution. Evidence from older children and adults reliably demonstrates that equitable resource distribution is a more paramount concern for individuals in poverty than individuals in high-income communities (Jovic, 2020). Low-income individuals tend to be more charitable and generous in their resource allocation, and are more willing to engage in unethical behavior (cheating) if that behavior directly benefits others; in comparison, high-income individuals are more likely to cheat for their own benefit (Dubois et al., 2015). In other words, individuals in economical poverty seem to give greater priority to all members of a group when making judgments about resource allocation. This focus for distributive justice has also been found in low-income preschool-age children as low-income children favor equality compared to high-income children who favor equity (Rochat et al., 2014). Children from more affluent or middle-class groups increasingly tend to redistribute wealth to benefit others with fewer resources as they move through early childhood into middle childhood (i.e., a maturational preference for equity; Essler & Paulus, 2021). Therefore, while affluent preschoolers show a transition in reasoning—from equality to equity—during the preschool years, this shift may not hold for low-income children.

Regarding socio-economically diverse samples, examining specific contexts or cultures in comparison to others (e.g., "high-income" versus "low-income") may be problematic, as it may serve to unintentionally support the deficit model of development by assuming similar standards for all children across contexts (Burlew, 2019; Frankenhuis & Nettle, 2020). Moreover, group comparisons not considering group differences in SES at all (i.e., controlling for SES, or not considering differences in SES) may also lead us to overlook the effects of contexts meaningful differences in child development that are worthy of consideration. That is, differences in household income hold important implications for children's lived experiences, and thus child development, and these differences indicate a sensitivity rather than a defect. In order to fully understand how morality and aggression interdependently develop within the context of poverty, researchers should be sensitive to the environmental issues that are present in poverty. Therefore, the current study does not make direct (i.e., statistical) comparison to a non-impoverished sample and focuses on the context of poverty and children's moral development.

Overall, children who experience economic adversity tend to evaluate moral transgressions by what are typically considered conventional standards, according to SDT, such as social order, authority, and obedience (Ball et al., 2017). Moreover, when they do evaluate transgressions concerns that fall within SDT's moral domain, low-income children tend to give salience to distributive justice concerns (Rochat et al., 2014), which may indicate that resource distribution has greater moral salience for low-income individuals. This may hold important implications for predicting specific aggressive behaviors, as discussed next, as children who reason about justice-related concerns (i.e., resource distribution) tend to show greater aggression than children who reason about psychological harm (Baker & Liu, 2021).

Integrating, then, previous findings on moral reasoning and aggression with findings of moral reasoning in poverty, while being sensitive to the lived experiences of individuals in poverty, the following patterns emerge. First, children in poverty tend to consider obedience, rule adherence, and resource distribution with more salience than more affluent samples (Ball et al., 2017; Rochat et al., 2014). Second, they may evaluate resource distribution as a particularly egregious transgression, and—because reactive aggression is a morally just response—demonstrate strong reactive aggression especially for children who judge a transgression based on resource distribution or rule adherence. Lastly, relational aggression is more common in individuals from impoverished areas even without the presumed perspective taking capacities that are thought to facilitate this behavior (Baker et al., 2021, b; Baker, D'Esterre, et al., 2021), and so perhaps children experiencing poverty who reason about resource distribution, but also property damage, are well primed to display greater relational aggression, compared with physical aggression.

Current Study

The goal of the current study is to extend what previous studies have found regarding moral reasoning and aggression (e.g., Baker & Liu, 2021) and assess how 3-, 4-, and 5-year-old children's moral reasoning about accidental harm predicts their aggressive behaviors at a 6-month follow-up, specifically within an impoverished urban community. Based on SDT, previous empirical studies (Baker & Liu, 2021; Jambon & Smetana, 2014, 2018), and with an ecologically-adapted framework in mind (Frankenhuis & Nettle, 2020), we hypothesize the following:

Physical-proactive aggression is more common in younger children, but persistent behavior is explained by deficits in moral understanding. However, proactive transgressors are socially adept. Therefore, we anticipate:

(1) Children who reason about conventional strategies (rule adherence) or resource distribution will display more physical-proactive aggression than children who reason about psychological harm. Moreover, this behavior will be less common in children than other types of aggression, and will decrease with age.

Physical-reactive aggression is typically more common in younger children, and is associated with strong moral understanding. It is considered as a just response to provocation, perhaps particularly so for children in economic poverty. Therefore, we hypothesize:

(2) Children who reason about psychological harm will, with age, show low levels of physical-reactive aggression. Children who reason about justice-related moral concerns (property damage, resource distribution) will show higher levels of physical-reactive aggression, with age.

Relational-proactive aggression is generally a sophisticated aggressive strategy, but does co-occur with limited understanding of moral versus conventional concerns. However, in the studies that have examined the integrated form-by-function approach to aggression, relational-proactive aggression is not well explained because this type of behavior is difficult to identify with parent, teacher, or observer reports. Therefore, we make no predictions about relational-proactive aggression.

Relational-reactive aggression involves fluid social thinking and sound moral judgment, and is more common in older children. Moreover, children in economic-deprivation may be especially prone to reactive aggression as a morally sound response to threat. Therefore, we hypothesize:

(3) Children who reason about psychological harm will display less relational-reactive aggression, with age. Children who reason about resource distribution, property damage, or rule adherence will show more of this behavior with age.

Method

Participants and Procedures

After receiving approval from the university's ethical review board, children were recruited from a network of three urban Head Start programs located in the northeast region of the U.S. Children qualifying for Head Start meet income and/or other requirements that indicate they need the program's preschool services. As a part of a larger study, parents of 106 children (M_{age} = 52.78 months, SD = 6.61 months, Range: 37–64 months, 51% boys) provided consent and completed demographic surveys. Children's ages were equally distributed across three age groups: 3-year-olds (N = 35; M_{age} = 45.07 months, SD = 3.64 months); 4-year-olds (N = 36; M_{age} = 53.56 months, SD = 2.45 months); and 5-year-olds (N = 35; M_{age} = 62.78 months, SD = 5.94 months). In sum, children came from 14 different classrooms across the three locations. Detailed demographic information is in Table 1.

Participants were recruited by researchers using tabling methods during the school's open-house just prior to the beginning of the regular school year. Specifically, researchers presented interested parents with study documents, explained the study in full and answered any questions. Consenting parents provided basic information about their child and demographic information about the family.

Data collection took place at two time points during the regular school year. In the fall, children completed assessments about moral cognition, and in the spring semester (approximately 4- to 6-months later) teachers completed surveys regarding children's aggression. If children were not able to complete all assessments at both time points, they were not included in the current sample. The schools received $5 for each participating child, and parents received $5 for survey completion and $5 for each participating child at each time point.

A trained doctoral student coordinated with each school's secretary and classroom teachers to arrange one-on-one interviews between children and trained undergraduate researchers. All children were interviewed in English, and interviews occurred in a quiet school location free of distractions. Interviews were audio recorded, and later transcribed and coded by trained researchers. Two independent undergraduate research coders coded 33% of the cases (N = 35), which was then re-checked by the PI. Inter-rater reliability was excellent, for both categorical (Kappa = 0.91) and continuous items (r = 0.92).

Measures

Moral Judgment and Reasoning

Children completed Killen et al. (2011) Accidental Transgressor Task. This assessment is designed as a story-interview: the child is first told a story about mild accidental harm (i.e., a target child unknowingly misplacing a peer's special cupcake), and then answers a series of open-ended and forced-choice questions regarding the characters, the actions, and the outcomes.

We were particularly interested in children's moral evaluations of the unintentional act ("When X did that [harmful act], do you think she was doing something that was alright or not alright?", "How alright [not alright] do you think she was?"). Children were trained to use a 4-point scale, illustrated with facial expressions, ranging from "really not alright" (illustrated with a very sad face), to "really alright" (illustrated with a very happy face). Children were trained to use this scale by the researcher asking the child how they feel about various foods (e.g., pizza), asking a sufficient

Table 1 Demographic information

Demographics	*M* [range]	Percentage (%)
Child		
Race/Ethnicity (98.5% reporting)		
African/African American/Black		29.2
White		14.2
Latinx		9.4
Asian American		1.9
Multiracial		17.0
Other		26.8
Parent		
Mother education (highest level completed, 82% reporting)		
Some high school or less		19.8
High school or GED		22.6
Some college		21.7
College degree		15.1
Graduate degree		2.8
Father education (highest level completed, 75% reporting)		
Some high school or less		23.6
High school or GED		26.4
Some college		10.4
College degree		10.4
Graduate degree		3.8
Household		
Family size	3.61 people [1- 8]	
Siblings (78% reporting)		
0		13.2
1		22.6
2		20.8
3		11.3
>3		10.4
Poverty threshold (% below)		90.6
Annual household income	$23,028 [$1100-$85,000]	

number of questions for the child to demonstrate use of the scale with both positive and negative affect.

To capture children's explanations for their evaluations of moral events, we coded children's responses to the open-ended follow-up question of "Why?", which immediately followed the previously described questions. Responses were coded using the coding manual designed for this task by Killen and colleagues (2011), according to domain and justification strategies (e.g., psychological harm). The coding strategies we focused on here were: psychological harm (moral domain; e.g., "that will hurt her feelings"); property damage (moral domain; e.g., "because that isn't his cupcake"); resource distribution (moral domain; e.g., "that isn't fair"); and rule adherence (conventional domain; e.g., "you're not supposed to touch other people's stuff"). In three cases, children's responses indicated more than one category, and so these cases were coded according to the category of the first response, in line with Killen et al. (2011). Children who did not provide a response or provided an unelaborated response ("because that's bad") were not included.

The Accidental Transgressor task is presented to children using colorful cartoon images of relevant stimuli (e.g., images of two different children representing the children in the story) which are displayed on the table in front of the child. Images of characters were gender-matched for each participant, and were selected to be ethnically ambiguous. This task was selected for several reasons: (1) prior research demonstrates that children's reasoning about prototypic harm is not related to their aggressive behaviors (Gasser et al., 2012), and so events of prototypic harm would likely not yield meaningful results; (2) the Accidental Transgressor task allows children to consider several domains of socio-moral reasoning, including the moral, conventional, and personal domains.

Aggression

Children's primary teachers reported on children's aggressive behaviors by completing the 12-item Preschool Proactive and Reactive Aggression—Teacher Report survey (PPRA-TR; Ostrov & Crick, 2007). The PPRA assesses the four types of aggression outlined by the form-by-function integrated approach with three items for each type (physical-proactive, physical-reactive, relational-proactive, relational-reactive). Sample items include "this child often hits, kicks, or pushes to get what he or she wants" for physical-proactive aggression, "to get what he or she wants, this child will often tell others that s/he won't be their friend anymore" for relational-proactive aggression, "if other children anger this child, s/he will often hit, kick, or punch them" for physical-reactive aggression, and "when this child is upset with others, s/he will often ignore or stop talking to them" for relational-reactive aggression.

The PPRA is constructed to be understood by people with a 5th grade literacy level. Items were scored on a 1 (never or almost never) to 5 (always or almost always) frequency scale. Scores were then averaged across items to create a score for each subtype. This resulted in four unique aggression scores, with higher scores indicating a higher level of aggression. Prior studies demonstrate the PPRA has strong validity (Ostrov & Crick, 2007) and excellent reliability (all Cronbach's $\alpha > 0.80$; Baker & Liu, 2021). Guttman's Lambda 2 (λ^2; Sijtsma, 2009) reliability coefficients were calculated for each subscale with the current data, and reached acceptable levels for all four subscales at both time points (all $\lambda^2 > 0.7$).

Power Analysis, Data Preparation, and Plan of Analyses

First, we conducted an a priori power analysis using G*Power 3.1 (Version 3.1.9.6; Faul et al., 2009) for a 3×4 ANOVA. Parameters for the power analysis were set to $\alpha = 0.05$, $1-\beta = 0.80$, and assuming an effect size of $\eta^2 = 0.12$, based on the smallest reported effect in Baker and Liu (2021). Results of the power analysis demonstrated that the total sample size needed to detect this effect is 107. Given our sample of 106, the current study is reasonably powered to detect the expected effects.

Tests of data normality indicated that aggression variables were not skewed or kurtotic (values <|2|). To test our hypotheses that children's moral reasoning strategies predict their aggressive behaviors, four (aggression subtypes) 3 (age: 3-, 4-, 5-year-olds) X 4 (reasoning strategies: psychological harm, property damage, rule deference, resource distribution) ANOVAs were conducted. Bonferroni corrections were used for follow-up comparisons.

Results

Preliminary Analyses and Descriptive Statistics

Correlations, means, and standard deviations can be found in Table 2. Age (continuous) was not significantly related to any type of aggression, nor was family income, therefore we did not control for age or income in any analyses. All aggressive subtypes were significantly correlated with one another, which was also expected and is common in aggression research (Casas & Bower, 2018).

Regarding moral judgments and reasoning strategies, differences emerged in the severity of judgment by the reasoning for the judgment. Specifically, children who reasoned based on resource distribution judged the act significantly more severely (on average, "very not alright"), compared to children who reasoned about psychological harm and property damage (average rating of "not alright"). Children who judged based on property damage were evenly split between judging the harm as "not alright" and "very not alright".

Table 2 Correlation matrix and descriptive statistics

Variable	*M*	SD	Age	Phys-Pro	Phys-React	Rel-Pro	Rel-React
Age	53.02	6.94	–				
Phys-Pro	1.44	0.68	−0.01	–			
Phys-React	1.96	0.73	−0.01	0.620**	–		
Rel-Pro	1.81	0.68	0.02	0.67**	0.58**	–	
Rel-React	2.37	0.83	0.09	0.35**	0.41**	0.67**	–
Income	23,028.76	14,187.34	0.22*	−0.09	−0.18	−0.18	−0.15

Phys-Pro Physical-proactive aggression, *Phys-React* physical-reactive aggression, *Rel-Pro* relational-proactive aggression, *Rel-React* relational reactive aggression

*p < 0.05

**p < 0.01

Moral Reasoning as Predicting Aggression

Physical Proactive Aggression

We hypothesized that—in explaining children's physical reactive aggression at T2—children who reason about conventional strategies (rule adherence) or resource distribution will display greater levels of physical proactive aggression, and that physical-proactive aggression will decrease with age. Findings generally supported our suppositions regarding moral reasoning strategies. The model reached significance and explained a large proportion of variance in children's aggression scores (F (10, 106) = 2.44, p = 0.033, η = 0.33). The Age X Reasoning term reached significance and likewise explained a large amount of variance in aggression scores (η = 0.19). As shown in Fig. 1, 5-year-olds who judged that the act was wrong because the actor violated norms of resource distribution showed significantly more aggression at Time 2 (M = 2.66, SE = 0.04) than did all other 5-year-olds ($M_{Psych\ Harm}$ = 1.27, SE = 0.05; $M_{Property\ Damage}$ = 1.14, SE = 0.02; $M_{Rule\ Adherence}$ = 1.27, SE = 0.03). Amongst the 4-year-olds, reasoning about property damage predicted the highest levels of aggression at Time 2 (M = 1.93, SE = 0.08), compared to all other 4-year-olds ($M_{Psych\ Harm}$ = 1.47, SE = 0.06; $M_{Rule\ Adherence}$ = 1.16, SE = 0.04; $M_{Resource\ Distribution}$ = 1.38, SE = 0.08). For 3-year-olds, children reasoning about resource distribution showed significantly more aggression at T2 than children who reasoned about psychological harm (M = 1.44, SE = 0.05, and M = 1.01, SE = 0.03, respectively). However physical proactive aggression did not decrease with age, countering our expectations.

Relational Proactive Aggression

In prior studies, children's relational proactive aggression has not been well explained in statistical models, largely because this behavior is difficult to identify with parent, teacher, or observer reports. Therefore, we anticipated non-significant results for this type of behavior. Our findings were supported, as the model showed that moral reasoning strategies did not explain a valuable level of behavior: F (10, 106) = 0.92, p = 0.566, η^2 = 0.28.

Physical Reactive Aggression

We hypothesized an Age X Justification interaction, such that children who reason about psychological harm will, with age, show decreased levels of physical reactive aggression; and children who reason about justice-related moral concerns (property damage, resource distribution) will show elevated levels of physical reactive aggression, with age. Findings were consistent with this hypothesis. The overall model reached significance and predicted a large amount

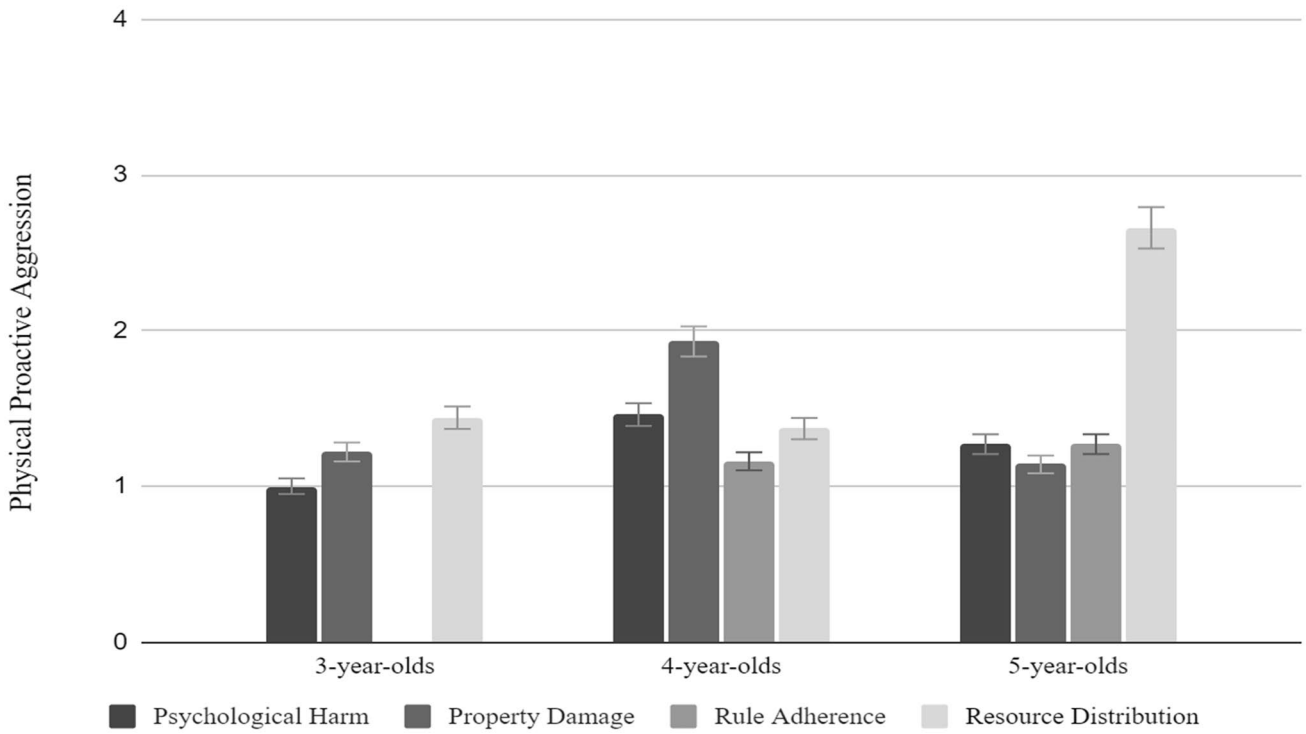

Fig. 1 Physical proactive aggression as a function of age and moral reasoning

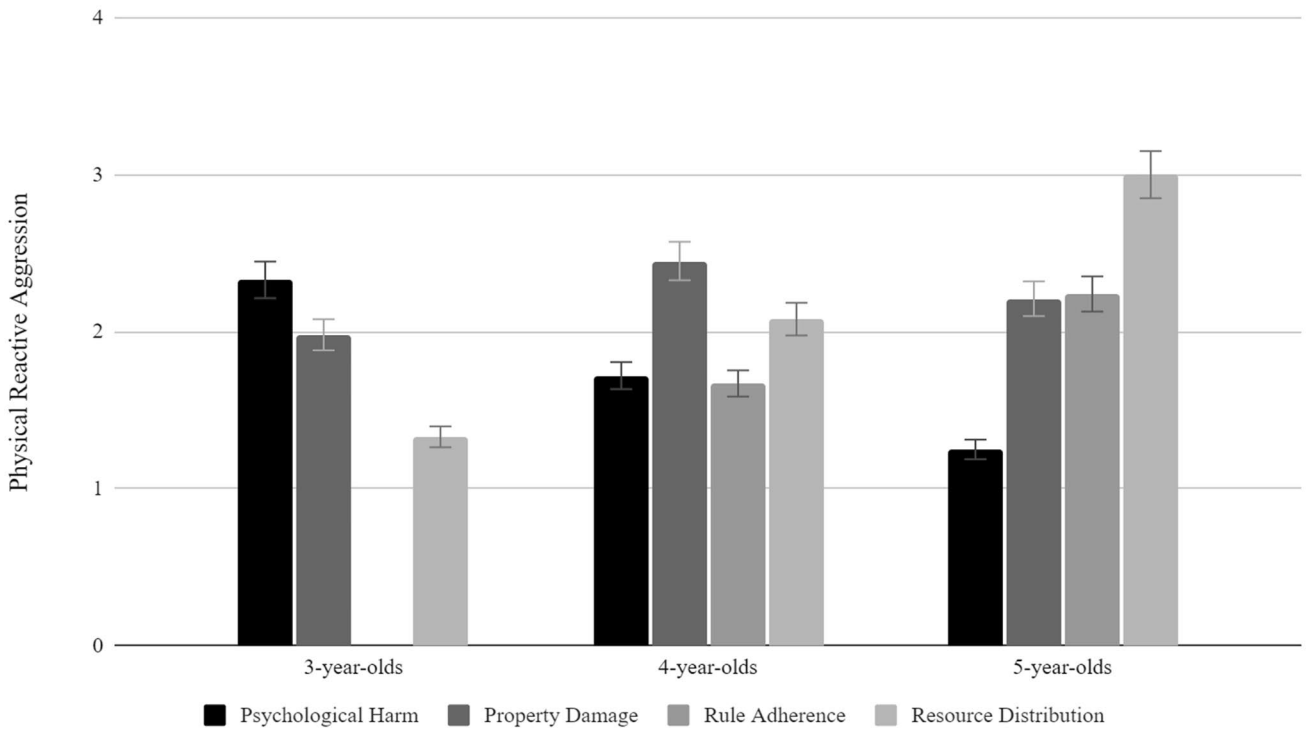

Fig. 2 Physical reactive aggression as a function of age and moral reasoning

of variance in children's aggression (F (10, 106) = 1.98, p = 0.045, η^2 = 0.43), which was largely explained by the Age X Judgement interaction (η^2 = 0.19).

As shown in Fig. 2, children who judged that the act was wrong because the victim experienced psychological harm showed significantly less aggression (at Time 2) with age—that is, amongst all children who reasoned about psychological harm, 3-year-olds (M = 2.33, SE = 0.07) were significantly more aggressive than 4-year-olds (M = 1.72, SE = 0.06), who were more aggressive than 5-year-olds (M = 1.25, SE = 0.03). The opposite pattern was found for children who judged the act to be wrong because they perceived the act to violate norms regarding resource distribution: 3-year-olds (M = 1.33, SE = 0.03) were significantly less aggressive than 4-year-olds (M = 2.08, SE = 0.07), who were less aggressive than 5-year-olds (M = 3.00, SE = 0.08).

Relational Reactive Aggression

For relational reactive aggression, we hypothesized that children who reason about psychological harm will display less relational reactive aggression, with age, and that children who reason about resource distribution, property damage, or rule adherence will show increased types of this behavior, with age. Findings support this hypothesis: the overall model reached significance and predicted a large amount of variance in children's aggression (F (10, 106) = 2.01, p = 0.026, η^2 = 0.46), which was largely explained by the Age X Judgement interaction (η^2 = 0.33).

As shown in Fig. 3, children who judged that the act was wrong because the victim experienced psychological harm showed significantly less aggression (at Time 2) with age—that is, amongst all children who reasoned about psychological harm, 3-year-olds (M = 3.33, SE = 0.06) were significantly more aggressive than 4-year-olds (M = 2.64, SE = 0.09), who were significantly more aggressive than 5-year-olds (M = 1.98, SE = 0.07). The opposite pattern was found for children who judged the act to be wrong because they perceived the act to be wrong based on resource distribution: 3-year-olds (M = 1.44, SE = 0.07) were significantly less aggressive than 4-year-olds (M = 2.50, SE = 0.05) and 5-year-olds (M = 2.67, SE = 0.07).

Discussion

The current study aimed at examining contributions of children's moral reasoning about accidental events on their aggressive behaviors within an impoverished community. By considering both the forms and functions of aggression and focusing on children living in poverty, we were able to expand on previous studies to explore the nuanced relationship between moral reasoning and one aspect of moral behavior in an empirically underrepresented

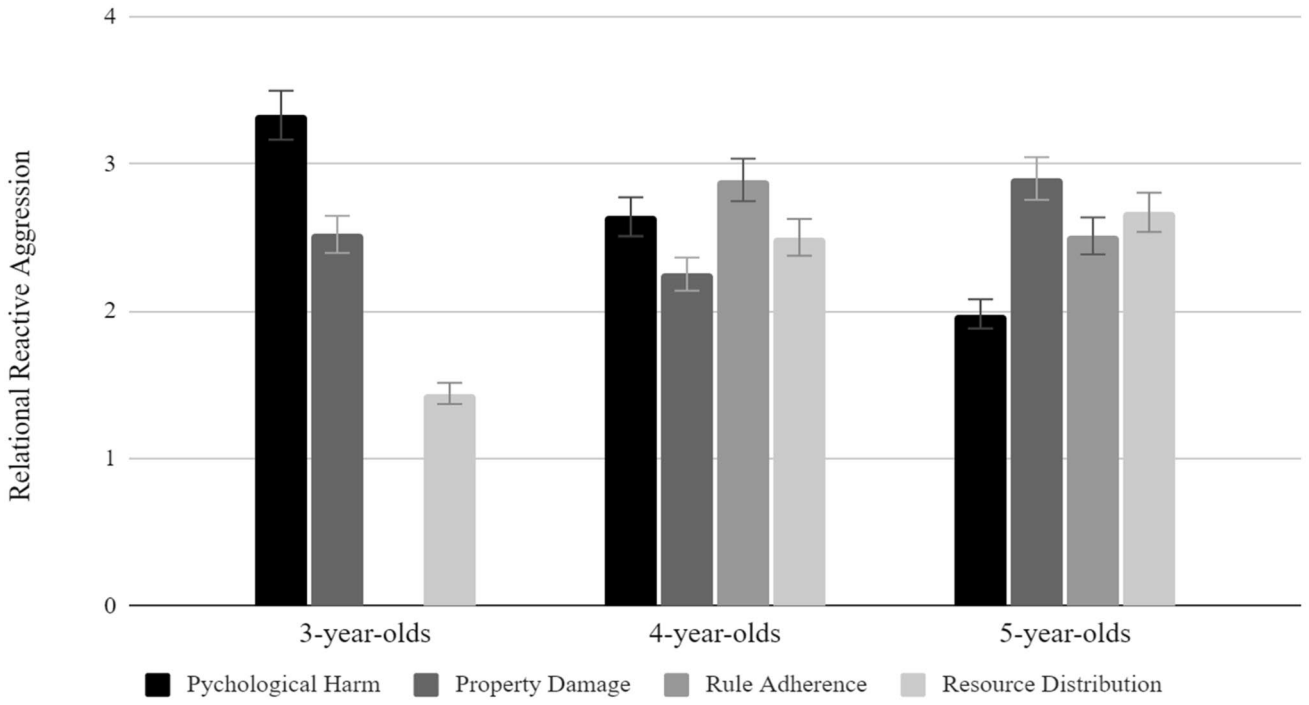

Fig. 3 Relational reactive aggression as a function of age and moral reasoning

group—children in economic deprivation—and how the unique context impacts this relationship. Our findings suggest that, among preschool children living in systemically disinvested communities, moral reasoning strategies about accidental harm explained future aggressive behaviors. Moreover, these patterns are in some ways similar to Baker and Liu (2021) yet in other ways support that the environmental needs of poverty shape the salience of certain concerns and subsequent aggressions.

Extending from previous work by Baker and Liu (2021), our study demonstrated that among historically-disinvested communities, it is true that specific reasoning strategies were closely related to specific subtypes of aggressive behaviors. First, our findings support that among children living in poverty children reasoning with conventional strategies (e.g., rule adherence, etc.) showed a lower level of physical proactive aggression across three age groups. In contrast, reasoning about resource distribution (preferred by 3- and 5-years-olds) and property damage (preferred by 4-years-olds) was associated with a higher level of physical proactive aggression. This may be because children in poverty consider conventional transgressions (e.g., disobedience to authority/rules) as more severe than justice-oriented (e.g., property damage, resource distribution) transgressions (Ball et al., 2017; Dunn et al., 2000).

This then brings to mind discussions of distinctions between moral and conventional concepts, and more recently moral and conventional norms (Dahl & Waltzer, 2020). More precisely, it brings to mind the "boundaries" of universality of what is conceptualized as convention—that is, accepted social guideposts for maintaining social order. Multifaceted events, such as the one that children responded to here, requires coordinating across domains and giving priority to what would be considered conventions (i.e., reference to authority). Dahl and Waltzer (and others) argue that conventions do not exist without pertinent contextual features, especially for multifaceted events (Dahl & Waltzer, 2020). It is possible that—for individuals living in poverty—the context of poverty, which is often high-risk and may include neighborhood violence for instance, may place greater concern on authority obedience as such conventions prevent harm. That is, the authority convention is inherently tethered to the moral domain in this context. Moreover, reverence to authority serves to uphold communal bonds, and therefore could also serve to prevent harm insofar as it upholds community welfare at large. In other words, obedience and deference to rules holds a stronger safety utility in high-risk, historically-disinvested communities, which in turn favor communalism over independence (Smetana, 2006). Indeed, in high-risk urban communities, parents undermining their children's autonomy and independence supports more positive social development and better parent–child relationships (McElhaney & Allen, 2001), contradicting patterns identified in more affluent communities. As in many communities abroad, it is possible that U.S. children living in abject poverty hold authority sanctions and rule adherence as moral concerns,

as they pertain to community and family harm, as we found that children who evaluated transgressions as wrong due to authority noncompliance judged them most severely, compared with children who evaluated based on psychological harm experienced or property damage.

In addition, physical proactive aggression increased with age during preschool; 4- and 5-year-olds showed more physical proactive aggression than other children, which contradicted our hypothesis and prior studies focusing on more affluent children (Baker & Liu, 2021). This may indicate that in general children at 4- or 5-years-old may still rely on physical proactive aggression, rather than shifting to relational aggression, when in poverty. This could possibly suggest that children in poverty develop the moral-conventional distinction later than more affluent children; however, this seems unlikely and is not well grounded. More likely, children in economic-poverty may be informally guided toward retaining these behaviors, as they likely serve a useful function within their environment. For instance, this specific type of aggression may prevent one from being victimized by increasing perceptions of pugnacity or solicitousness for quarrelsome behavior.

Our study also showed that with age reasoning about resource distribution, but not property damage, was associated with a greater level of physical reactive aggression and relational reactive aggression, which partially supports our hypothesis, and differs from previous studies of more affluent samples (Baker & Liu, 2021). This implies that for children in poverty concerns for equality may hold greater import and merit a strong response (i.e., reactive aggression) compared to property damage. This is supported by the positive association between moral judgment and resource distribution reasoning in our sample, as we found that children with resource distribution reasoning strategies tend to judge harm as more severe than children who reasoned about other strategies. Therefore, instead of explaining reactive aggression due to poor inhibition (Jambon & Smetana, 2014; Jambon et al., 2019; Ostrov et al., 2013), it is more likely that resource distribution becomes a more salient concern when living in a resource-poor environment (Jovic, 2020). Another explanation is that in high-risk, impoverished families, parents are more likely to teach their children that it is okay to fight back with reactive aggressive behaviors in order to promote greater safety (Kim et al., 2019). This may be especially salient when the experienced provocation relates unequal resource distribution. This interpretation also supports previous findings that children who display reactive aggression have intact moral understanding (Jambon & Smetana, 2018).

We also found some consistencies with previous studies with more affluent children (Baker & Liu, 2021). Consistent with our hypothesis, we found that with age children who reasoned about psychological harm showed less physical reactive aggression and relational reactive aggression. That is, children who reasoned with care-oriented concerns showed less aggression than those who reasoned with justice-oriented concerns. Baker and Liu (2021) argued that reasoning about psychological harm is thought to indicate strong mental state understanding and empathy, which leads to less engagement in reactive aggression. Children in poverty may view both physical and relational forms of reactive aggression as unacceptable given their strong mental state understanding.

Implications

The current paper offers important applications for practitioners and educators. For instance, recognizing that children's aggression is in part driven by their moral reasoning strategies, and moral reasoning strategies are trainable, practitioners might find utility in addressing aggressive behavior by cognitive means. As an example, parents can guide young children to reason about their aggressive behaviors using care-oriented strategies, such as, "how do you feel when others do this to you?" or "If you do [harmful action], others may feel really sad." Research suggests that this may be useful for children across a variety of contexts (Baker & Liu, 2021; Shahaeian et al., 2014).

Limitations and Future Directions

The current study is useful in better understanding children's moral reasoning and aggression, as well as the impact of material deprivation on child development, yet some limitations remain. First, the information for this study was gathered from a community that has been historically underresourced; due to this choice, it is advised that if results be applied with caution to children living in other environments (Bender et al., 2011). Moreover, it is possible that general socio-political climates impact these phenomena, and research could also be extracted from rural and urban impoverished communities to compare possible relations between them.

Second, as measurements collected for this study focused on children's aggressive behavior in school, there is little investigation of the parent–child interactions. How caregivers interact with their children can have immense effects on children's aggressive tendencies and reasoning patterns. If caregivers are patient with children and guide them on appropriate conflict resolution, they are more likely to develop healthy coping mechanisms for expressing themselves in lieu of using aggressive actions. Future research could seek the intervening effects of parents' own moral reasoning, and their guidance on children's aggressive behaviors.

Lastly, one limitation that could have interfered with findings is that teachers reported children's aggression levels 6-months after children completed the moral cognition assessments. In early childhood, individuals experience robust cognitive growth; it is possible that concurrent data collection techniques would yield different results.

Conclusions

This study presents first efforts to examine the short-term longitudinal associations between moral reasoning and subtypes of aggression in young children from economic adversity. Findings show that children living in impoverished regions consider conventional transgressions more severely than they do justice-oriented transgressions. Nevertheless, care-oriented reasoning may still be an important factor against children's aggressive behaviors, especially reactive aggression, which is also true for children from more affluent communities (Baker & Liu, 2021). These findings offer significant insights into understanding young children's moral reasoning and aggressive behavior.

Declarations

Conflict of interest The authors have no conflict of interest.

Ethical Approval The data and all study materials are available upon reasonable request from the corresponding author. This project received IRB approval from the corresponding author's institution [Protocol Number 17E203].

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