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Children's resource taking varies with experimentally manipulated relative status

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How do relative status and gender shape children's resource taking? In two preregistered studies, 4–8-year-olds completed a competitive '*Where's Waldo?*' task and then decided how many tokens to take from a new peer. In Study 1 (*N* = 195; 49% girls), children competed against a pre-recorded peer and were randomly assigned to *win* or *lose*. Next, they chose one of two unfamiliar peers (a prior "winner" or "loser") and selected how many tokens to take from that chosen peer. Children with *low relative status* ('losers' taking from 'winners') took more than half the tokens, whereas *high status* children ('winners' taking from 'losers') did not differ from an equal split. Under *equal status*, boys took more than half, whereas girls did not differ from an equal split. In Study 2 (N = 101; 48% girls), children played against the clock (without a peer competitor) and were randomly assigned to *succeed* or *fail*. In this non-social context, children took more than half of their peers' tokens. A cross-study comparison indicates that taking is calibrated to socially instantiated relative status, not performance per se, and that gender differences arise only under equal status. These findings reveal early status sensitivity and specify when gender differences in taking emerge.

Keywords Social status, Social rank, Cooperation, Gender differences, Resource distribution

Children's distributive decisions have been studied extensively in **sharing** contexts, such as the dictator game, where one child decides unilaterally how much of a given endowment to share with another. A consistent pattern is that preschoolers typically favor themselves, and gradually incorporate fairness norms and factors such as merit, need, reputation, and ownership into their decision making[1–5]. Importantly, these developmental changes are not restricted to Western populations: in a cross-cultural study spanning seven societies, children in all groups rejected disadvantageous inequality early, whereas rejection of advantageous inequality emerged later and only in some cultures[3]. Together, this literature shows that fairness norms emerge early, yet sharing behavior is both malleable and context-sensitive. Despite extensive work on sharing behavior, much less is known about **taking**.

Framing an act as "taking" rather than "sharing" produces different judgments and emotions, even if the final distributive outcomes are identical. In adults, 'taking aversion' is documented, whereby people are less comfortable taking than withholding[6,7]. Very few studies have addressed early childhood in this regard, but they did reveal similar sensitivities. For instance, preschoolers reciprocate less generously toward takers than toward givers, even when the resulting distributions are identical, indicating attention to the social intentions underlying resource transfers[8]. These highlight appropriation as psychologically distinct from generosity, motivating the present study's focus on how children's resource-taking is manifested and shaped by two factors that are relevant among adults – social status and gender.

In adults, decision-making can be shaped by both social status and gender. For example, men take greater risks when observed by peers of equal status. This effect does not occur with higher- or lower-status peers and is specific to resource-related contexts[9]. Complementary evidence shows that women, more than men, are sensitive to differences between taking and sharing frames, exhibiting a stronger aversion to taking (Chowdhury et al., 2017). More broadly, studies of gender and competition suggest that on average, men are more willing than women to enter and escalate competitive interactions[10–12]. These patterns in adults motivate a developmental test of whether status and gender already regulate taking behavior in early childhood.

From infancy, children track a range of cues to infer social status, including physical size, decision-making power, competence, and resource ownership[13–16]. By 15–17 months of age, they expect dominant relationships to generalize across contexts[17,18] and anticipate that dominant individuals will rectify wrongs[15]. In toddlerhood,

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children prefer winners, especially when their status was earned through non-aggressive means[19]. During the preschool years, children infer leading positions from persuasive communication and norm-setting cues[20–22]. They also predict that those who give orders will prevail in competitions[20] and preferentially trust high-status over low-status informants[23]. By age five, they even expect leaders to contribute more to joint goals, but not to benefit more than others[24]. Together, this work provides rich evidence on how children infer and interpret the status of others. However, less is known about how children's own status positions shape their behavior.

Addressing this gap, recent work emphasizes that children do not merely learn about social hierarchies but actively participate in them through their judgments and behavior[25]. For example, experimental manipulations of children's relative status affect downstream cognition, including theory-of-mind performance, with disadvantaged children often showing heightened sensitivity to others' mental states[26]. Beyond experimentally induced status, children's subjective perceptions of status (i.e., believing their families to be relatively high in socioeconomic standing) predict greater acceptance of unequal resource distributions[27]. Likewise, children's endorsement of gender-based status stereotypes constitutes another form of subjective status representation: by age six, children associate high intellectual status ("brilliance") more strongly with boys than with girls, a belief that shapes girls' interests and choices[28]. One domain in which behavior becomes especially consequential is resource allocation, where choices directly signal entitlement, restraint, and relational stance toward others. The present studies build on this emerging literature by examining how relative status positions in a dyad are translated into children's distributive behavior toward peers.

A complementary framework for understanding how children translate status into concrete behavioral strategies, particularly in resource-related contexts, comes from Resource Control Theory [29,30], which proposes that access to social, material, and informational resources is achieved through multiple strategies ranging from unilateral appropriation and competitive tactics to prosocial behaviors such as helping, sharing, and turn-taking. Quasi-experimental studies suggest the former dominates in zero-sum contexts, where one child's gain is another's loss, and the latter are more frequent in non–zero-sum situations, where cooperation can benefit both parties[31]. Coercion is common early in development, when verbal skills are limited[30], but from about 4 years of age, children start to deploy both types of strategies, leading to a gradual distinction between those who combine coercive and prosocial strategies ("leaders"), and those who rely primarily on coercion ("bullies")[29]. Direct evidence regarding gender differences in resource-control strategies is limited in early childhood. However, indirect evidence in related domains reveals distinct informative patterns: girls, on average, tend to prioritize relationship-oriented goals in peer interactions[32], display slightly higher levels of sharing[33,34], and are willing to incur personal costs to secure reciprocal exchanges[35]. These findings at least hint that the roots of gender-differentiated status behavior observed in adulthood [9], may be detectable in childhood, a possibility we test directly. The present study focuses on children's resource-taking decisions and does not examine coercion or force in peer interactions.

In the present study, we ask how experimentally manipulated performance outcomes (winning vs. losing) and gender shape children's taking behavior, and how these outcomes are transformed into relational status positions through children's subsequent social choices. Children aged 4–8 first participated in a rigged "*Where is Waldo?*" game that produced a winning or losing experience. They were then introduced to two unfamiliar, age- and gender-matched peers who were described by the experimenter as having previously played "*Where is Waldo?*" with someone else, one described as a "winner" and the other as a "loser". Children were informed that in the subsequent game, they could choose one of the two peers and decide how many resources to take from that peer. We ask three questions: (1) Do children prefer to interact with a 'winner' or a 'loser'? (2) Does children's relative status vis-à-vis the selected peer predict how many tokens they take? and (3) Do these patterns differ by gender? (Preregistration: https://osf.io/3t58d*)*.

Study 1

Participants

195 4–8-year-olds participated in the study (M_{age}=6.3, SD = 1.0y, 49% girls). They were recruited from kindergartens and elementary schools in Israel, with ethical approval from the Israeli Ministry of Education (Protocol No. 11413), and parental consent was obtained in advance. An additional 21 children were excluded per preregistered criteria: (1) not recalling whether they had won or lost in the competitive game (n = 6), or (2) having a mixed outcome in the competitive task (i.e., winning or losing in some rounds, but not in all; n = 22). All methods were performed in accordance with the relevant guidelines and regulations. (Preregistration: https://osf.io/3t58d*)*.

Design

Participants were randomly assigned to one of two Experience conditions (*winning* or *losing*). Two dependent variables were measured: (1) Partner choice (i.e., selection of a new peer to take resources from, described as a prior *winner* or *loser*), and (2) Resources taken from that chosen partner (*0–10*). There were 96 children in the *winning* experience (M_{age}=6.26, SD = 0.9y, 50% girls) and 99 in the *losing* experience condition (M_{age}=6.21, SD = 1y, 48% girls).

Materials

Pilot tests were conducted at the local Science Museum (Pilot 1: N = 15; Pilot 2: N = 24) to refine an engaging competitive game that is suitable for young children, before the study was actually conducted via Zoom.

1. *Competitive Game*: To manipulate winning and losing experiences, participants played three rounds of a '*Where's Waldo?*' search against a prerecorded video of an unfamiliar peer, creating the impression of a live competitive interaction while maintaining experimental control. '*Where's Waldo?*' stimuli were pretested

Fig. 1. Stimuli used in the competitive game. **(A)** An easy set of stimuli that was used in the 'winning' condition, where participants were likely to win. **(B)** A difficult set of stimuli that was used in the 'losing' condition, where participants were likely to lose. The figure shows a child-participant (on top) and a child-opponent (bottom), with the locations of Waldo once was found.

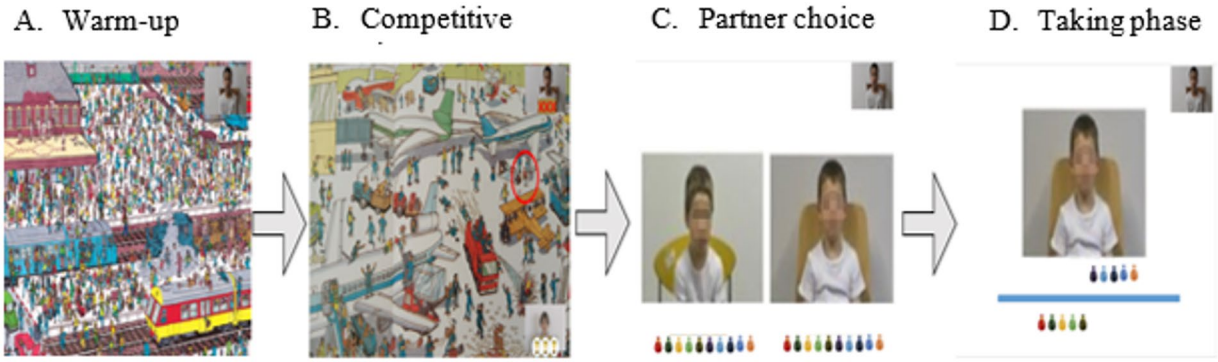

Fig. 2. Procedural phases of Study 1. **(A)**Warm-up phase, **(B)** Competitive phase, **(C)** Partner choice phase, **(D)** Taking phase.

with an independent sample (N = 10): images found within 60 s were classified as "easy", those taking more than 120 s as "difficult". In the *winning* condition, participants always found Waldo first (since easy stimuli were used and prerecorded peers never declared finding Waldo); in the *losing* condition, participants always lost (since difficult stimuli were used, and prerecorded peers announced victory within 10 s). An animated scoreboard awarded a digital trophy icon to the winner of each round. After three rounds, the player with the most trophies was declared the winner. Notably, no tangible rewards were given, so all children began the next phase without physical prizes (Fig. 1).

2. *Opponent presentations.* To enhance realism, prerecorded videos of eight child opponents (4 boys and 4 girls) were used. Opponent identity was counterbalanced across Experience conditions. An opponent was presented on a computer screen in a lively manner, saying sentences such as "*Hmm…where is Waldo?*" and "*Waldo? Where are you?*" to give the impression of actively searching for Waldo. Additionally, when the child opponent was the first to find Waldo, they would announce it enthusiastically (e.g., "*Here is Waldo! By the brown plane!*"). Each participant interacted only with one of the eight prerecorded peers during the competitive game.
3. *Partner choice*. Following the competitive game, a new game was introduced. For this game, two new, unfamiliar peers (not previously seen) were introduced via videos: one described as a prior winner, and the other as a prior loser in a similar '*Where's Waldo?*' game. Each had an identical set of 10 tokens (presented on screen). Side assignment (winner left/right) and presentation order were counterbalanced. In this game, participants were asked to choose one of the two peers, from whom they would then decide how many tokens to take (Fig. 2).

Procedure

The study was conducted via Zoom by research assistants who were blind to the research design and hypotheses. The procedure included age- and gender-matched peers and consisted of four phases:

1. **Warm-up.** The experimenter (E) introduced the "*Where's Waldo?*" game and administered two practice rounds with stimuli not used later (Fig. 2A).
2. **Competitive game.** Children played three rounds of the game against the prerecorded opponent. In the Winning condition, all rounds used easy stimuli, and the child always found Waldo first. In the Losing con-

dition, all rounds used difficult stimuli, and the opponent declared victory within 10 s. After each round, E announced the winner and awarded an animated trophy to the appropriate player's scoreboard. After three rounds, the player with the most trophies was declared the winner. No tangible rewards were given, so all children began the next phase without prizes in their possession (Fig. 2B).

3. **Taking phase ("Game of Prizes").** Following the competitive game, a different game was presented. Two new prerecorded peers were introduced: one described as a previous winner and the other as a previous loser in a '*Where's Waldo?*' game. Critically, both peers were explicitly shown to possess an equal number of tokens, and E asked children to count them (all counted correctly). Equalizing endowments isolated outcome-history effects (i.e., described as being a 'winner' or a 'loser') from their actual resource possession (i.e., each had 10 tokens). Then, children were informed that in the subsequent game, they could choose one of the two peers and decide how many tokens to **take** from that peer (see Fig. 2C–D). After children chose a partner, they declared how many tokens they would like to take, E presented it visually on the screen and verified their understanding by asking, for example: "*So, you said you want to take 9 tokens. If you take 9 tokens for yourself, how many will remain for the peer?"* (all answered correctly).
4. **Follow-up questions.** After the taking phase, children answered five questions: (1) whether they remembered winning or losing the '*Where's Waldo?*' game, (2) how they felt about the outcome of that game (sad, neutral, or happy), and (3–5) three open-ended questions about their partner choice and prize-taking decision. Exact instructions and question wording are provided in the *Supplementary Materials*.

Ending

All participants received a medal at the end of the session. To ensure that children in the losing condition concluded on a positive experience, they played one additional round of the '*Where's Waldo?*' game, in which they always won and thus received a medal.

Analysis and results

Partner choice

Behavioral measure

We first tested whether children's partner choices were influenced by their own prior Experience (*winning* vs. *losing*), gender, or age. A logistic generalized linear model (binomial link) with partner choice as the dependent variable and Experience, Gender, and their interaction as predictors (with Age as a covariate) did not improve fit over the null model (likelihood ratio test: $\chi^2(3, N = 195) = 1.35$, $p = .72$).

Collapsing across conditions, 70% (137/195) of the children preferred to play with a peer described as a winner ($\chi^2(1) = 32.01$, $p < .001$; Fig. S.1.A in *Supp. Material*). This preference was evident both for children who had previously won (69%; 66/96, $\chi^2(1) = 13.5$, $p < .001$) and for those who had previously lost (72%; 71/99, $\chi^2(1) = 18.68$, $p < .001$). The preference to interact with winning peers was also significant within each Experience and Gender conditions as well: 73% of boys (35/48) and 65% of girls (31/48) with winning experiences ($\chi^2_{(1)} = 10.08$, $p = .001$ and $\chi^2_{(1)} = 4.08$, $p < .05$, respectively), and 75% of boys (38/51) and 65% of girls (33/48) with losing experiences ($\chi^2_{(1)} = 12.26$, $p < .001$ and $\chi^2_{(1)} = 6.75$, $p < .01$, respectively).

To explore the reasons behind partner choices, children's responses to the open-ended question *"Why did you choose this partner?"* were coded into five preregistered categories: (1) status-related (e.g., "because she won"), (2) self-related (e.g., "so I can take everything"), (3) other-related (e.g., "so she will have some"), (4) norm-related (e.g., "because it is fair"), and (5) uninformative (e.g., "just because"). Uninformative responses (104/195; 57 from 5-year-olds and 47 from 7-year-olds) were excluded from analysis.

A chi-square test showed a significant association between partner choice and justification type ($\chi^2(3) = 24.92$, $p < .001$). Among children who chose a winning peer, 71% of the justifications were status-related (71%; $\chi^2(3) = 76.82$, $p < .001$; Fig. S1.B in *Supp. Material*). In contrast, among children who chose a losing peer, no justification type predominated ($\chi^2(3) = 4.3$, $p = .23$). The same pattern held when analyzed separately by gender, with 67% of boys and 77% of girls who chose winning peers providing status-related justifications ($\chi^2(3) = 39.71$, $p < .001$ and $\chi^2(3) = 22.23$, $p < .001$, respectively) and no dominant justifications found among those who chose to play with losing peers ($\chi2_{(3)} = 4.3$, $p = .23$ and $\chi2_{(3)} = 4.3$, $p = .23$, respectively).

Taking resources

Behavioral measure

Following Ermer et al.[9],, we categorized children's relative status based on their own Experience condition and Partner choice. Children who had a *losing* experience and then chose to play with a winner peer were classified as having *low relative status* ($n = 71$, 46% girls). Children who had a *winning* experience and chose to take from a loser peer were classified as having *high relative status* ($n = 30$, 57% girls). Children who chose peers with the same experience as theirs were classified as having *equal relative status* ($n = 94$, 49% girls). A general linear model (GLM) with Resources taken (0–10) as the dependent variable, and the interaction between Relative Status (*high*, *equal*, *low*) and Gender as predictors, with Age as a covariate, indicated that the full model fit significantly better than the null model ($\chi^2(5, N = 195) = 15.84$, $p = .007$). A second reduced model that included only the main effects of relative status and gender yielded a main effect for gender (estimate ± SE = 0.13 ± 0.06, z = 2.37, $p < .05$), but this was subsumed by the 2-way interaction. The interaction between Relative status and Gender was then analyzed with three separate GLMs for each relative status condition, with Gender as the independent variable. *Note*: Age was used as a covariate since no age-related effects were found when using two separate age groups (i.e., 4–6 and 6–8-year-olds) (Fig. 3).

- **High relative status.** Children who had won and chose to take resources from losing peers took on average 56% of the resources (SD = 26%). A GLM analysis yielded no difference between the full and null models

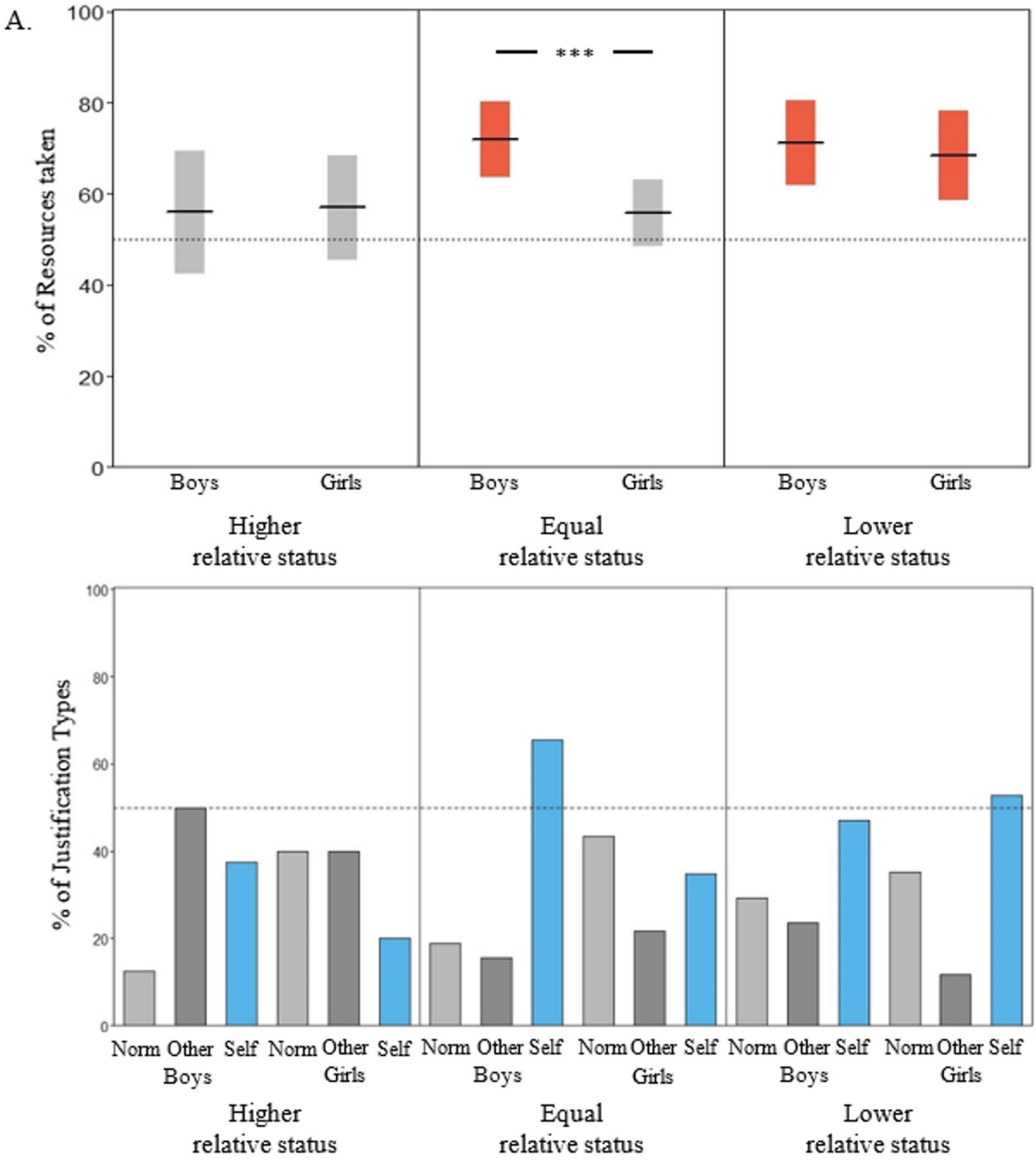

Fig. 3. Taking behavior and Justifications in Study 1. **(A)** Resources taken by participants per relative status condition and gender. Red bars represent a sig taking behavior (i.e., sig over 50% w/95% CI) and grey bars represent n.s taking behavior (i.e., n.s. from 50%). **(B)** Percentage of justifications given for taking behavior, per relative status condition.

($\chi^2(1, N=30)=0.01$, $p=.92$), and neither boys ($t(12)=0.8$, $p=.44$) nor girls ($t(16)=1.09$, $p=.29$) differed from equal division. Thus, high-status children generally behaved in an egalitarian manner toward lower-status peers (Fig. 3A; Table 1).

- **Low relative status.** Children who had lost and chose to take from winning peers took on average 70% of the resources (SD = 25%). A GLM yielded no difference between the full and null models ($\chi^2(1, N=71)=0.21$, $p=.64$). Both boys ($t(37)=5.1$, $p<.001$; Cohen's $d=0.82$) and girls ($t(32)=4.2$, $p<.001$; Cohen's $d=0.73$) took significantly more than half of the higher-status peer's tokens (Fig. 3A; Table 1).
- **Equal relative status.** Children who chose peers with the same winning or losing experiences took on average 64% of the resources (SD = 25%). A GLM revealed a significantly improved fit between the full and null models ($\chi^2(1, N=94)=10.04$, $p=.001$), with a main effect for Gender (estimate ± SE = 0.26 ± 0.08, $z=3.15$, p

Condition	Gender	Partner Choice	Relative Status	Resources Taken (out of 10)	*n*
Losing	Boy	Loser	**Equal**	6.38	13
		Winner	**Lower**	7.13	38
	Girl	Loser	**Equal**	5.67	15
		Winner	**Lower**	6.85	33
Winning	Boy	Loser	**Higher**	5.62	13
		Winner	**Equal**	7.51	35
	Girl	Loser	**Higher**	5.71	17
		Winner	**Equal**	5.55	31

Table 1. N of participants and mean taking behavior across conditions.

<.01; Cohen's d = 0.33). This main effect suggests that boys took significantly more than girls (t(90) = 3.31, p =.001; Mboys = 7.2, Mgirls = 5.6; Cohen's d = 0.68). One-sample t-tests against the equality reference (5 tokens) confirmed that boys took significantly more than half (t(47) = 5.9, p <.001; Cohen's d = 0.85), whereas girls' allocations did not (t(47) = 1.86, p=.07). Moreover, these findings are robust even when looking separately at participants who had 'won' (and chose a *winning* peer) and participants who had 'lost' (and chose a losing peer). Specifically, boys who had 'won' or 'lost' took significantly more than half of the resources from partners of relatively equal status to them (M = 7.5; t(34) = 5.6; p<.001; Cohen's d = 0.95; M = 6.4; t(12) = 2.18; p=.05; Cohen's d = 0.6; respectively). Conversely, girls who had 'won' or 'lost' took about half of the resources from peers of relatively equal status as theirs (M = 5.5; t(31) = 1.42; p=.17; M = 5.7; t(15) = 1.18; p=.26; respectively) (Fig. 3A., and Table 1).

Verbal answers

To examine children's reasoning, we analyzed responses to the open-ended question *"Why did you take this amount?"*. Answers were coded into four categories: (1) self-related (e.g., "*so I can have more*"), (2) other-related (e.g., "*so she will have some*"), (3) norm-related (e.g., "*because it is fair*"), and (4) uninformative (e.g., "*just because*"). Uninformative responses (88/195; 50 from 5-year-olds and 38 from 7-year-olds) were excluded from analysis.

Among children with **high relative status** (n = 18), chi-square test for independence suggest no relation between gender and justification type ($\chi^2(2) = 1.8$, p=.4), and a chi-square test for goodness of fit found no dominant justification type ($\chi^2(2) = 1$, p =.6). Among those with **low relative status** (n = 34), chi-square test for independence suggest no relation between gender and justification type ($\chi^2(2) = 0.82$, p =.66), and a chi-square test for goodness of fit found a trend toward self-related justification (17/34; $\chi^2(2) = 5.35$, p =.07). Among those with **equal relative status** (n = 55), justification types varied by gender at a trend level ($\chi^2(2) = 5.5$, p =.06). Follow-up analyses showed that boys predominantly gave self-related explanations (21/32; $\chi^2(2) = 15.06$, p <.001), whereas girls did not show a dominant justification (8/23; $\chi^2(2) = 1.65$, p =.40; Fig. 3B). Overall, self-related justifications were most frequent in contexts where children had taken more than half of the tokens, namely, in low relative status situations and among boys in equal-status situations.

When collapsing across gender, justification patterns were broadly similar across relative status conditions. In both the **equal**- and **lower-status** conditions, self-focused justifications were most common (53% and 50%, respectively). In the **higher-status** condition, responses were more evenly distributed, with "other" justifications being most frequent (44%), and norm-based and self-focused explanations each accounting for 28% of responses.

General feelings

As a manipulation check, children also reported how they felt about the outcome of the competitive game. Most children reported feeling *happy* after winning (67%; 64/96; $\chi^2(2) = 62.06$, p <.001), and most reported feeling *neutral* after losing (65%; 64/99; $\chi^2(2) = 43.82$, p <.001).

Summary

Taking behavior among children with high relative status did not differ from equality; low relative status children took more than half of others' resources, and under equal relative status conditions, boys exceeded equality, while girls did not. These findings parallel those of Ermer et al.[9], in adults, suggesting continuity in how relative status and gender influence self-serving resource-taking behavior from childhood into adulthood. Study 1 demonstrated that children's partner choices, taking behavior, and justifications varied systematically with relative status and gender. One limitation, however, is that *winning* and *losing* were embedded in a competitive, social context. To test whether the observed effects were specific to social status dynamics rather than performance or affect (i.e., doing and feeling good after the '*Where's Waldo?*' task), Study 2 modified the design by removing the peer component. In Study 2, children played '*Where's Waldo?*' against the clock, producing outcomes of *success* or *failure* instead of *winning* or *losing*. Comparing the two studies allows us to distinguish between the effects of performance per se and those of social competition.

Study 2

Participants

One hundred and one children aged 4–8 years (M = 6.3, SD = 0.94; 48% girls) participated, recruited in the same manner as Study 1. One additional child was tested but excluded due to a mixed outcome (succeeding on only one of three rounds).

Design

Children were randomly assigned to one of two between-participant Outcome conditions: **success** ($n = 52$) or **failure** ($n = 49$). The dependent variable was the number of resources taken from a chosen partner (0–10).

Materials

The '*Where's Waldo?*' task from Study 1 was adapted to remove the social competitor. In the *success* condition, children were given 60 s to find Waldo, and all succeeded. In the *failure* condition, children were given only 10 s, and all but one failed as intended.

Procedure

The study was conducted via Zoom, by research assistants who were blind to the research design and hypotheses. The procedure included age- and gender-matched peers and followed the same sequence of phases as in Study 1 to ensure comparability (see Fig. S.2 in Supp. Material). The critical change was that during the performance phase, children either succeeded or failed to find Waldo against the clock, rather than winning or losing against a peer. To maintain parallelism with Study 1, the partner-choice phase was retained, but the two unfamiliar peers were introduced by name only (without references to prior outcomes). The subsequent "Game of Prizes" and follow-up questions were identical to Study 1, with terminology adjusted to "succeeding" and "failing" rather than "winning" and "losing." As in Study 1, participants in the failure condition were given an additional round at the end, in which all succeeded, to ensure a positive conclusion.

Analysis and results

Partner choice

Behavioral measure

A general linear model (GLM) with Partner choice (left vs. right) as the dependent variable and Outcome (success vs. failure), Gender, their interaction, and Age as predictors indicated no significant effects (likelihood ratio test: $\chi^2(3, N = 101) = 4.78$, $p = .19$). A follow-up chi-square test confirmed that children showed no overall preference between the two partners ($\chi^2(1) = 0.9$, $p = .77$).

Verbal answers

When asked to justify their partner choice, above 90% of the responses were uninformative (e.g., "just because," "I don't know"), consistent with the fact that no information was provided about the partners other than their names.

Taking resources

Behavioral measure

We conducted a preregistered analysis to test whether success or failure influenced children's taking behavior. A GLM with Resources Taken (0–10) as the dependent variable, and the interaction between Outcome (*success* vs. *failure*) and Gender, and Age as a covariate showed no significant effects (likelihood ratio test: $\chi^2(3, N = 101) = 1.76$, $p = .62$). A reduced model including only main effects also revealed no significant differences. To examine whether children's allocations differed from equality, we conducted one-sample t-tests within each Outcome condition. Children took significantly more than half of the prizes after success (M = 6.4, SD = 3.0; $t(51) = 3.32$, $p < .01$; Cohen's d = 0.46) and after failure (M = 6.2, SD = 3.1; $t(48) = 2.71$, $p < .01$; Cohen's d = 0.38). Thus, in the absence of a social competitor, *success* and *failure* experiences did not differentially affect resource-taking, and children, on average, took more than half of the peers' tokens.

Verbal answers

Open-ended justifications were coded into four categories as in Study 1 (norm-related, self-related, other-related, uninformative). A chi-square test for goodness-of-fit yielded high rates of self-related justifications in both Outcome conditions. After failure, self-related explanations were most frequent for both boys ($\chi^2(2) = 10.8$, $p < .01$) and girls ($\chi^2(2) = 8.7$, $p = .01$). After success, boys used predominantly self-related explanations ($\chi^2(2) = 9.5$, $p < .01$), and girls showed a similar but nonsignificant trend ($\chi^2(2) = 4.7$, $p = .09$).

General feelings

As a manipulation check, most children reported feeling *happy* after success (77%; 40/52) and *neutral* after failure (63%; 31/49). These patterns closely matched those reported in Study 1 (67% *happy* after winning; 65% *neutral* after losing).

Combined analyses of Studies 1 and 2

Performance outcomes independent of relational status

To test whether children's taking behavior could be explained solely by performance outcomes, independent of relational status, we analyzed the combined data from Studies 1 and 2 using a GLM predicting the number of prizes taken from Study (*social* vs. *non-social*), Performance Outcome (*win/success* vs. *lose/failure*), and

their interaction, controlling for age. This model did not improve fit relative to a model including age alone ($\chi^2(3) = 2.07$, $p = .559$). Children's overall resource taking was significantly above the midpoint (M = 6.44, SD = 2.74)($t(295) = 9.05$; $p < .001$), and this pattern held across all 4 Study X Performance Outcome combinations (all ps > 0.27). Thus, neither winning versus losing nor succeeding versus failing predicted children's taking behavior, nor did these effects differ across social and non-social contexts. Performance outcomes alone were therefore insufficient to account for variation in children's taking behavior.

Gender differences under equal relative status across social versus non-social contexts

To directly examine the role of the social component under conditions of equal relative status, we compared children from Study 2 – who by design interacted with peers of equal status, as no outcome history of the new peers was provided ($n = 101$), with children from Study 1 who had chosen to play with peers of equal relative status ($n = 94$). Here, we analyzed the combined data using a GLM predicting the number of prizes taken from Study (*social* vs. *non-social*), Gender, and their interaction, controlling for age. This model fit was significantly better than the null model which included age alone ($\chi^2(3, N = 195) = 9.47$, $p = .02$). A reduced model with only main effects yielded a main effect of Gender (estimate ± SE = 0.11 ± 0.06, z = 1.97, $p < .05$), but this was subsumed by the Study × Gender interaction ($\chi^2(1, N = 195) = 5.45$, $p = .02$). Specifically, in non-social contexts (Study 2), boys and girls did not differ in their taking behavior and both took significantly more than half (M = 63%; $t(100) = 4.29$, $p < .001$). In social contexts (Study 1), however, toward relatively equal-status peers, gender differences emerged ($t(90) = 3.31$, $p < .01$) as boys took more than half (M = 72%), while girls' allocations did not differ from equality (M = 56%).

Summary

Taken together, these combined analyses indicate that performance outcomes alone do not explain children's taking behavior, whereas embedding performance in a social-relational context reveals systematic gender differences under conditions of equal relative status.

General discussion

Social status is linked to having privileged access to valuable resources[36,37]. Research on status in childhood has primarily examined how children evaluate or infer the behavior of high- and low-status others[16,38], and thus far has been less focused on how children's own status position shapes behavior. The present studies move beyond third-party judgments by examining how experimentally manipulated win-loss outcomes are translated into children's resource-taking behavior once they are embedded in a relational context that defines children's relative status vis-à-vis a peer.

In Study 1, we found that children with ***low relative status*** took more than half of the available tokens, whereas children with ***high relative status*** preferred an equal split. Gender differences surfaced only towards peers who held ***equal relative status***: boys took more than half, while girls favored an equal split. In Study 2, by contrast, we removed the social dimension of competition, so instead of children having a winning or a losing experience with others, children experienced individual success or failure against the clock. These outcomes elicited comparable feelings (i.e., feeling 'happy' after winning/success and feeling 'neutral' after losing/failing), but lack the social component that exists within peer competition. Under these conditions, children took more than half of the resources regardless of their prior success, failure, feelings, or gender. A direct comparison across the two studies exposed that resource-taking was calibrated not to performance outcomes per se, but to how those outcomes were embedded in social comparison and enacted through children's subsequent partner choices. Gender differences emerged only in the social-competitive context, and only toward peers of relatively equal status.

The specificity of the gender differences suggests that boys may be particularly sensitive to interactions with equal-status peers, where hierarchy is least determined. This pattern is compatible with evolutionary accounts proposing greater male sensitivity to rank-related cues and competitive contexts[39–41], and with adult evidence documenting gendered strategies for enhancing status[9,42,43]. From a developmental perspective, the present findings suggest that children are not only sensitive to their relative rank but also begin to show gender-differentiated tactics, specifically when status is equal. Such differences may reflect any mixture of evolutionary heritage, early social learning (e.g., exposure to gender-typed norms about competition, leadership, and fairness)[44,45], and individual differences (e.g., competitiveness or inhibition). Importantly, our data do not show that children construe resource taking as a means of elevating their own status or diminishing that of a peer. Rather, they indicate gender-differentiated behavioral responses to status-relevant social contexts.

Notably, the gender asymmetries we observed here may foreshadow divergent pathways by which boys and girls learn to manage reputation and hierarchy in the presence of peers or authority figures[46,47]. In this sense, the experimenter's explicit legitimization of resource appropriation may have reduced reputational constraints, allowing children to weigh material gain against social evaluation. Importantly, however, prior work suggests that such legitimization does not eliminate normative considerations altogether. For example, when a kindergarten teacher recommended sharing "all" versus "none", both boys and girls adjusted their behavior accordingly, yet sharing levels remained intermediate (i.e., 25–40% of the endowment) rather than extreme, indicating sensitivity to authority alongside residual fairness concerns[48]. In the current studies, however, the experimenter's legitimization to appropriate resources was constant across conditions, which may influence taking behavior, but not the gender difference, which emerges only among peers of equal relative status.

Complementing our focus on taking, these findings also provide insight into gender differences in sharing contexts. In classic dictator games, girls are often found to share slightly more than boys[33,34]. This pattern has typically been attributed to boys' stronger material self-interest and girls' greater prosocial motivation. Our results suggest a complementary interpretation, which is that if boys are especially likely to appropriate more

resources when interacting with peers of equal status, this tendency could help explain boys' reduced sharing in distributive contexts where partners are (implicitly) presented as equals. More broadly, distributive games can be construed either as zero-sum interactions (where one child's gain is another's loss), or as non–zero-sum contexts (where both parties can benefit). Exploring how status influences whether children interpret a context as competitive or collaborative could help explain variability in their sharing and taking behavior[49–51]. Importantly, cross-cultural work shows that gender differences in competitiveness are not fixed but vary as a function of social and cultural context, underscoring the role of situational affordances in shaping gender-differentiated behavior[52]. Future work that orthogonally varies task frame (zero- vs. non–zero-sum) and relative status would provide a direct test of this mechanism.

An important alternative explanation for gender differences could be biological. Specifically, one biological marker often implicated in competitive and dominance-related behavior is testosterone. Although associated with assertiveness and status-seeking[53–55], pronounced baseline sex differences typically emerge only during puberty[56,57], well after the ages studied here. Thus, it is unlikely that baseline hormonal differences alone explain boys' greater tendency to take more from equal-status peers. Instead, our findings are consistent with the possibility that precursors of gender-differentiated distributive strategies emerge before puberty. Future work will need to clarify how biological, social, and cultural factors interact over development to shape children's approaches to status and resource allocation, a question we return to in the limitations below.

One limitation of the present study is that children experienced homogeneous sequences of either "winning" or "losing". This ensured strong manipulations of relative status but may not reflect the variability of real interactions, where children often obtain a mixture of winning and losing experiences (e.g., win-loss-win, lose-win-loss). Future work could introduce mixed sequences to test whether children flexibly adjust their distributive choices as relative status shifts within a relationship. Such designs could also illuminate temperamental differences: some children may discount losses and emphasize wins, whereas others may do the opposite. More broadly, examining how children update expectations about fairness, reciprocity, and partners' intentions across fluctuating histories would provide a richer picture of how status dynamics unfold in everyday peer interactions. Our findings, therefore, isolate one stable slice of children's social reasoning, but the next step is to test how robust these strategies are under messier real-world conditions. Finally, although equalizing partners' endowments isolated the effect of outcome history, children may nevertheless infer that "winners" deserve more or would mind losses less. Future studies should orthogonally vary outcome history and current endowment to adjudicate this possibility.

A second limitation concerns cultural scope. All participants were tested in Israel, a WEIRD society (Western, Educated, Industrialized, Rich, Democratic) that scores low on measures of "power distance," meaning that authority and hierarchy are relatively deemphasized compared to more stratified contexts[58–60,61]. Children growing up in societies with higher power distance may internalize different expectations about the legitimacy of unequal distributions and the acceptability of status-based claims. Examining children across diverse cultural contexts could therefore clarify whether the patterns we observed reflect early-emerging developmental tendencies or culturally specific adaptations. Such cross-cultural work would also shed light on how cooperative norms and institutional practices shape children's interpretations of distributive interactions, e.g., as competitive contests or as collaborative exchanges. In this way, methodological variation and cultural comparison ultimately converge on the broader question of how general, flexible, and culturally embedded the mechanisms are by which children regulate resource allocation in light of status.

Together, our findings show that even in early childhood, children's distributive strategies are not guided by outcomes alone but by the social architecture in which those outcomes are embedded. Much of the literature has focused on **sharing**, showing children gradually move toward fairness. Here, we demonstrate that **taking**, a distinct but complementary form of distribution, is not regulated by performance outcomes per se (winning vs. losing or success vs. failure) but instead is strongly shaped by how those outcomes are situated within a relational context, emerging through social comparison and children's subsequent partner choices.

Gender differences emerged precisely in those situations where hierarchy was least determinate, namely, among equals, suggesting that children are already beginning to adopt differentiated tactics for navigating peer relations. These results underscore that distributive interactions are not merely acts of sharing or taking, but occasions for negotiating standing, fairness, and reputation. Future work that varies outcome histories and cultural contexts will be critical for clarifying the scope, flexibility, and cultural embedding of these mechanisms. More broadly, the present studies highlight that the early foundations of hierarchy-sensitive distributive strategies emerge very early and may scaffold later cooperative and competitive behavior.

Data availability

Study information, data, and code for the current study are available in the OSF repository ([https://osf.io/3t58d]) and from the corresponding author upon reasonable request.

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Author contributions

C.B. designed the study, collected and analyzed the data, and drafted the manuscript. A.B assisted with conceptualization, analysis, visualization, and editing. O.R. and J.E. contributed to theoretical framing and interpretation. A.B. and J.E. supervised the project, provided critical revisions, and secured funding.

Declarations

Competing interests

The authors declare no competing interests.

Additional information

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