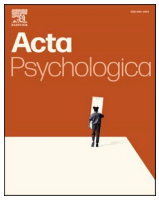
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What one says, what many do: children's use of group behavior and testimony in social judgments☆

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ABSTRACT

Children often rely on group-level information and others' testimony to make social judgments, particularly when encountering unfamiliar individuals. This study investigated how children aged 6 to 8 (N = 123, 61 female) generalize negative behavior observed in a few members of a group to novel group members, and whether such generalizations can be revised through testimony. After viewing instances of negative behaviors enacted by one group (the transgressor group) against another (the victim group), children predicted whether a novel transgressor group member would behave negatively. They then received testimony from an informant whose group identity (transgressor, victim, or neutral) varied. Results showed that, following their initial observation, children did not assume that a novel individual from the transgressor group would behave in the same negative way. Further, while children revised their initial judgments in response to testimony regardless of informant identity, they still favored the victim over the transgressor group members in social measures. Finally, children's initial impressions continued to shape their subsequent judgments, even after exposure to contradictory information. These findings suggest that children's attributions are sensitive to both observed behavior and social cues, but also highlight the persistence of early impressions and the complexity of testimonial influence when learning about other individuals.

1. Introduction

From an early age, children are motivated to understand and predict the behavior of others. Yet, these inferences often occur under conditions of limited information, requiring children to rely on various social and epistemic cues to bridge inferential gaps. One especially salient cue is group membership. It facilitates early social understanding by helping children interpret others' behaviors (Rhodes & Baron, 2019; Shilo et al., 2021; Shutts et al., 2013), comprehend social norms (Rhodes & Chalik, 2013), and acquire cultural knowledge (Legare & Harris, 2016). However, reliance on group markers can also foster overgeneralization, contributing to stereotypes and intergroup biases (Aboud, 2003; Bigler & Liben, 2006; Tajfel et al., 1971). Increasing evidence points to the critical role of social learning in shaping children's group-based inferences and biases (Aldan & Soley, 2019; Conder & Lane, 2021; Diesendruck & Menahem, 2015; Lane et al., 2020; Nasie & Diesendruck, 2020). In the present pre-registered study, we examine how children's expectations about unfamiliar individuals are influenced both by their observations of group-level behavior and by the testimony of informants. Specifically, we ask whether children generalize negative behaviors observed in some group members to novel individuals from the same group, and whether testimony, varying in both content and source identity, would moderate these expectations.

1.1. A quick overview of notable determinants of person perception

Children's person perception is shaped by multiple factors, including their tendency toward a positivity bias, assumptions based on social group membership, and the testimony they receive from others. In the following sections, we briefly review each of these influences as a

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foundation for the current study.

1.2. Positivity bias

Children's social evaluations are shaped by a general expectation that unfamiliar individuals possess positive qualities (Mezulis et al., 2004). This phenomenon, referred to as *positivity bias*, typically emerges around the age of three (Boseovski & Lee, 2006) and has been observed in different cultural contexts (Marble et al., 2025). Positivity bias persists even when the target person had exhibited negative behaviors in the past (Landrum et al., 2013; Lapan et al., 2016; Rholes & Ruble, 1986), and only diminishes after the target engages in negative behaviors repeatedly (Boseovski, 2012). This bias is also reflected in children's assumption that positive characteristics are more stable than negative ones, leading children to view a person's true nature as good and to interpret previously observed negative behaviors as temporary or anomalous (Boseovski & Lapan, 2021; Heyman & Giles, 2004; Sato & Wakebe, 2014). The exact reason why this attribution tendency is observed during the childhood period might be hard to pinpoint (Boseovski, 2010). Some perspectives suggest that positivity bias may have evolutionary roots (Boseovski, 2010): maintaining an optimistic outlook about oneself and others can promote hope, persistence, and motivation, factors that are crucial for a developing child (Bjorklund, 1997; Lockhart et al., 2002). At the same time, positivity bias is likely shaped and reinforced through socialization practices (Boseovski, 2010). Supporting this view, cross-cultural research shows variability in both children's self-directed positivity (Xia et al., 2023) and their assumptions about the stability of traits, whether positive or negative (Lockhart et al., 2008; Miller, 1984), indicating that cultural input plays a meaningful role.

Another open question about positivity bias, and the focus of the present project, concerns its limits: Most studies assessing positivity bias did not test the effects of social group identities (e.g., Boseovski & Lapan, 2021; Boseovski & Lee, 2006; Heyman & Giles, 2004; Sato & Wakebe, 2014), and thus it is unclear whether children would offer this positive outlook to people outside of their social groups. There is limited evidence suggesting that this tendency can indeed extend to outgroup members, albeit less robustly (Aldan & Soley, 2019).

1.3. Social group identity

Group membership serves as a potent cue for inferring the attributes and behaviors of individual group members. From an early age, children assume that members of the same group would behave similarly; they interpret group regularities as prescriptive (Diesendruck & HaLevi, 2006; Nesdale & Brown, 2004; Roberts et al., 2017) and generalize various attributes of known group members to novel members of the same group (Birnbaum et al., 2010; Chalik & Rhodes, 2014; Diesendruck & HaLevi, 2006; Roberts et al., 2017; Shilo et al., 2021; Soley, 2019). Children's expectation of within-group similarity extends to their reasoning about preferences (Velez et al., 2019), knowledge (Öner & Soley, 2023; Soley, 2019; Soley & Aldan, 2020), and the causes of behavioral patterns observed within social groups, for instance, why members of a particular group tend to act in similar ways (Diesendruck & Eldror, 2011; Roberts et al., 2019). Such tendencies underlie the development of stereotypical assumptions and the generalization of valenced attributes based on limited observation to entire groups, which might be positive (e.g., believing that all Asian students are good at math [Cvencek et al., 2015]), as well as negative (e.g., believing that all women are inadequate navigators [Halpern et al., 2011]). These expectations, in return, might contribute to discrimination and prejudice (e.g., Fogiel et al., 2023; Hewstone & Hamberger, 2000; also see Boldry et al., 2007, for a review). In addition to fostering prejudices based on limited observation and information, group membership also shapes how children perceive others in intergroup contexts - even when they have not previously encountered those individuals, but merely know whether they belong to an ingroup or an outgroup. By around age six, children not only attribute more positive characteristics to novel ingroup members but also ascribe negative traits to novel outgroup members (Aboud, 2003; Baron & Banaji, 2006; Baron & Dunham, 2015; Dunham et al., 2013). Overall, these findings suggest that children's general tendency to assume that other people are good and likely perform commendable actions (in other words, show a positivity bias [Boseovski, 2012; Boseovski & Lapan, 2021; Heyman & Giles, 2004; Mezulis et al., 2004]) may be constrained by group membership cues (Aboud, 2003; Baron & Banaji, 2006; Baron & Dunham, 2015; Dunham et al., 2013).

1.4. Testimony

In addition to relying on assumptions about others, such as assuming people are good (Boseovski, 2012; Boseovski & Lapan, 2021; Heyman & Giles, 2004; Mezulis et al., 2004), at least when they are in one's ingroup (Aboud, 2003; Baron & Banaji, 2006; Baron & Dunham, 2015; Dunham et al., 2013), growing evidence suggests that social learning also plays a critical role in shaping children's social reasoning (e.g., Aldan & Soley, 2019; Boseovski, 2012; Diesendruck & Menahem, 2015; Lane et al., 2020; Nasie & Diesendruck, 2020). This might mean that even when the informant has inaccurate information, or when they intend to cast someone in a negative light (such as in negative gossip), their testimony can shape how children perceive novel individuals (Caivano et al., 2020; Liberman & Shaw, 2020). At the same time, testimony can be a powerful tool to warn others about negative situations, such as entering a cooperation arrangement with a habitual freeloader unlikely to uphold their end of the bargain (Dunbar, 2004; Kniffin & Sloan Wilson, 2010).

Related to the purposes of the current study, testimony may also be a promising way to attenuate prejudiced inferences linked to group membership (e.g., Aldan & Soley, 2019; Diesendruck & Menahem, 2015; Lane et al., 2020; Nasie & Diesendruck, 2020). For instance, examining the role of testimony in a conflictual intergroup context, Nasie and Diesendruck (2020) showed that 3- to 6-year-old Israeli Jewish children expressed most curiosity about the conflicted outgroup (Arabs). Crucially, when their questions about the outgroup received full and informative answers, children's attitudes toward outgroup members improved, demonstrating the potential for testimony to mitigate intergroup bias when children are motivated to learn. On the other hand, even indirect exposure to biased testimony can shape children's beliefs about others. For example, 4-to-9-year-old children who overheard derogatory comments about novel social groups showed diminished liking for those groups, increased social distance, and reduced willingness to engage with their cultural elements (Conder & Lane, 2021; Lane et al., 2020).

While testimony can effectively shape children's intergroup biases, when learning about social agents, its effectiveness may depend on several factors. One such factor is children's existing biases about others: As explained above, children tend to exhibit a positivity bias in social learning, showing a tendency to endorse positive testimony about others (Aldan & Soley, 2019; Boseovski, 2010, 2012; Boseovski & Lee, 2008; Boseovski & Thurman, 2014; Landrum et al., 2013; Lapan et al., 2016). Importantly, this bias does not appear to stem solely from perceiving positively valenced informants as more trustworthy. For example, 4-to-8-year-olds prefer to learn from a mean informant who previously provided positive information over a nice informant who previously offered negative information, suggesting that the valence of the testimony itself, rather than the character of the informant, primarily drives these preferences (Croce & Boseovski, 2020).

Another important factor that might modify the strength of testimony is the group identity of the informant. In intergroup contexts, children are more trusting toward ingroup informants and prefer to learn from them over outgroup informants (Chen et al., 2013; Howard et al., 2015; Kinzler et al., 2011). This tendency might make them more likely to trust ingroup informants even when those informants are not

the most reliable. For instance, children (ages 8–11) as well as adolescents (ages 12–16) tend to judge misinformers more leniently when they belong to the ingroup, even if the misinformation is clearly false (Farooq et al., 2022) Younger children, in particular, are more likely to attribute dishonest intent to outgroup misinformers than to those from their own group (Farooq et al., 2022). Informants' group identity might also interact with the valence of the information they offer and children's existing biases concerning the target. For instance, children show a preference for learning from ingroup members especially when the information concerns outgroup targets, but when the testimony is positive and pertains to the ingroup, they are equally willing to accept it from both ingroup and outgroup informants (Aldan & Soley, 2019).

The informants' group identity appears to play a role in children's endorsement of testimony even when children are third party observers-that is when they are not affiliated with any of the groups in question. For instance, children between the ages of 3 and 13 are more likely to discount negative information when it comes from a known rival and view it as more credible when it originates from a friend, suggesting that they take potential interpersonal motivations into account when assessing testimony (Liberman & Shaw, 2020). These findings show that group identity influences not only whom children trust, but also how they interpret the actions and intentions of informants, and the value of the information they offer (Over & Carpenter, 2012; Sobel & Kushnir, 2013).

Taken together, these findings suggest that children's testimonial learning is guided by a nuanced integration of epistemic, social, and contextual cues. Group membership plays a central role in shaping whom children trust and how they interpret testimony, but its influence can be moderated by the perceived relationship between the informant and the target, the emotional valence of the information, and the broader social context in which learning takes place. Despite growing evidence on the role of testimony and group cues in children's reasoning, several questions remain open. One such question concerns how children respond to contradictory testimonies from different sources while actively forming opinions about a novel group based on limited observation, much like the conflicting information from disagreeing sources people often encounter about unfamiliar social groups with whom they have little direct interaction.

1.5. The present study

As explained above, children tend to generalize information based on limited observations of a group members' to the entire group (Birnbaum et al., 2010; Chalik & Rhodes, 2014; Diesendruck & HaLevi, 2006; Öner & Soley, 2023; Roberts et al., 2017; Shilo et al., 2021; Soley, 2019; Soley & Aldan, 2020; Velez et al., 2019). Such generalizations, while they can empower children to make inferences about novel individuals, might also lead them astray, as they are not always accurate (Bian & Cimpian, 2017). These generalizations can also have undesirable consequences for group members, fostering the formation of stereotypes and, ultimately, prejudice against entire social groups (e.g., Bai et al., 2022; Bigler et al., 1997; Doosje et al., 1995).Therefore it is critical to understand how children might develop such expectancies based on limited information, and how these expectancies might be modified once they are formed. The present study focuses on these questions by examining children's generalizations of behavior from their observations on a few individual group members to an entire group, and whether they can use information from other social agents - namely, people who provide testimony about those individuals - to revise their initial impressions.

In this study we use a third party setting to observe how children might use their limited negative observations on some group members to make inferences about the rest of that group, and how testimony might affect this process, in a setting where children will not have self-serving biases, such as upholding the ingroup's reputation. Specifically, we investigate two key questions. First, we assess whether children expect a novel individual from a group with a history of negative behavior to also engage in similar acts. We focus on negative behavior, because generalizing such behavior can be detrimental to peaceful intergroup relationships and cooperation, and understanding how this generalization process works can therefore point us toward ways to curb it. Second, we examine the extent to which testimony from an informant modulates children's initial attributions, and whether the group identity of the informant (i.e., they belong to the transgressor, victim or a third, neutral group), affects this process differently. Our aim is to understand whether, and how, testimony can serve as an effective tool for intervening in the process of prejudice development.

Critically, in the current study, instead of sharing facts or eyewitness testimony about the novel members of the transgressor group, we focus on the effects of informants' beliefs or opinions about the target (e.g., “I think this child would not share their toys with others”). This differs from previous work (e.g., Haux et al., 2017; Lane et al., 2020; Shinohara et al., 2021), which has typically relied on factual information or eyewitness accounts. However, children's everyday language environment is rich in mental-state words such as “think” (Ilgaz et al., 2025). Particularly when having conversations about other people, information is arguably often exchanged in the form of opinions, making opinion-based testimony ecologically plausible in the domain of social judgments. Importantly, both children and adults regard opinions as more revealing of personal identity than factual statements (Heiphetz et al., 2014), positioning opinion-based testimony as a particularly useful tool for probing how informant identity shapes children's endorsement of testimony.

For this aim, we introduced 6- to 8-year-old children living in Turkey, who, according to prior research, tend to show a general positivity bias toward novel individuals (Aldan & Soley, 2019), to two novel groups: a transgressor and a victim group, where members of the transgressor group engaged in some negative acts toward the victim group. After this introduction, participants saw a member of the transgressor group and asked whether that person would also engage in similar negative behavior or not, as a measure of generalization of negative behavior. After participants made their initial attributions, an informant who is either from the transgressor, the victim or a third, neutral group was introduced. This informant gave testimony that contradicted children's initial attributions (e.g., if children made a positive attribution, the informant gave a negative testimony about the target). Following this, children were asked again whether the target member would engage in the negative behavior or not. This method allowed us to test 1) whether children generalize the negative behavior displayed by a few group members to the rest of the group or believe that the other group members will engage in positive behaviors; 2) whether the valence of their initial belief (i.e., expecting positive or negative behaviors from the transgressor group) influences the strength of those beliefs in the face of contradicting testimony; and 3) whether the social group identity of the informant affects how impactful their testimony is in modifying participants' initial beliefs. Additionally, we examined participants' preferences toward members of the transgressor and victim groups to test whether, even in the absence of explicit expectations of negative behavior from the transgressor group, participants might still hold negative biases against them.

As mentioned earlier, prior research shows that children typically exhibit a positivity bias, expecting unfamiliar others to exhibit positive behaviors (e.g., Boseovski, 2012; Boseovski & Lapan, 2021; Mezulis et al., 2004). This expectation can also extend to outgroup members, although usually to a lesser extent (Aldan & Soley, 2019). However, other research shows that if children interpret a group member's negative behavior as prescriptive of the group they may generalize that behavior to the group as a whole and thus show a negativity bias (Diesendruck & HaLevi, 2006; Nesdale & Brown, 2004; Roberts et al., 2017). Because these tendencies work in opposite directions, our first hypothesis was that children would not show strong positivity toward members of the transgressor group. Since we did not know whether the

tendency to generalize negative information would be strong enough to trump positivity bias completely in a third-party setting, we expected children to either remain neutral regarding the novel group members (i.e., show no positivity or negativity bias) or to show a negativity bias (i.e., expect other group members to behave negatively as well) after observing one member's negative behavior. Prior work shows that when children lack direct evidence, testimony can effectively shape children's impressions of unfamiliar individuals and groups (Aldan & Soley, 2019; Diesendruck & Menahem, 2015; Lane et al., 2020; Nasie & Diesendruck, 2020). Based on these studies, we expected that, overall, children would be more likely to revise their initial attributions after hearing testimony that contradicts their first impression than not. However, we also expected the likelihood of such revision as well as its strength to depend on the identity of the informant. Specifically, we predicted that, overall, testimony from an independent source (i.e., someone unaffiliated with either the victim or transgressor group) would be more persuasive than testimony from a member of the transgressor or the victim group. Critically, we also expected the effect of informant identity to interact with participants' initial attributions. When a child initially made a negative attribution, we anticipated greater revision in response to positive testimony from an independent or victim group informant, as children might perceive such testimony as less likely to serve a self-protective purpose, such as preserving the transgressor group's image (Liberman & Shaw, 2020). Conversely, when the initial attribution was positive, we expected greater change if the negative testimony came from an independent or transgressor group member, as children are more likely to dismiss negative information from a known rival and to regard it as more credible when it originates from a friend (Liberman & Shaw, 2020).

We used novel social groups rather than real ones to observe how children generalize negative behavior to other group members in a context where they have no preexisting biases that might influence this process. We focused on 6- to 8-year-old children, as research shows that by 5–6 years of age, children begin to exhibit strong intuitions about social groups, including assumptions about group members' social status (e.g., Santhanagopalan et al., 2021; Yazdi et al., 2020) or interests (e.g., "boys like physics more than girls" [Miller et al., 2024]). By targeting this age range, when children are consolidating their understanding of social group dynamics, we aimed to examine the role of testimony in shaping or modifying their emerging beliefs.

2. Method

2.1. Participants

One hundred and twenty-three[1] 6-to-8 years old children participated in the study (61 females, M_{age} = 6.86, SD_{age} = 0.57, range: 5.9–8.1 years). Seven additional children were tested but were eliminated from the final sample due to failure to answer the control question correctly (see below for details). All participating children were residents of Turkey and native Turkish speakers. Subjective family socioeconomic status (SES) was measured using the 10-rung ladder from the MacArthur Self-Reported Socioeconomic Status Scale (Adler et al., 2000). Most families came from middle-to-high socioeconomic backgrounds with the reported SES scores ranging from 2 to 9 (M = 5.69, SD = 1.36, 35 missing values). Participants were recruited through social media and the laboratory database. The study was approved by the Institutional Ethics Review Board at [Blinded for review] and pre-registered before data collection began.

2.2. Materials

Two scenarios were used to introduce the transgressor and the victim groups. In one scenario, children from the transgressor group mock a child from the victim group. In the second scenario, children from the transgressor group do not share a toy with the victim group (see Appendix A for the full texts of the stories). To present along with each transgression scenario, eight images supporting the story line were created using an online tool. Four of the images were used for the 'mocking' scenario and these depicted four different child characters (three children from transgressor group and one child from victim group) with a garden background. The other four images were used for the 'toy-sharing' scenario and consisted of six child characters, three from the transgressor group and three from the victim group, with a school yard background. All child characters in the images had different hair styles and facial features and the group identities were marked with t-shirt colors (i.e., with orange and green t-shirts), and the characters in each scenario were distinct, with no child appearing in both stories.

Across trials, participants saw gender-matching stimuli. Therefore, eight different versions of both stories were created (for example, a single character in the story image can be a male or female; an orange team member or a green team member; and victim or transgressor).

We also compiled six questions asking participants to guess which of the two target children, one from the transgressor group and one from the victim group, would perform a negative or a positive action. The two characters matched participants' gender, accordingly eight unique characters (four female and four male characters, half wearing an orange t-shirt and half wearing a green t-shirt) were created in total. Additionally, two yellow circles, differing in size, were created to help children visualize different levels of confidence in their choices (i.e., the small circle means a little sure, and the big circle means very sure) (see below for details). The visual stimuli were presented on Qualtrics online data collection software.

Before the experiment, parents were also asked to complete a demographic questionnaire that included questions about their gender, level of education, socioeconomic status (SES), and their child's birth date, gender, school grade, and developmental background.

2.3. Design and procedure

Participants were tested individually via Zoom. First, parents were briefed about the study, instructed on adjusting the meeting settings (e.g., hiding self-view, adjusting side-by-side mode), and gave their verbal consent. The experimenter then introduced the study to the participant and obtained their assent. Following this, a warm-up activity was conducted, where the participants were asked to identify colors and animals displayed on the screen, to check whether they could see the stimuli and hear the instructions without any problems.

The study had three between-subjects conditions based on the informant's group identity (either a member of the transgressor, the victim, or the neutral group). After the warmup, the experimenter introduced the transgressor and the victim groups. Two groups of children, distinguished by their T-shirt colors (orange and green), appeared on the screen. The experimenter said: "In this game, there are different teams. Let me introduce them to you! Look, these children," *children wearing green T-shirts appeared on the left side of the screen*, "are on the Green Team. And these children," *children wearing orange T-shirts appeared on the right side of the screen*, "are on the Orange Team. Now I'm going to tell you some stories about these teams." The experimenter then

[1] Based on earlier studies on children's social-moral reasoning (e.g., Kim & Spelke, 2020; McDonald & Ma, 2016; Pesch & Koenig, 2018; Schmidt et al., 2012), we initially targeted 30 children per experimental condition. We planned to analyze children's answers separately based on their initial attributions (positive vs. negative), but children's initial responses were not equally distributed, leaving some cells with very small Ns. Thus, we increased our sample size from 30 to 40 per condition, to achieve a reasonable distribution of initial attributions across different conditions. The change in sample size and the reasoning behind it are detailed in the pre-registration: https://osf.io/r67jq?mode=&revisionId=&view_only=9d2d5a29924940abb5f68bac3b018541.

narrated two transgression stories while showing story images. Each sentence in the storyline was presented along with a related image. The stories depicted members of one of the teams (e.g., the Orange Team) mocking the other group (e.g., the Green Team) and refusing to share a toy with them. The full text of these stories is provided in Appendix A. Following this, the experimenter introduced a novel member from the transgressor group and asked the participant's expectation regarding their behavior as follows: "I'm going to introduce you to someone else from the Orange Team; we've never seen this child before. Do you think this child would share his/her toys with others or not?". This first question was always about sharing a toy (i.e., a behavior demonstrated in one of the stories). We purposely left the identity of "others" unspecified to examine children's expectations about the target child's general characteristics, rather than their behavior toward a specific group. Once the participant answered, a small and a large circle appeared on the screen simultaneously, and the experimenter asked: "How sure are you? Are you a little sure or very sure?". Confidence ratings were collected to allow for a more nuanced scoring (e.g., Soley & Köseler, 2021).

After the initial phase, a novel informant was introduced. Depending on the experimental condition, this informant was a member of either the transgressor, victim or the neutral group (a Purple Team that was not mentioned before). The informant always gave contradictory testimony to what the participant reported earlier about the novel character: For example, if a participant indicated that the novel individual would share their toys with others, the informant said 'I think, this child would not share their toys with others'. After hearing the testimony, the experimenter asked the question one more time (e.g., "Do you think this child would share their toys with others or not?"). After answering the question, participants were asked to indicate how sure they were of their answer.

Finally, participants were posed 6 novel forced-choice attribution questions. For this, they were presented with two novel target children, one from the transgressor group and one from the victim group, and asked to guess which of the two targets would perform four negative (e.g., misbehaving at school) and two positive actions (e.g., baking cookies for classmates) across six trials. These actions are provided in Appendix B. At the end, participants were also asked which of the two characters they liked more and which of the groups they would like to be a part of.

The transgressor and victim groups were introduced in a counterbalanced order. The images of children who belonged to the transgressor and victim groups were also counterbalanced across participants. To mitigate a potential bias stemming from group colors, the t-shirt colors of the transgressor and the victim groups (the Orange Team or the Green Team) were also counterbalanced across participants. The two stories were introduced in the same order across participants. The order of the six questions that were asked at the end of the experiment varied randomly across participants. The side of the screen (left vs. right) where children from the victim or the transgressor group appeared was the same across trials, but varied across participants.

At the end of the session, participants were asked the following control question: "Do you remember which team refused to share their toy and mocked the other group in the stories we read?". Participants who did not answer the control question correctly were not included in the final sample. The entire session lasted about 10 min.

3. Results

Data and analysis scripts are publicly shared:https://osf.io/w482x/?view_only=1a5b68cc8dcd438699250057e4cdf2b8. All analyses were conducted on R (R Core Team, 2013).

3.1. Scoring

The scoring was adopted from Soley and Köseler (2021).[2] Accordingly, participants' initial attributions to the novel member from the transgressor group were coded as "1" for answering "yes, she/he would share" and "-1" for answering "no, she/he would not share" for the novel member attribution trial. These scores were multiplied by "1.5" if participants indicated that they were "very sure" of their answer and by "0.5" if they were "a little sure". Thus, scores for each trial ranged from −1.5 to 1.5. This procedure was repeated for participants' responses after hearing the conflicting testimony of the informant. We then calculated a difference score by subtracting participants' initial score from their subsequent score after hearing the opposing testimony then taking the absolute values of these difference scores. The resulting difference scores ranged from 0 to 3.

Participants' responses to the six novel attribution questions asked at the end of the session were scored as 1 if the participant attributed the positive characteristic to the victim rather than the transgressor group member, or attributed the negative characteristic to the transgressor rather than the victim group member. Responses were scored as 0 otherwise. The six item scores were then summed to produce a composite attribution score ranging from 0 to 6, with higher scores indicating more positive attributions toward the victim group.

3.2. Pre-registered analyses

A chi-square test was conducted to examine the overall distribution of participants' initial attributions (i.e., Do you think this child would share the toy with others or not?) (negative vs. positive). The results indicated that there was no difference in the frequency of negative ($n = 56$) and positive ($n = 67$) attributions, $\chi^2(1, N = 123) = 0.98$, $p = .32$ $V = 0.09$. Thus, overall, participants did not make a positive or negative attribution about the novel member from the transgressor group.

Next, we examined the effect of the informant's group identity on participants' attribution change by conducting a linear regression analysis. Informant's group identity (with three levels: transgressor vs. victim vs. neutral) was the predictor variable, and the absolute change in decision score, (ranging from 0 to 3) as the outcome variable. Results revealed no significant effect of the informants' group identity ($F(2,120) = 0.21$, $p = .80$, $\eta 2 = 0.002$), see Fig. 1.

Table 1 presents the distribution of children's initial attributions (positive vs. negative), the direction of their response changes after hearing the contrasting testimony, and their confidence levels, reported separately for each experimental condition.

Because informants' testimony differed depending on participants' initial attributions, we examined the effect of the informant's group identity separately for participants whose initial attributions were positive versus negative. For this, we repeated the above analysis separately for the two groups of participants. Both for participants whose initial attribution was positive and negative, the effects of informant's group identity were nonsignificant ($F(2,64) = 0.45$, $p = .63$, $\eta 2 = 0.001$; $F(2,53) = 1.45$ $p = .24$, $\eta 2 = 0.05$, respectively). See Fig. 2.

3.3. Exploratory analyses

As an exploratory analysis, we exclusively focused on the valence of participants' attributions (positive or negative), excluding their responses about how sure they were of their answers (i.e., the magnitude of the change in their answers). We calculated the proportion of participants who changed the direction of their attributions (i.e., from positive to negative or from negative to positive) after hearing an opposing testimony. We conducted three exact binomial tests to assess

[2] This scoring deviates from our preregistered analysis plan. This deviation and the reasoning behind it are detailed in Appendix C.

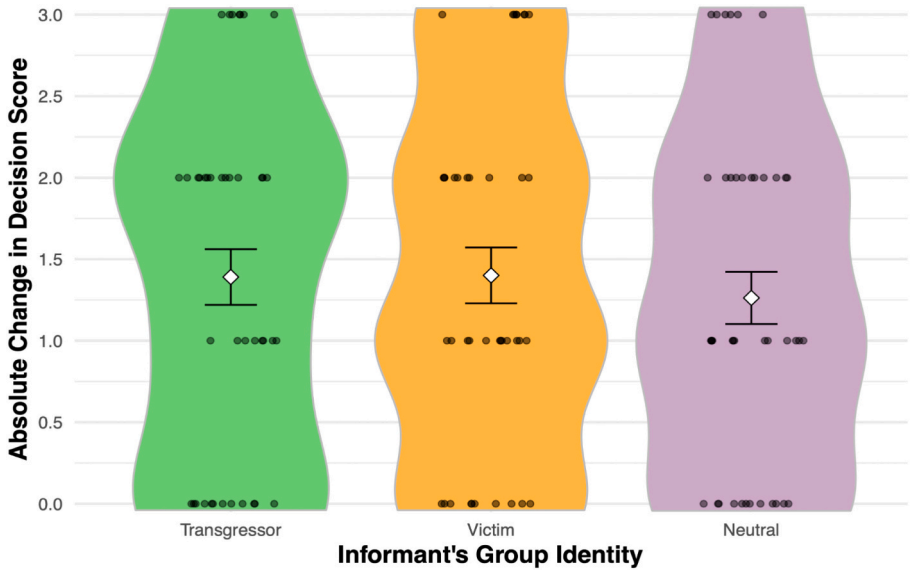


Fig. 1. Violin plot of absolute change in decision score (0–3) by informant's group identity.
Note. Error bars represent the 95% confidence intervals around the mean change decision rate for each condition.

Table 1
Distribution of initial and second responses across experimental groups.

Informant Groups	Initial Response (Valence)	Initial Response (*n*)	Confidence level for initial responses (*n*; very sure/little sure)	Proportion of Responses with Direction Change (from + to - or vice versa) (%)	Confidence level for decision change (n; very sure/little sure)	Change in Attribution Score (*M*)	Change in Attribution Score (*SD*)
Transgressor	Positive	23	17/6	60.87%	6/8	−1.04	1.07
	Negative	18	9/9	83.33%	12/3	1.83	0.99
Victim	Positive	19	12/7	73.68%	8/6	−1.16	1.30
	Negative	21	9/12	76.19%	11/5	1.14	1.42
Neutral	Positive	25	16/9	64.00%	9/7	−1.08	1.35
	Negative	17	6/11	82.35%	8/6	1.29	0.77

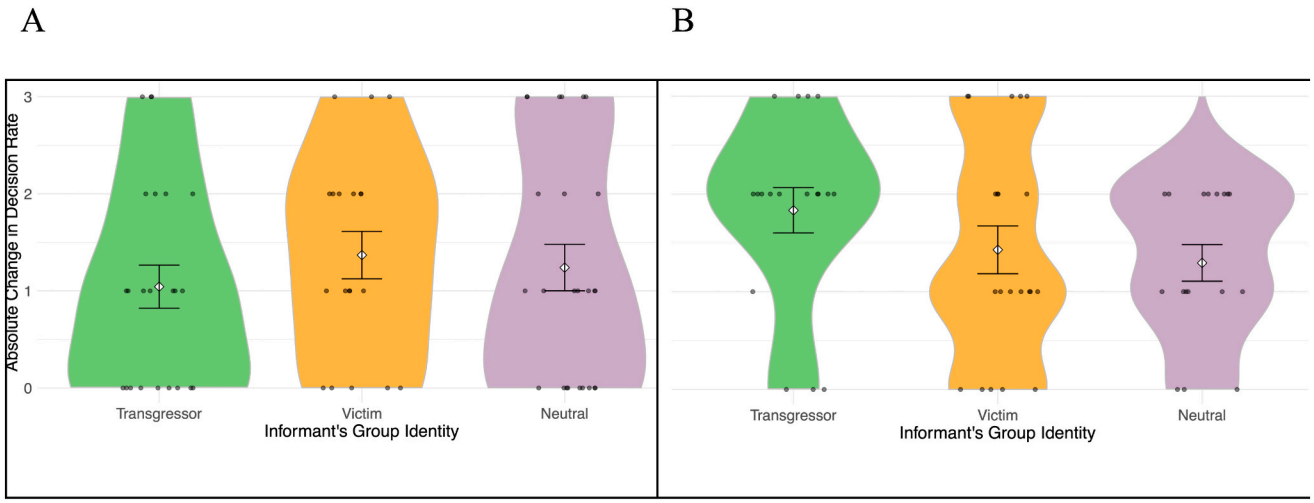


Fig. 2. Violin plot of change in decision rate for participants by informant's group identity.
Note. (A) Violin plot of absolute change in decision score (0–3) representing participants whose initial answers were positive. (B) Violin plot of absolute change in decision score (0–3) representing participants whose initial answers were negative. Error bars represent the 95% confidence intervals around the mean change decision rate for each condition.

whether the proportion of participants who changed their initial attribution's direction differed from chance level (50%) across three informant conditions (transgressor vs. victim vs. neutral). These tests revealed that participants in each group changed the direction of their decision significantly more than expected by chance: Twenty-nine out of 41 participants changed the direction of their decision in the transgressor informant condition, $p = .011$, 95% CI [0.54, 0.84], $d = 0.21$. In the victim informant condition, 30 out of 40 changes were observed, $p = .002$, 95% CI [0.59, 0.87], $d = 0.2$. Similarly, in the neutral informant condition, 30 out of 42 changes were observed, $p = .008$, 95% CI [0.55,

0.84], $d = 0.21$. These proportions do not differ from one another ($\chi^2(2, N = 123) = 0.21$, $p = .90$).

Separate binomial tests ($p = .50$) for children with positive and negative initial responses were also conducted to assess whether change of direction in children's responses differed from chance for each subgroup. Among children who initially provided positive responses, the proportion who later changed direction did not differ significantly from chance in the Transgressor ($n = 23$, 14 changed; 61%, $p = .41$), the Victim ($n = 19$, 14 changed; 74%, $p = .06$), or the Neutral condition ($n = 25$, 16 changed; 64%, $p = .23$). In contrast, among children who initially provided negative responses, the proportion who later changed direction was significantly greater than chance in the Transgressor ($n = 18$, 15 changed; 83%, $p = .008$), the Victim ($n = 21$, 16 changed; 76%, $p = .027$), and the Neutral condition ($n = 17$, 14 changed; 82%, $p = .013$).

To further assess whether the likelihood of changing direction differed across the three informant conditions, we conducted chi-square tests comparing Transgressor, Victim, and Neutral groups separately for children with positive and negative initial attributions. We did not find any significant group differences for either valence condition, $\chi^2(2, N = 67) = 0.93$, $p = .63$ (positive) and $\chi^2(2, N = 56) = 0.32$, $p = .85$ (negative) (see Table D1 in Appendix D).

Thus, children who initially made negative attributions were significantly more likely than expected by chance to revise their judgments following a positive testimony, whereas those with positive initial attributions tended not to change their initial judgments following a negative testimony, regardless of the informants' identity.

We also examined if children's confidence ratings varied based on the valence of their initial attributions. For this, we compared the proportion of children who reported being "very sure" versus "a little sure" across positive and negative responses. Children who initially made negative attributions were significantly less confident than those who made positive attributions. Specifically, 43% of children with negative initial responses reported being "very sure," compared with 67% of those with positive responses, $\chi^2(1, N = 111) = 7.56$, $p = .006$ (see Appendix D for Table D2).

Participants' attributions to novel group members (i.e., their choices of victim vs. transgressor group member in response to 6 novel attribution questions) were examined using a two-tailed, one-sample *t*-test against chance (chance level = 3). Overall, participants attributed positive acts to members from the victim group rather than the transgressor group ($t = 10.05$, $df = 122$, $p < .001$, $d = 0.91$, $M = 4.63$, $SD = 1.80$).

Participants also liked the victim group member over the transgressor group member ($p < .001$, 95% CI [0.71, 0.86], probability of success = 0.79, $d = 0.30$), and indicated that they would like to join the victim group rather than the transgressor group ($p < .001$, 95% CI [0.71, 0.86], probability of success = 0.80, $d = 0.30$). For these two analyses, the averages and the standard deviations of participants' scores for each condition are reported separately in Table 2.

Table 2
Participants' positive attribution scores to novel victim group members across conditions.

	M Attribution	*SD* Attribution	Participants Favoring Victim Group Member	Participants Preferring to Join Victim Group
Conditions				
Transgressor Informant	4.63	1.81	32/41	33/41
Victim Informant	4.65	1.73	32/40	32/40
Neutral Informant	4.62	1.90	33/42	33/42

Note. Scores represent a composite of six trial questions ranging from 0 to 6. Higher scores indicate a greater number of positive attributions to victim group members and negative attributions to transgressor group members.

Finally, we examined whether participants' initial attributions to the novel member from the transgressor group (ranging from −1.5 to 1.5, with positive scores indicating positive attributions to the target) and the informant's group identity (transgressor, victim, neutral) predicted participants' later composite attribution score (6 novel attribution questions) (ranging from 0 to 6, with an increase in scores indicating favoring the victim group), using a linear regression analysis. The results showed that initial attribution scores predicted composite attribution scores: As participants' initial attribution scores increased, their composite attribution scores decreased ($\beta = -1.05$, $SE = 0.16$, $t = -6.4$, $p < .001$). The informant's group identity did not have a significant effect on the composite attribution scores (βvictim $= -0.38$, $SE = 0.28$, $t = -1.34$, $p = .18$; βneutral $= -0.46$, $SE = 0.29$, $t = -1.61$, $p = .11$). Additionally, the interaction between initial attribution scores and the informant's group identity was not significant, indicating that the effect of initial attributions on the composite scores was consistent across informants from different groups (βvictim $= -0.06$, $SE = 0.24$, $t = -0.27$, $p = .79$; βneutral $= 0.19$, $SE = 0.24$, $t = 0.8$, $p = .42$). Thus, those participants who were more likely to assume that a novel member from the transgressor group would not engage in a negative act, were less likely to favor the victim group over the transgressor group.

4. Discussion

This study explored whether children extend negative actions of certain group members to new members of the same group, and whether and how these expectations may be influenced by testimony that differs in content and in the identity of the speaker. The results showed that children did not expect novel individuals from a group with a history of negative behavior to necessarily engage in similar negative actions. However, they also did not expect these individuals to behave positively. Exploratory analyses of confidence ratings revealed that children were significantly more confident in their positive than in their negative initial attributions. In other words, even when children made negative judgments, they appeared less certain about them, suggesting that positive expectations about others may represent their default stance. This pattern aligns with prior evidence that children generally view unfamiliar others as good and tend to make predominantly positive attributions (e.g., Boseovski & Lee, 2006; Mezulis et al., 2004). Nonetheless, compared with the robust positivity bias typically observed at this age, the overall lack of strong positive attributions in the present study may indicate a decline in this tendency, consistent with our initial predictions.

Second, we explored how children revise their initial beliefs when presented with contradictory testimony. To investigate this, the group identity of the informants was systematically varied. Additionally, attribution patterns were analyzed separately for children who initially made positive versus negative attributions. After hearing testimony that contradicted their original judgments about the novel member of the transgressor group, most children revised their initial attribution, regardless of whether the informant belonged to the transgressor, victim, or a neutral group. Exploratory analyses further revealed that, when considering only the valence of responses, children were more likely to accept positive testimony following an initial negative attribution than to accept negative testimony following a positive attribution. This asymmetrical pattern aligns with prior evidence of a positivity bias in children's social reasoning, namely, their tendency to favor and endorse positive over negative information about others (Aldan & Soley, 2019; Boseovski, 2010, 2012; Boseovski & Lee, 2008; Boseovski & Thurman, 2014; Landrum et al., 2013; Lapan et al., 2016). Such asymmetry may also stem from children's lower confidence in their negative judgments compared to their positive ones, which could make them more open to revising initially negative evaluations.

Critically, the proportion of children who changed the direction of their initial attribution was comparable across informant conditions, both for those who began with negative attributions and for those who

began with positive attributions. Thus the direction of changes in children's attributions (e.g., from negative to positive or vice versa) and the extent of change in confidence (e.g., from somewhat sure to very sure) were consistent across all three conditions. These findings contradict our initial predictions, in which we expected children's willingness to revise their responses to vary based on an interaction between informant identity and the valence of their initial attribution.

With respect to children's initial generalizations, it is important to note that the nonsignificant effects observed here should not be taken as definitive evidence for the absence of group-based generalization. One possibility is that the relatively mild nature of the transgressions used in the study, such as mocking someone or not sharing a toy, limited the strength of children's judgments about the group and, consequently, about novel individuals. Future studies incorporating stronger or more salient violations (e.g., involving physical harm) would be informative for assessing the robustness and generalizability of the present findings. Further, the current study focused on whether children's generalizations of negative behaviors, as including positive or neutral conditions would likely have produced ceiling effects in initial responses, limiting our ability to test the role of negative attributions in children's endorsement of testimony from different informants. Nonetheless, directly comparing generalizations of positive, neutral, and negative behaviors remains an important avenue for future research for a more systematic assessment of positivity bias and children's group-based attributions.

The absence of an informant identity effect may reflect the generally high rates of children's endorsement of testimony, which could have masked potential differences. Some evidence suggests that when children have direct, first-hand evidence, they tend to privilege it over contradictory testimony (Clement et al., 2004; Haux et al., 2017). In the current study, however, children never directly observed the targets about whom the testimony was given. They only observed behaviors of other group members, meaning their initial attributions were inference-based rather than grounded in first-hand evidence. In contexts like this, where children lack direct information about the relevant individual, testimony is known to exert a strong influence (Aldan & Soley, 2019; Diesendruck & Menahem, 2015; Lane et al., 2020; Nasie & Diesendruck, 2020). Thus, children's willingness to revise their judgments in response to testimony in our study is consistent with this broader pattern. It is important to note, however, that one contributing factor may have been demand characteristics. Specifically, children might have interpreted the second question following the testimony as an implicit signal that their initial response was incorrect, prompting them to revise their initial judgment regardless of the testimony's source.

Another reason children may not have distinguished between information from the transgressor and victim groups is that different social attributes of the informants, such as group membership (ingroup vs. outgroup) and their relationship to the target individual (as members of the Transgressor vs. Victim group), may exert competing influences on children's trust. For example, while children may prefer informants from the victim group over those from the transgressor group, they may still find the latter more informative, reasoning that ingroup members have greater knowledge about each other than outgroup members (Liberman et al., 2020; Liberman & Shaw, 2018). Similarly, children might show greater trust in informants from the transgressor group, as they perceive them as more dominant (e.g., Bernard et al., 2016). In contrast, children might not trust the testimony of an informant from the victim group as their objectiveness is compromised given their history with the transgressor group (e.g., Liberman & Shaw, 2020).

To address this potential ambiguity, we included a neutral informant who was also an outgroup member but not directly affected by the transgressor group's actions. This allowed us to examine children's trust in an informant less likely to be influenced by group loyalties or personal experiences, in contrast to those whose objectivity might have been shaped by group identity or victimization. Research suggests that children can detect when informants may lack objectivity, for example, due to personal ties, and tend to place greater trust in those they perceive as impartial (Mills & Keil, 2005; Mills & Landrum, 2012). Critically, however, the ability to evaluate objectivity appears to develop during older childhood. For instance, Mills and Landrum (2012) investigated how children aged 6 to 12 and adults made trust judgments about judges whose capability (i.e., access to perceptual evidence) and objectivity (i.e., being a friend, enemy, or neutral party to the target) were systematically varied. Their findings showed that while all age groups considered the judges' capability, only the older children (ages 10 to 12) also factored in objectivity when evaluating whom to trust. Thus, younger children's limited capacity to assess objectivity may help explain why the current sample did not differentiate between informants from neutral and victim outgroups in terms of trustworthiness.

Although children did not exhibit a strong expectation that a novel member of the transgressor group would engage in the same negative behavior as previous group members, they still expressed a clear preference for the victim over the transgressor group, reporting greater liking and a stronger desire to affiliate with its members compared to the members of the transgressor group. This suggests that children not only distinguished between the two groups but also consistently favored the victim group over the transgressor group. Methodologically, the structure of the tasks may have contributed to the observed differences. Novel group member attributions were measured with rating scales, allowing for nuanced responses and confidence ratings. In contrast, final attribution and preference questions employed a forced-choice format, requiring binary decisions. Supporting this idea, deMayo and Olson (2024) found that 5- to 6-year-olds displayed stronger ingroup preferences in forced-choice tasks than in rating-scale tasks, even though responses across formats were correlated.

Importantly, children's social preferences did not extend to greater trust in the victim group as a source of information. While children showed a preference for the victim group, they did not exhibit greater trust in its members when evaluating testimony. This dissociation between social preferences and judgments of informant reliability suggests that children's affiliative inclinations do not always align with their epistemic evaluations. In addition to examining how children integrate multiple cues, such as moral character and prior accuracy, when deciding whom to trust (e.g., Johnston et al., 2015; Landrum et al., 2013; Liu et al., 2013; Vanderbilt et al., 2018), directly comparing social and epistemic preferences using a variety of distinct measures is also an important direction (e.g., Vanderbilt et al., 2023). The present findings highlight the value of such comparisons and suggest that investigating how these dimensions interact across different evaluative contexts may further deepen our understanding of children's trust and learning. As noted earlier, however, our measure of epistemic trust involved children making a second behavioral prediction after hearing a contrasting testimony. Thus, their responses may have been influenced by factors other than epistemic evaluation, such as social motives.

We also examined whether children attributed novel positive or negative behaviors (e.g., “Which of these children misbehaved at school?” or “Which of these children baked cookies for all of their friends?”) to unfamiliar members of the victim or transgressor groups. The results showed that children were more likely to attribute positive actions to members of the victim group than to those of the transgressor group, in line with their earlier preferences and affiliation choices. These findings indicate that, when assessed using a forced-choice paradigm, children generalized group-level traits to new individuals and behaviors. Moreover, the results rule out the possibility that children failed to differentiate between informants due to difficulty distinguishing or remembering their group identities.

Finally, as an exploratory analysis, we examined the relationship between children's initial attributions (i.e., whether a target member from the transgressor group would engage in a negative behavior previously exhibited by other group members) and their subsequent attributions of novel acts. Results showed that initial judgments significantly predicted later attributions across conditions. Specifically, children who were less inclined to assume that a new member of the transgressor

group would behave negatively, were also less likely to express a preference for the victim group over the transgressor group. This suggests that even when children revised their initial evaluations following contradictory testimony, their subsequent group-level judgments continued to reflect the influence of their original impressions.

This pattern may reflect some resistance to testimony, suggesting that children's initial evaluations remained influential despite exposure to disconfirming information. The use of opinion-based testimony may also have contributed: Prior work indicates that opinion or belief statements can be perceived as less persuasive than factual claims, which children often regard as more objective and trustworthy (e.g., Banerjee et al., 2007). That said, previous studies have not directly contrasted different types of testimony in social learning contexts where children form impressions of individuals. Addressing this gap will be an important direction for future research. Another possibility, as noted earlier, is that when faced with conflicting testimony, children may have adjusted their responses not due to genuine belief change, but in response to subtle social pressures, such as a desire to please the experimenter or to conform to perceived norms of correctness, especially those introduced by peers. Introducing a delay between initial and final measures in future studies might help disentangle some of these possibilities.

An important strength of the present research is that it draws on data from a non-WEIRD cultural context. Given that most developmental research has relied heavily on WEIRD populations (Henrich et al., 2010; Nielsen et al., 2017), the current findings contribute to a more globally representative picture of children's social reasoning. At the same time, the sample was primarily composed of middle- to higher-SES families in Turkey, which limits the generalizability of the results. Relatedly, SES data were missing for a subset of families ($n = 35$), which may bias the sample toward relatively advantaged households. While this profile aligns with many samples in the existing literature (Bard & Keller, 2024; Nielsen et al., 2017), future work should prioritize recruiting more socioeconomically and culturally diverse populations, ideally through cross-cultural comparisons that capture variation in socialization processes.

Taken together, the present findings demonstrate that children's social evaluations are shaped by both observed group behavior and subsequent testimony, yet initial impressions remain influential even after receiving contradictory information. Although children revised their judgments across conditions, their broader group-level attributions and preferences continued to reflect early assumptions. These findings highlight the importance of accounting for both social and contextual influences, as well as methodological factors, when interpreting children's responses in experimental settings. They also raise interesting questions for future research, emphasizing the importance of examining individual differences in attribution patterns. In particular, it might be an interesting future direction to explore why some children are more inclined to make negative rather than positive inferences about members of a previously transgressing group. Such variability may reflect underlying differences in character traits, prior social experiences, or sensitivity to group-based cues and dynamics. Understanding these processes can provide deeper insight into the early development of social reasoning and bias.

CRediT authorship contribution statement

Halide Sena Koçyiğit: Writing – review & editing, Writing – original draft, Visualization, Investigation, Formal analysis, Data curation. **Pınar Aldan:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Gaye Soley:** Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization.

Ethics approval statement

This study was approved by the Institutional Review Board at Boğaziçi University (Record number: 2020-31).

Declaration of competing interest

Authors report no conflict of interest.

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Appendix A

Transgression stories

One day, while three children from the Orange (Green) Team were walking, they came across a child from the Green (Orange) Team that was painting. The Orange (Green) Team watched from afar for a long time as this child from the Green (Orange) Team worked on the painting. When she/he finished painting, the Orange (Green) Team came toward her/him. And even though they knew that she/he worked hard for this picture, they made fun of her/him, telling her/him that her/his painting was very bad.

Another day, three children from the Orange (Green) Team and the Green (Orange) Team were walking in the schoolyard and came across a teddy bear lying on the ground. They all loved playing with the teddy bear. However, the Orange (Green) Team did not want to share the toy, instead they just wanted to play with it among themselves. So, they took the toy for themselves and left.

Appendix B

Six novel attribution questions

1. Which of these children took someone else's belongings without permission?
2. Which of these children misbehaved at school?
3. Which of these children baked cookies for all of their friends?
4. Which of these children helped a friend with their homework?
5. Which of these children had bad grades?
6. Which of these children played with their toys without sharing them with others?

Appendix C

Deviations from the preregistration in the scoring of children's responses

Scoring of initial attributions

In the preregistration, we initially specified a scoring system ranging from −2 to 2 (−2,−1,1,2). However, realizing that the absence of a 0 score, we found it necessary to revise this system. To maintain equal intervals between the scores, we adopted a new scoring range of −1.5 to 1.5 (−1.5, −0.5, 0.5, and 1.5), adopting the scoring of Soley and Köseler (2021). This adjustment ensures consistent spacing between scoring categories and avoids the issue of unequal intervals.

Scoring of change in decision

We also made a modification in scoring the decision change when combining children with both positive and negative initial attributions. In the preregistration, the analysis did not account for the directional ambiguity that could arise when comparing changes from opposite poles (positive and negative initial attributions). Specifically, when combining these groups, it became unclear whether a change in score indicated a shift toward or away from the informant's position. To address this issue, we opted to take the absolute value of the decision change score, ensuring that the magnitude of change, rather than its direction, was the primary focus.

Appendix D

Binomial tests of direction changes in children's attributions by group and initial response valence

Table D1
Binomial tests of direction changes in children's attributions by group and initial response valence.

Group	Initial Valence	*N*	Changed Attribution (*n*)	Not Changed Attribution (*n*)	Proportion Changed	Binomial *p*
Transgressor	Positive	23	14	9	0.61	0.405
Transgressor	Negative	18	15	3	0.83	0.008
Victim	Positive	19	14	5	0.74	0.064
Victim	Negative	21	16	5	0.76	0.027
Neutral	Positive	25	16	9	0.64	0.230
Neutral	Negative	17	14	3	0.82	0.013

Note. χ^2 tests comparing the direction change of the Transgressor, Victim, and Neutral conditions were nonsignificant for the positive and negative initial response groups: $\chi^2(2, N = 67) = 0.93$, $p = .63$; $\chi^2(2, N = 56) = 0.32$, $p = .85$.

Overall comparison of confidence by initial attribution valence

Table D2
Comparison of confidence levels between positive and negative initial attributions.

Valence of Initial Response	Very Sure (*n*)	Little Sure (*n*)	Very Sure (%)
Positive	45	22	%67
Negative	24	32	%43

Data availability

The study was preregistered. Data and code for this research are available at the following URL: https://osf.io/w482x/?view_only=1a5b68cc8dcd438699250057e4cdf2b8.

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