The Influence of Direct and Overheard Messages on Children's Attitudes toward Novel Social Groups

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Abstract

Individuals often develop negative biases toward unfamiliar or denigrated groups. Two experimental studies were conducted to investigate the extent to which brief negative messages about novel social groups influence children's (4- to 9-year-olds'; $N = 153$) intergroup attitudes. The studies examined the relative influence of messages that are provided directly to children versus messages that are overheard, and examined whether the force of these messages varies with children's age. According to implicit and explicit measures of children's intergroup attitudes, children rapidly internalized messages demeaning novel groups, thus forming negative attitudes toward out-groups merely on the basis of hearsay. These effects were generally stronger among older children, and were particularly pronounced when the message was provided directly to children.

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Classifying people into social groups is a common feature of human social cognition (Banaji & Gelman, 2013; Hirschfeld, 2008; Macrae & Bodenhausen, 2001). Social groups may be characterized by members' physical appearances, practices, preferences, or ideologies. Individuals may personally identify with one or a set of social groups, and may develop hostility toward members of other groups (Patterson & Bigler, 2006; Pettigrew & Tropp, 2006). How do negative attitudes and behaviors toward out-groups develop? Work with infants suggests that these attitudes build upon social-cognitive biases that are present quite early in life. Infants and toddlers demonstrate early preferences in attending to and interacting with others who share their food preferences, accents, and languages (Dunham, Baron, & Banaji, 2008; Liberman, Woodward, & Kinzler, 2017; Mahajan & Wynn, 2012); although they do not necessarily understand that these factors reflect social-group membership. During the preschool years, children begin to carve their world into social groups and demonstrate in-group favoritism; soon thereafter, out-group bigotry may emerge (Aboud, 2003; Aboud & Amato, 2008; Bigler & Liben, 2007; Buttelmann & Böhm, 2014; Hewstone, Rubin, & Willis, 2002).

Intriguingly, individuals may hold negative attitudes even toward social groups that they have *not personally encountered* (Pettigrew & Tropp, 2006). This suggests that the development of negative sentiments toward out-groups is partly a function of information acquired through word of mouth (Bigler & Liben, 2007; Over & McCall, 2018). Indeed, approximately two-thirds of humans' conversation time is spent discussing social matters—people, groups, morality, and so forth (Dunbar, 2004). The current studies are designed to experimentally examine the extent to which others' negative claims about novel social groups influence developing attitudes toward

those groups. We examine whether the force of such claims varies with age across early and middle childhood, and whether the effects of such claims differ depending on whether claims are provided directly to children or are overheard. In the following sections, we briefly review research on developmental trends in children's sentiments and behavior toward in-group and out-group members. Then, we consider ways in which others' claims may undergird or alter these developmental trends.

Children's Sentiments toward Out-Groups

Although young children tend to evaluate novel others positively (e.g., Boseovski & Lee, 2008), certain social preferences emerge early in life. When asked to choose, children as young as 3-years prefer others who are similar to themselves (rather than dissimilar) on salient dimensions. For example, they donate more resources to and choose to befriend children with whom they share morphological phenotypes, including hair color, apparent race, and apparent gender (Fawcett & Markson, 2010; Renno & Shutts, 2015). They also prefer to interact with others who share their food and toy preferences (Fawcett & Markson, 2010). By at least five years of age children prefer affiliating with others who have native (vs. foreign) accents (Kinzler, Shutts, DeJesus, & Spelke, 2009). As children develop more nuanced social-group categories – typically, groups that adults explicitly identify and discuss around children (e.g., Bigler & Liben, 2007; Leaper, 1994) – new intergroup preferences emerge.

During the preschool years, intergroup preferences seem to reflect in-group *positivity* more than out-group negativity (Aboud & Doyle, 1993; Dunham, Baron, & Carey, 2011; Nesdale, 2004), but out-group negativity often increases in middle childhood (Aboud, 2003; Buttelman & Böhm, 2014). A meta-analysis of 113 studies, which included (predominately White) children ranging from 2 to 19 years, found that ethnic, racial, and national prejudice peak

between 5 and 7 years, and decline slightly thereafter (Raabe & Beelmann, 2011). For example, in one study of 4- to 7-year-olds, White children's attitudes about other White children became increasingly positive between 5 and 7 years, while their attitudes about Black children became increasingly negative (Aboud, 2003).

Not only do negative attitudes toward out-groups strengthen between early and middle childhood, the formation of these social-group categories is increasingly hair-triggered. This developmental progression is exemplified in studies using 'minimal-group' paradigms (e.g., Bigler, Jones, & Lobliner, 1997; Dunham et al., 2011); for example, group membership may be manipulated by having participants wear a shirt that is the same color as shirts worn by one group of people (the in-group) and different in color from shirts worn by another group (the out-group). In studies using this paradigm, 5- to 6-year-olds immediately demonstrate positive biases toward in-group members (e.g., Dunham & Emory, 2014), and also expect that in-group members will behave more prosocially toward (i.e., share with or help) members of their own group rather than members of out-groups (Rhodes, 2012). Younger children (3- and 4-year-olds) tend to not demonstrate such biases immediately (e.g., Dunham & Emory, 2014; Rhodes, 2012, Study 1), although they may do so after prolonged (multi-week) exposure to the arbitrary social-groupings (e.g., Patterson & Bigler, 2006). Thus, as demonstrated using minimal-group paradigms, older children seem to more quickly infer social-group membership.

In studies using minimal-group paradigms, negative biases and behaviors toward out-groups often emerge and strengthen around 6–8 years. Six-year-olds punish the selfish behavior of out-group members more than the selfish behavior of in-group members (Jordan, McAuliffe, & Warneken, 2014), and they donate more positive items (e.g., cookies) to in-group members (Buttelmann & Böhm, 2014). By 8 years, children may display malice, e.g., donating more

negative items (e.g., spiders) to out-group members, rather than discarding the items (Buttelmann & Böhm, 2014). These findings demonstrate that as children progress from the preschool years to middle childhood, they may transition from merely preferring members of their own groups to a more pronounced out-group disregard, dislike, and in some cases malice. These developmental shifts likely underlie age-related increases in beliefs that it is permissible to exclude and discriminate against outgroup members (Killen & Stangor, 2001). Such developments may reflect an interplay of universal justice-based concerns and local group-based concerns that are weighted differently across contexts and ages (Killen, 2007; Rutland, Killen, & Abrams, 2010), or they may reflect an increased tribalism and parochialism of morality itself (Haidt, 2012; Rhodes, 2012).

As we discuss next, messages that children receive about social groups are likely to play a major role in how they construct ideas about and form negative attitudes toward some groups, and there may be developmental differences in children's receptivity to such messages.

Messages about Social Groups

Children acquire much of their knowledge from others (see Gelman, 2009; Harris, 2012), and this is especially true when first-hand experience is lacking (for reviews, see Harris & Koenig, 2006; Lane & Harris, 2014; Lane, 2018). Although most experimental work on children's 'trust in testimony' has focused on transmitting information about the physical and biological domains (see Harris, 2012), testimony can also be a powerful mechanism for conveying social information (Dunbar, 2004; Rottman, Young, Blake, & Kelemen, 2018). For example, brief messages directed at children can influence their tendency to share with and donate to others (Eisenberg-Berg & Geisheker, 1979; Grusec, Saas-Kortsaak, & Simutis, 1978; Rushton, 1975), and can influence children's judgments of the goodness or badness of others'

novel actions (Rottman, Young, & Kelemen, 2017). As well, the language that adults use to describe people can influence children's social-group categories. For example, parents' use of generic language about social groups (e.g., "An Arab can't work as a security guard"; "Zarpies are scared of lady bugs") is associated with children's essentialist beliefs about those groups (Rhodes, Leslie, & Tworek, 2012; Segall, Birnbaum, Deeb, & Diesendruck, 2015).

How does testimony influence developing *attitudes* toward novel social groups? Experimental findings demonstrate that testimony can swiftly influence adults' attitudes toward ethnic outgroups. For example, in an undergraduate sample, anti-racist beliefs were weakened following a peer's verbal expression of racism (Blanchard, Crandall, Brigham, & Vaughn, 1994). However, scarce experimental work has directly addressed this question among children. Correlational studies reveal moderate relations (*r*s = .35–.40) between children's (8– to 11-year-olds') attitudes toward other racial and ethnic groups and their parents' attitudes toward those groups (e.g., Aboud & Doyle, 1996), but the specific mechanism of transmission is unclear. In one recent experiment, testimony highlighting the positive qualities of a Black protagonist (depicted in a series of vignettes) decreased White and Asian 8– to 12-year-olds' Anti-Black bias (according to an implicit measure; the child IAT); however this testimony had no influence on the biases of younger children aged 5–8 years (Gonzalez, Steele, & Baron, 2017). In the current study, we anticipate that the force of negative messages about social groups will also increase between the preschool years and middle childhood.

Most research on children's learning from testimony has focused on the effects of *direct* messages. This focus may reflect learning theories' emphasis on "pedagogical cues" such as direct eye contact and child-directed speech (for review, see Csibra & Gergely, 2009). While important, such cues do not appear to be *necessary* for young children to acquire new

information, and they are not employed universally across cultures (Schneidman & Woodward, 2016). For example, even toddlers can acquire new information (e.g., new words, functional information about tools) by eavesdropping on conversations between adults (Akhtar, Jipson, & Callanan, 2001; Gampe, Liebal, & Tomasello, 2012; Phillips, Seston, & Kelemen, 2012). Questions about whether and how ambient messages influence children's learning are especially relevant when considering how children might learn about social groups (Bigler & Liben, 2007). Many of the negative messages that children encounter are likely not directly provided to them but are overheard, for example in conversations between parents, during caregivers' phone conversations, and from media outlets that repeatedly play controversial and provocative sound bites about different groups of people. Thus, a major goal of the current studies is to examine whether and how the influence of negative claims about novel groups varies based on whether messages are directly provided to children or if they are embedded in ambient conversations and merely overheard.

In two studies, we examine the relative influence of direct versus overheard testimony on children's attitudes toward novel social groups, and we explore how the influence of these messages varies across early and middle childhood. Studying attitudes and behaviors toward *novel* groups (as opposed to real groups) is common practice in developmental research, both because it would be unethical to provide children negative messages about real social groups and because it allows for full experimental control of children's knowledge of the groups (Bigler & Liben, 2007). The testimony that children hear in the current studies briefly conveys negative information about a novel group's kindness, food, clothing, and language. Even if this testimony influences children's intergroup attitudes, children might be hesitant to explicitly express their negative opinions; thus, we assessed their intergroup attitudes with implicit as well as explicit

measures. Importantly, rather than evaluating children's *relative* intergroup attitudes (e.g., with forced-choice measures that pit one group against another; common in research on intergroup attitudes), we evaluate children's *absolute* intergroup attitudes by asking them about one group at a time. These methods are more ecologically valid (in real life, children are rarely *forced* to *choose* between or to compare groups *simultaneously*; more often, non-zero-sum, non-mutually-exclusive judgments and decisions are made about people and groups), and provide more stringent tests of negative attitude formation.

Study 1 is exploratory and small-scale. Children heard an adult's negative testimony (provided directly or overheard) about a novel (target) group; later, a different researcher evaluated children's sentiments about that group and another novel (comparison) group. Findings from Study 1 informed methodological refinements that were incorporated in Study 2. In Study 2, children were randomly assigned to either be directly told negative testimony about a group, overhear the negative testimony, or to hear no testimony; and their sentiments about that group were evaluated. Study 2 is larger both in terms of sample size and the breadth of outcome measures. In both studies, children's attitudes toward the novel group were gauged with explicit questions and with an implicit measure. Use of multiple measures allows us to evaluate how robustly testimony influences children's attitudes. We expected that children would form negative attitudes toward novel social groups after hearing brief negative testimony, and that this effect would be more powerful for direct testimony than for overheard testimony. We also anticipated that the influence of these claims would increase between the ages of 4 and 9 years, given that the formation of social-group categories is increasingly hair-triggered, and that negative attitudes and behaviors toward out-groups typically strengthen between early and

middle childhood. We expected that these patterns would manifest across all measures of children's intergroup attitudes.

Study 1

Method

Participants. Parents of children ranging in age from 4.5 to 9.0 years (N = 54, 25 girls, M_{age} = 6.48 years) were contacted via phone calls and emails; their contact information was obtained through public Tennessee State birth records. Families that agreed to participate traveled to a campus laboratory, in Nashville, Tennessee. Two additional children participated (one 5-year-old, and one 7-year-old), but their data were excluded from analyses because of experimenter errors. Caregivers provided written informed consent to have their children participate, and children provided verbal assent to participate. According to caregivers' responses to a demographic questionnaire, most (51) caregivers who attended the study sessions identified as White/Caucasian, and three identified as Black/African American. Of these caregivers, more than half (31) had completed a Bachelor's degree, 12 completed a Master's degree, six held a doctorate, four completed some college, and one held a high-school diploma (demographic data were not collected directly from or about child participants). Methods for participant recruitment, informed consent, and study procedures were approved by Vanderbilt University's Institutional Review Board ("Judging Groups Based on Testimony", IRB#151748).

Procedure. At the start of each study session, Experimenter 1 (henceforth, "E1") played a distractor game with the child, during which the child was asked to find objects hidden in elaborate photographs. At approximately 90 seconds into the game, E1 provided negative information about a novel social group (the *Target* group; e.g., "Gearoos"). For half of the children (n = 27) this information was provided *directly*: E1 faced and looked at the child as she

said, “After we play this game, someone is going to come in to talk to you about Gearoo people. Those Gearoos are really bad people. They eat disgusting food, and they wear such weird clothes. The Gearoos’ language sounds so ugly. Anyway, let’s get back to the game.” The remaining children (*n* = 27) *overheard* this same message: E1 answered a cell phone call (in reality, it was a pre-set alarm), walked to a corner of the room (approximately 1.1 meters from her seat) and turned her side to the child as she seemingly spoke to someone on the other line; “Hi! I can't really talk right now. Yeah, I'm at work. A [girl/boy] and I are playing a find-the-picture game. Then someone is going to come in to play other games and talk to [her/him] about Gearoo people. Those Gearoos are really bad people. They eat disgusting food, and they wear such weird clothes. The Gearoos’ language sounds so ugly. Anyway, I gotta go now. Talk to you later. Bye.” Importantly, for both conditions, identical wording was used to convey negative information about the novel group (“Those Gearoos are really bad people...”); this portion of the utterance lasted approximately 9 seconds. The goal of including the Overheard condition was to approximate one way in which children might ‘naturally’ hear about novel groups in their everyday lives. Thus, we did not purposely direct children to look toward or otherwise attend to the speaker as she spoke on the phone. However, most children in this condition (11 of 12; 92%) spontaneously looked toward the speaker while she made the negative claims.

The child and E1 returned to the hidden-object game for another 120 seconds, and then E1 excused herself from the room, saying: “Thanks so much for playing this game with me! Another person is going come in here to draw with you and play other games. I don’t remember their name, but I’ll go get them.” The latter statement was included to discourage children’s inference that E1 and the second experimenter (E2) were very familiar with one another.

Measures.

Distance Drawn. Approximately 10 seconds after E1 left, E2 entered the room, introduced herself, told the child that they were going to play a drawing game, and asked the child to name his/her favorite colors. A piece of ledger paper (27.9 × 43.2 cm), horizontally-oriented, was placed within a template such that only a small 7.6cm high X 5.1cm wide rectangle at the bottom-center of the page was exposed. Children were asked to draw themselves in the rectangle. After completing their drawing, children were asked if they had ever heard about a novel social group: either the *Target* group (i.e., the group E1 had mentioned; e.g., "Gearoo people") or a novel *Comparison* group (i.e., a group E1 had not mentioned; e.g., "Shogie people"). The right half of the page was exposed and children were asked to draw a member of that group. After children completed their drawing, the left half of the page was exposed and this same procedure was repeated for the remaining group (either *Target* or *Comparison*). Thus, at the end of this task, the page contained drawings of the self (in the center) and drawings of the two novel group members (one on the left and one on the right). The procedure and apparatus were designed to ensure that children had equivalent space in which to draw each of the two group members (i.e., the same amount of space on either side of their own drawing). The order in which groups were mentioned and the name of the Target and Comparison groups were counterbalanced across participants. Children's implicit attitudes were assessed by measuring the distance (in cm) between drawings of the self and drawings of each of the two group-members (measured from the closest points on each drawing); larger distances between drawings are theorized to reflect greater social distancing and more negative sentiments toward the social group (e.g., DeWall, Deckman, Pond, & Bonser, 2011; Diesendruck & Menahem, 2015). When

drawings of the self and novel group-member touched or overlapped (n = 6), distance was coded as 0 cm.

Friendship Decisions. After the drawing task, children's intergroup sentiments were also assessed with explicit questions about the two groups. First, E2 asked children whether they would be friends with the first group-member they had drawn (i.e., "Would you want to be friends with a Gearoo person?", "Why?"); "Yes" was coded 1 and "No" was coded 0 (answers to the open-ended "Why" questions are beyond the scope of this paper).

Goodness Ratings. Next, participants were asked to evaluate that group's *goodness* with two questions: "Do you think that Gearoos are good people?"; "Do you think Gearoos are *very* [*not*] good or just *a little* [*not*] good?" *Goodness* scores were calculated such that: 0 = very not good, .33 = a little not good, .67 = a little good, 1 = very good.

The *friendship* and *goodness* questions were then asked in reference to the remaining group. If for any question a child initially did not respond or provided an indecisive response (e.g., "I don't know"), the child was reassured that there was no wrong answer and the question was repeated.

Results

Children were questioned about the two social groups (*Target* and *Comparison*) in counterbalanced order. During interviews, researchers noticed that some children were confused when E2 first asked about the novel *Comparison* group, since they had heard E1 talk about the Target group and mention that E2 would later talk about the Target group. This question order was employed for approximately half of the sample (n = 25; 14 girls; M_{age} = 6.35). Children might have been unsure whether E2 meant to refer to the Target group or if E2 meant to refer to another novel group. These observations prompted us to test for order effects for each dependent

measure—*distance drawn*, *friendship decisions*, and *goodness ratings*. Indeed, multiple main effects and interaction effects involving order were found for all dependent measures (these analyses are presented in Supplementary Materials). Thus, subsequent analyses evaluate data only from the children first questioned about the Target group (n = 29; 11 girls; M_{age} = 6.59).

Analytic Plan. For each dependent measure, we tested for effects of Message Type (Direct vs. Overheard), Group (Target vs. Comparison), Age (a continuous variable), and interactions among these variables. Because the study included continuous and dichotomous predictor variables, and because the factor Group was nested within participants, a hierarchical (multilevel) mixed-effects regression was employed for each dependent measure. Random effects of participant were included in each model. All analyses were conducted with Stata 14.

Distance Drawn. Children's implicit sentiments toward the groups were assessed with their drawings; specifically, the distance included between drawings of themselves and drawings of each novel group member. On average, the self and the Target group member were drawn 3.66 cm (SD = 2.83 cm) apart, and the self and the Comparison group member were drawn 2.57 cm (SD = 2.62 cm) apart. A hierarchical linear mixed-effects model (Wald $\chi^2(7) = 22.68$, $p < .01$) revealed a significant main effect of Message Type (b = -10.89, SE = 4.13, z = -2.63, CI: -18.99, -2.79, $p < .01$), subsumed under an interaction of Message Type X Age (b = 1.74, SE = .61, z = 2.87, CI: .55, 2.94, $p < .01$). Among children *directly* provided messages, there was an age-graded increase in the distance between drawings of the self and the novel group members; and with age, distances drawn by children given *direct* messages were increasingly larger than distances drawn by children who *overheard* messages. These trends did not significantly differ between the Target and Comparison groups.

Friendship Decisions. To gauge children's explicit attitudes toward the novel groups, we

asked them whether they would like to be friends with a member of each group, and we asked them to rate the *goodness* of each group. Overall, 41% of children wanted to be friends with the Target group member, and 41% wanted to be friends with the Comparison group member. A hierarchical logistic mixed-effects model (Wald $\chi^2(7) = 7.80$, $p = .35$) revealed a marginally significant interaction of Message Type X Group X Age ($b = -1.69$, $SE = .88$, $z = -1.92$, 95% CI: -3.42, .04, $p = .055$). As depicted in Figure 1, there was a general age-related increase in decisions to be friends with a novel group member. However, when children were directly provided a negative message about the Target group, there was an age-related *decrease* in decisions to be friends with a member of that group. Thus, older children who were given direct claims were more biased against Target group members than children who were younger and children who merely overheard claims.

Goodness Ratings. Children's average ratings of Target group members were neutral ($M = .49$, $SD = .37$), as were their ratings of Comparison group members ($M = .54$, $SD = .39$). A hierarchical linear mixed-effects model (Wald $\chi^2(7) = 13.93$, $p = .052$) revealed a significant interaction of Message Type X Group ($b = 1.85$, $SE = .82$, $z = 2.26$, 95% CI: .24, 3.45, $p = .024$), subsumed under an interaction of Message Type X Group X Age, $b = -.30$, $SE = .12$, $z = -2.50$, 95% CI: -.54, -.07, $p = .012$. As depicted in Figure 2, there was a general age-graded increase in children's ratings of the novel groups' goodness, with one exception—when children were directly provided messages about the Target group, there was an age-graded *decrease* in evaluations of that group. Similar to the findings for friendship decisions, older children who were given direct claims demonstrated stronger bias against the Target group than did children who were younger and children who merely overheard claims.

Discussion

Findings from Study 1 offer preliminary insight into the influence of negative messages on children's impressions of novel social groups. Children's attitudes toward a novel social group were influenced by a single brief negative message about that group, particularly when the message was delivered *directly* to children. *Overhearing* similar messages seems to have had little influence on children's attitudes. Findings also suggest that intergroup messages become increasingly influential as children progress from early to middle childhood.

Preliminary findings from Study 1 informed the design of Study 2. In Study 1, each child evaluated a novel Target group (about which children heard a negative message) and a novel Comparison group. Being asked about both groups confused some children; this confusion might account for children including similar distances between drawings of themselves and both novel group members (Target and Control), and might have more generally dampened the effects of negative testimony on children's impressions of the Target group. Thus, we eliminated these order effects in Study 2 by employing a fully between-subjects design: children's implicit and explicit attitudes toward a novel group were assessed after they either were directly provided a negative message about the group, overheard the message, or were exposed to no message about the group (i.e., a control condition). One reason why the overheard message in Study 1 might have had little influence on children's impressions of the Target group (relative to the Comparison group) was that E1 had walked away from the table before providing the negative intergroup message. Although she was only 1 meter away, children might have not heard her message as clearly as children who were told the message directly (while E1 sat at the table). Children might have also paid less attention to E1 because they surmised that her move away from the table signaled that she wanted privacy. Thus, in Study 2, E1 uttered the overheard

message while sitting at the table, across from the child.

To more thoroughly assess the breadth of the influence of such messages on children's intergroup attitudes, in Study 2 we included additional measures of children's willingness to associate with and learn about the novel group. As well, we asked children to judge the acceptability of victimizing a member of the novel group. Children 4-9 years distinguish between harming in-group versus out-group members; when there is no rule against harming others, children judge it more permissible to harm out-group members as opposed to in-group members (Rhodes & Chalik, 2013). We anticipated broad effects of exposure to negative intergroup claims, evident across all indices of children's intergroup attitudes: children who heard (vs. did not hear) the negative messages would evaluate the novel group more negatively, would draw the novel group member further away from themselves, would be less willing to associate with a novel group member, less willing to engage with aspects of the novel group's culture, and would judge it more permissible to victimize a novel group member. In Study 2, we also examined age-related trends with more precision by including slightly younger participants, testing for potential non-linear age-related trends, and assessing the effect of messages at specific ages. Thus, we recruited a sample large enough to accomplish these goals and to have statistical power sufficient to detect medium effects for tests of individual regression coefficients (f^2s = .3 for main effects; .09 for interaction effects). Power analyses (computed using G*Power 3.1, with Power = .80, and $\alpha = .05$) determined that we required a minimum *N* of 90 (power analysis procedures for tests of individual regression coefficients are described in Faul, Erdfelder, Buchner, & Lang, 2009).

Study 2

Method

Participants. Children from the greater Nashville area, ranging from 4.0 to 9.0 years in age (N = 99, 50 girls, M_{age} = 6.49) were recruited in the same manner as children from Study 1; none had participated in Study 1. Four additional children (three 4-year-olds and one 7-year-old) participated, but their data were excluded from analyses because of extreme reticence (n = 2), difficulty interpreting English (n = 1), or because they decided to end the study early (n = 1). Caregivers provided written informed consent to have their children participate, and children provided verbal assent to participate. According to caregivers' responses to a demographic questionnaire, most (92) caregivers who attended study sessions identified as exclusively White/Caucasian, four as exclusively Black/African American, two as both White/Caucasian and Native American, and one as both White/Caucasian and Asian/Asian American. When asked to report their highest level of education, approximately half (48) of the caregivers reported having earned a Bachelor's degree, 22 a Master's degree, 14 a doctorate, 10 some college, four a high-school diploma, and one completed some high school (demographic data were not collected directly from or about child participants). Methods for participant recruitment, informed consent, and study procedures were approved by Vanderbilt University's Institutional Review Board ("Judging Groups Based on Testimony", IRB#151748).

Procedure. The procedure was similar to that of Study 1. Each study session began with E1 playing a picture-finding game with the child. During the game, some participants heard E1 provide a negative message about a novel social group (either named "Gearoos" or "Flurps", counterbalanced across conditions). Children were assigned to one of three conditions: *Direct* message (n = 33, M_{age} = 6.44 years), *Overheard* message (n = 33, M_{age} = 6.54 years), or *Control*

(n = 33, M_{age} = 6.51 years). For the Direct and Overheard conditions, the messages were worded identically to those from Study 1 and they were delivered in similar ways, with one important change: In the Overheard condition, when E1 answered the phone, she uttered the message while she remained *seated* across from the child, and turned to the side. As in the Overheard condition from Study 1, we did not explicitly direct children to attend to E1 while she spoke on the phone. However, most children in the Overheard condition (31 of 32; 97%) spontaneously looked toward E1 while she made the negative claims. In the Control condition, participants played the same picture-finding game, but E1 did not mention the novel group and did not receive a phone call.

Measures. After the game, E1 excused herself from the room, and E2 entered to conduct the remainder of the study. To gauge children's implicit sentiment toward the novel group, participants completed a drawing task similar to the one used in Study 1. The only difference was that, after children drew themselves in the center rectangle, the *full length* of the paper was exposed and children were asked to draw just *one* other person—a member of the novel group that was mentioned in the testimony (i.e., a Gearoo person or a Flurp person).

Children then completed two blocks of questions about the novel group, presented in counterbalanced order across participants. Block 1 began with questions identical to those from Study 1: children were asked whether they would like to be *friends* with a person from that group, and were asked to rate the group's *goodness*. New to Study 2 were questions about children's willingness to engage with different aspects of the novel group's culture: "If someone would teach you the Gearoo alphabet, would you want to learn it?", "If someone gave you some Gearoo food, would you try it?", and "If someone gave you some Gearoo clothes, would you wear them?" Answers to each question were scored 1 ("Yes") or 0 ("No"). The three scores were

summed, yielding a *cultural engagement* score ranging from 0 to 3. (After each of the latter questions, children were asked "Why?"; these questions are beyond the scope of this paper.)

Block 2 included four sets of questions for which children made *victimization judgments*, evaluating actions that victimized a novel group member (as in Rhodes & Chalik, 2013). For example, children were told, "One day, a kid teased a Gearoo kid and hurt their feelings. Was that okay or not okay?" If a child responded that it was not okay, they were asked if it was "a little bad, pretty bad, or very, very bad". Children were then asked to evaluate a similar case when there was "no rule in school against teasing." Another scenario dealt with a child stealing crackers from a child in the novel group, and the final dealt with that same circumstance when there was "no rule in school against taking each other's food." The two "no rule" scenarios are our focus, as they are designed to capture children's personal evaluation of the acts, irrespective of prescribed norms or rules. For these two scenarios, *victimization judgments* were coded such that Okay = 0; A little bad = 1; Pretty bad = 2; Very, very bad = 3 (following Rhodes & Chalik, 2013). Responses were averaged across these two scenarios for scores ranging from 0 to 3.

If, for any question, a child did not initially respond or provided an indecisive response (e.g., "I don't know"), then the child was assured that there was no wrong answer and the question was repeated. On one occasion, when supplying a Goodness rating, a child provided a subsequent indecisive response ("I don't know"), which was coded as .5.

Results

Analytic Plan. Because prior research suggests potential discontinuities in the development of intergroup attitudes (e.g., Raabe & Beelmann, 2011), we visually inspected scatterplots of relations among variables to assess whether our data met assumptions of linearity. These plots revealed non-linear age-related trends in children's responses for several dependent

measures, with shifts in age-related rates of change appearing to emerge at approximately 6–7 years of age. Interestingly this coincides with the timing of common developmental shifts in children's intergroup attitudes (Raabe & Beelmann, 2011). Thus, to more precisely examine age-related trends, and appropriately model the data, we conducted piecewise (also known as "segmented" or "spline") regression analyses to account for potential shifts in slope at the mean age (6.5 years) (for examples of other developmental studies that employ piecewise regressions, see Adolph, Vereijken, & Shrout, 2003; Campbell et al., 2001). Our use of these analyses allow for the rate and direction of age-related differences in our dependent variables to differ between the youngest (n = 47) and oldest (n = 52) portions of the sample.

For each dependent measure, an initial regression model included main effects for Direct and Overheard conditions (relative to the Control condition), a slope for age across the entire sample (Age 1), another slope (Age 2) that allows age-related trends to shift at 6.5 years, and terms that allow for the slopes of Age 1 and Age 2 to differ between the three conditions both before and after 6.5 years (i.e., interactions of Age X Condition). For each dependent measure, if slopes for Age 1 and Age 2 did not significantly differ (i.e., if the effect of Age 2 was not significant), and if slopes for Age 2 did not differ between the three conditions (i.e., if there were no significant interactions of Age 2 X Condition), then the regression model was simplified by removing main effects and interaction effects involving Age 2. If the subsequent model revealed that slopes for Age 1 did not differ between the three conditions (i.e., there were no significant interactions of Age 1 X Condition), those interaction terms were removed from the final regression model. When age-related trends *were* found to vary by condition (i.e., when there were significant interactions of Age X Condition), these interaction effects were interpreted by evaluating differences between the three conditions at ages 4.5, 6.5 and 8.5 years. All post-hoc

comparisons were computed using the postestimation "-test-" command in Stata 14. Preliminary analyses revealed that scores for all dependent measures were no different whether the group was called "Gearoos" or "Flurps" ($.22 < ps < .99$), so the name of the group is not considered in further analyses.

Distance Drawn. Three children (two 4-year-olds, and one 6-year-old), declined to draw, and thus their data were not included in these analyses. Among the remaining 96 children, the average distance between drawings of the self and the novel group member was 5.28 cm (*SD* = 3.15 cm). An initial regression model predicting distance drawn revealed that the relation between age (in years) and drawing distance did not differ between younger children (4.0- to 6.5-years) and older children (6.5- to 9.0-years) (i.e., the Age 2 term was non-significant); and there were no interactions of Age 2 X Condition (see Table S1 in Supplementary Materials). Thus, a simplified regression model included a single variable for Age, variables for the Direct Condition and Overheard Condition, and interactions between Age and Condition, $F(5, 90) = 1.73$, $R^2 = .09$, $p = .14$. Interaction effects indicated that the relation between age and drawing distance differed (marginally) between the Direct and Control conditions ($b = .88$, $SE = .52$, $t = 1.70$, 95% CI: -.15, 1.91, $p = .092$), and also differed (marginally) between the Overheard and Control conditions, $b = .87$, $SE = .52$, $t = 1.68$, 95% CI: -.16, 1.91, $p = .097$. As depicted in Figure 3, there was an age-related *decrease* in drawing distance for the Control condition, and age-related *increases* in drawing distance for the Direct and Overheard conditions. This indicates that, as participants' age increased, both forms of testimony became increasingly potent in leading to negative implicit attitudes.

To further explore developmental trends, fitted regression coefficients were compared at 4.5, 6.5, and 8.5 years. At 4.5 years, drawing distance was similar across the three conditions

($Fs(1, 90) < .58$, $ps > .45$). At 6.5 years, drawing distance was larger for the Direct vs. Control condition, $F(1, 90) = 3.82$, $p = .054$. At 8.5 years, drawing distance was larger for the Direct vs. Control condition ($F(1, 90) = 6.27$, $p = .014$) and larger for the Overheard vs. Control condition ($F(1, 90) = 3.91$, $p = .051$). Distances did not differ between Direct and Overheard conditions, $F(1, 90) = .04$, $p = .84$. Thus, the negative influence of these messages was apparent by 6.5 years when children heard the message directly and by 8.5 years when children overheard the message.

Friendship Decisions. Of the 99 participants, 42 reported wanting to be friends with a member of the novel group. An initial logistic regression model revealed that the relation between Age (in years) and friendship decisions did not differ between younger children and older children (i.e., the Age 2 term was non-significant), and there were no interactions of Age 2 X Condition (Table S2, Model 1 in Supplementary Materials). Thus, a simplified logistic regression included a single variable for Age, variables for the Direct Condition and Overheard Condition, and interactions between Age and Condition; this model revealed no significant effects of Age or interactions of Age X Condition (Table S2, Model 2 in Supplementary Materials). Thus, effects of Condition did not vary with age. A final model included only main effects of Age and Condition, $\chi^2(3) = 15.26$, Pseudo $R^2 = .11$, $p < .01$. Decisions to be friends with a novel group member differed significantly across the three conditions. Among children in the Control condition, 67% reported wanting to be friends; this rate was significantly lower (21%) among children who received a direct message ($OR = .13$, $SE = .07$, $z = -3.58$, 95% CI: .04, .40, $p < .001$), and significantly lower (39%) among children who overheard the message, $OR = .32$, $SE = .17$, $z = -2.19$, 95% CI: .12, .89, $p = .028$. Children in the Direct and Overheard conditions did not differ, $\chi^2(1) = 2.60$, $p = .11$. Again, this measure indicated robust effects of

brief testimony on children's negative intergroup attitudes, and in this case the effects were found across the entire age-range investigated.

Goodness Ratings. On average, children's ratings of the novel group were neutral (M = .46, SD = .37). In an initial regression model, the relation between age (in years) and goodness ratings shifted significantly at 6.5 years (i.e., the Age 2 term was significant), but there were no significant interactions of Age 2 X Condition (Table S3, Model 1 in Supplementary Materials). A simplified regression model (excluding interactions of Age 2 X Condition) revealed no overall interactions of Age X Condition (Table S3, Model 2 in Supplementary Materials). Thus, effects of Condition did not vary with age. All interaction terms were excluded from a final regression model which included only the two Age variables and two Condition variables, $F(4, 94) = 6.77$, $R^2 = .22$, $p < .001$. As depicted in Figure 4, this model revealed two age-related trends that applied to children in all three conditions: a significant age-related increase in goodness ratings from 4 to 6.5 years (b = .10, SE = .05, t = 1.96, 95% CI: .00, .19, p = .05), and a significant age-related *decrease* in goodness ratings from 6.5 to 9.0 years, b = -.20, SE = .09, t = -2.16, 95% CI: -.38, -.02, p = .034. Relative to children in the Control condition, goodness ratings were significantly lower among children in the Direct Condition (b = -.39, SE = .08, t = -4.82, 95% CI: -.55, -.23, $p < .001$) and the Overheard Condition, b = -.22, SE = .08, t = -2.69, 95% CI: -.38, -.06, $p < .01$. As well, goodness ratings were significantly lower among children in the Direct Condition compared to children in the Overheard Condition, $F(1, 94) = 4.53$, p = .036. Therefore, across the entire age-range sampled, children's evaluations of the novel group were more negative after exposure to brief testimony, especially when the testimony was provided directly.

Cultural Engagement. Children could indicate a desire to engage with as many as three elements of the novel group's culture: to try their food, to wear their clothes, and to learn their alphabet. On average, children decided to try 1.11 elements (*SD* = 1.02). A regression model predicting children's desire to engage with these elements (see Table 1 for full model) revealed significant shifts in age-related trends at 6.5 years (i.e., the Age 2 term was significant), and revealed significant interactions of Age 2 X Condition. Thus, all variables were retained in the model. As depicted in Figure 5, among children in the Control condition, there was a significant age-related increase in children's desire to try elements from the novel culture between 4.0 and 6.5 years, and a significant age-related *decrease* in their desire to try elements from that culture between 6.5 and 9.0 years. Age-related trends were not significantly different between the Direct and Control conditions (as indicated by nonsignificant Age X Direct effects). However, age-related trends differed significantly between the Control and Overheard conditions (as indicated by significant Age X Overheard effects; see Table 1)—within the Overheard condition only, the number of elements was essentially identical for children across the age range.

To further explore developmental trends, fitted regression coefficients were compared at ages 4.5, 6.5, and 8.5 years. At 4.5 years, desire to engage with cultural elements was similar between the three conditions, $Fs(1, 90) < 2.56$, $ps > .11$. At 6.5 years, children who received Direct messages or who Overheard messages wanted to engage with fewer cultural elements than children in the Control condition (Direct vs. Control: $F(1, 90) = 14.63$, $p < .001$; Overheard vs. Control: $F(1, 90) = 8.05$, $p < .01$); children in the Direct and Overheard conditions did not differ, $F(1, 90) = 1.12$, $p = .29$. At 8.5 years, children who received Direct messages wanted to engage with (marginally) fewer elements of the culture than children in the Control condition ($F(1, 90) = 3.28$, $p = .07$); there were no other differences between conditions, $Fs(1, 90) < 2.20$, $ps > .14$.

Thus, the negative influence of both the Direct and Overheard messages was apparent by 6.5 years, but these effects diminished by 8.5 years, due to general age-related declines in children's desire to engage with the novel culture (as apparent among children in the control group).

Victimization Judgments. Children's judgments about actions that victimized the novel group in the absence of explicit rules forbidding those actions were evaluated on a scale ranging from "Okay" (scored 0) to "Very, very bad" (scored 3). Overall, children's average judgment score was 1.85 (*SD* = 1.17). An initial regression model revealed that age-related trends did not differ between younger and older children (i.e., the Age 2 term was non-significant), and there were no interactions of Age 2 X Condition (Table S4, Model 1 in Supplementary Materials). A simplified regression model included one variable for Age, a variable for the Direct Condition, a variable for the Overheard Condition, and interactions between Age and Condition; this model revealed no significant effects of Age or interactions of Age X Condition (Table S4, Model 2 in Supplementary Materials). A final model included only variables for Age and Condition ($F(3, 95) = 6.87$, $R^2 = .18$, $p < .001$), revealing an effect of Age ($b = -.32$, $SE = .08$, $t = -4.41$, 95% CI: -.47, -.18, $p < .001$) and no effects of condition. Regardless of condition, there was a significant age-related *decline* in judgments that victimizing a novel group member would be bad.

General Discussion

There is a critical need to understand how social learning shapes intergroup biases (Over & McCall, 2018). The current studies are the first (to our knowledge) to directly investigate the impact of negative messages about novel groups on children's intergroup attitudes. Using both implicit and explicit measures of children's intergroup attitudes, we find that 4- to 9-year-olds can rapidly internalize passing (9-second) messages demeaning novel groups, thus forming negative attitudes toward outgroups on the basis of mere hearsay. These effects were particularly

pronounced when negative messages were provided to participants directly but were also found when messages had been overheard. Importantly, these effects were found with measures of children's *absolute* intergroup attitudes, rather than their *relative* attitudes (e.g., tested with forced-choice measures). Thus, these methods provided stringent and ecologically-valid tests of the potential influence of negative intergroup messages.

We found age-related increases in the impact of negative messages on children's impressions of the novel group, but there were nuances to this general pattern. In both studies and across most measures, preschoolers' sentiments were largely unaffected by the negative claims about the novel social groups, perhaps partly a reflection of their reluctance to attribute negative qualities to novel others (Boseovski & Lee, 2008). However, in Study 2, 4– to 5-year-olds (as well as 6– to 9-year-olds) who overheard or were directly provided a negative message (vs. no message) were less willing to be friends with a novel group member and rated that group member more negatively. Thus, even preschoolers' attitudes toward the novel groups were somewhat influenced by the negative messages (see also Bigler & Liben, 1993; Rhodes, 2012). These results are consistent with multiple theories of intergroup moral cognition. For example, these findings are consistent with theories which would interpret participants' moral concerns as essentially biased, extending only to ingroup members (e.g., Haidt, 2012; Rhodes, 2012), with an age-related strengthening of this moral parochialism. Findings are also consistent with theories which would instead interpret participants' judgments in terms of competing universal moral concerns and social concerns, with ingroup social concerns becoming increasingly forceful (relative to universal moral concerns) as children develop (e.g., Killen, 2007; Rutland et al., 2010). Arbitrating between these competing theories is beyond the scope of the present research, but suggests a potential avenue for future investigation.

By middle childhood, the effects of negative messages were more pronounced, and this pattern converged across multiple measures of children's intergroup attitudes. In Study 2, 6– to 7-year-olds drew a novel group member further away from themselves after they were directly presented with a negative message (vs. no message), and they less often wanted to engage with the novel group's culture (e.g., to try their food) after either overhearing or being directly provided a negative message. The effects of direct messages and overheard messages were typically as strong or stronger among children at the older end of our age range (8–9 years). One account of the increasing influence of these messages between ages 4- and 9-years is the increasing significance of social group membership in children's lives (Eccles, 1999; Killen, Elenbaas, & Rutland, 2015); thus, older children might have been more attentive to these messages (Brown & Gaertner, 2008) and more likely to adjust their attitudes in response to these messages. Such increased receptivity to negative claims may partly account for increases in real-world intergroup biases between the preschool years and middle childhood (Raabe & Beelmann, 2011). Whether such receptivity to negative intergroup claims persists or changes in later childhood remains an open question.

One apparently aberrant and unexpected finding was that 8– to 9-year-olds were only marginally less likely to engage with elements of the culture (e.g., to try their food) if they were directly provided a negative message (vs. no message), and they were equally willing to engage with the culture whether they overheard a negative message or heard no message. Inspection of Figure 5 provides important context for this finding—8– to 9-year-olds in the Control condition (i.e., children who heard *no* message) were generally unwilling to engage with the novel culture; and were significantly less willing than 6– to 7-year-olds. This could reflect a developing distaste toward novelty, but it could also reflect a developing awareness of what is "correct" or normative

behavior in one's context. In either case, there was little room to detect an effect of negative claims on 8– to 9-year-olds' already-low desire to engage with the novel culture. Another unexpected finding was that there were no effects of the negative messages on children's judgments about victimizing novel-group members—with age, children were increasingly accepting of victimizing the novel group, regardless of condition. This age-related increase in antagonism toward the novel group provides inspiration for future studies to examine how *positive* messages about novel groups can alter the development of negative intergroup attitudes.

These findings motivate several other avenues for future research. In the current study, messages (both direct and overheard) were provided by a researcher with whom the child had directly interacted. Perhaps this direct social experience increased the strength of the messages or potentially influenced demand characteristics – although it is important to note that demand effects were substantially reduced by involving a second experimenter who evaluated children's intergroup attitudes in the absence of the first experimenter, and demand effects are unlikely to have influenced the results of the implicit drawing task. Future work can examine how children's intergroup attitudes are influenced by messages provided by individuals who are not present and with whom children never directly interact (e.g., individuals on television, or individuals overheard on a video call). Further research is also needed to examine the long-term effects of exposure to these messages, as well as to examine whether the force of these messages differs depending upon features of the informant (e.g., their apparent age, gender, or race).

The claims that children heard in the current studies were brief but detailed. Speakers described novel groups as being generally "bad", and described several aspects of their culture (their food, language, and clothing) in negative terms. Future studies may investigate how specific components of these claims influence children's attitudes toward new social groups.

Studies may also investigate how more subtle or tentative negative claims (e.g., “I think they may be bad people. I think their food may be weird”) influence children’s intergroup attitudes. Another avenue of future investigation is whether *positive* intergroup messages can counteract or buffer against negative intergroup messages.

The current samples were largely U.S.-born, White, and middle-SES. Future studies may examine whether the current findings generalize to other populations and social groups. Conceivably, individuals from social groups that more frequently encounter marginalization and discrimination may differ in their receptivity to testimony about negative out-groups or may differ in their general sentiments toward novel others.

Overall, these findings carry profound implications. Particularly as the United States and other nations become more polarized over issues related to diversity and inclusivity, and as media is increasingly filled with extreme and often negative claims about foreigners and minorities, it is important to uncover how adults’ claims about outgroup members can meaningfully shape children’s intergroup attitudes. When children are not exposed to members of particular ethnic or cultural groups, messages may constitute the sole source of evidence that they use to construct intergroup beliefs and attitudes. We find that the effects of negative intergroup messages are detectable as early as the preschool years, even when children have *overheard* just seconds of negative testimony. This potentially insidious power of messages may help to explain why intergroup attitudes are particularly pronounced for children growing up in racially or socially homogenous environments (e.g., McGlothlin & Killen, 2006), as these children are not given the opportunity to personally interact with members of marginalized groups. By understanding how messages can shape intergroup attitudes, ways to effectively communicate and inspire tolerance and respect may become increasingly clear.

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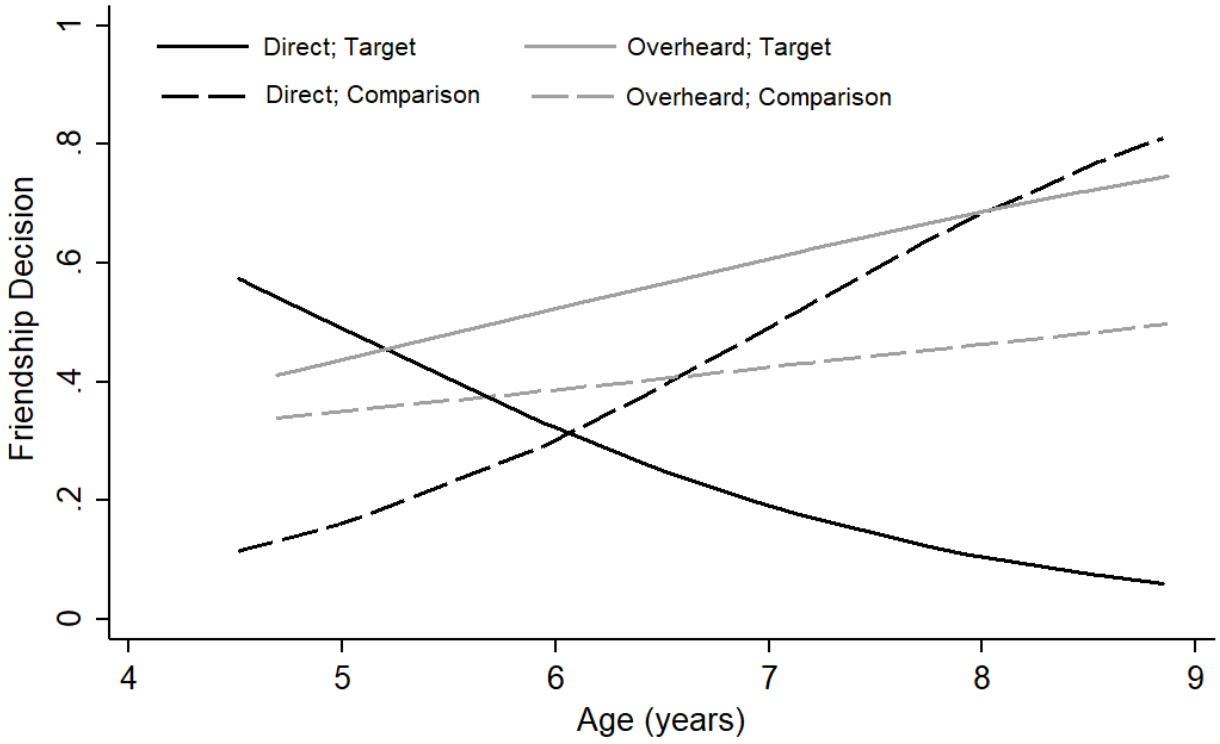

Figure 1. Study 1: Fitted logistic regression curves for age-related trends in children's decisions to be friends with a member of the novel Target group and a member of the novel Comparison group, following a negative message about the Target group. Messages were either provided *Directly* to children or were *Overheard*.

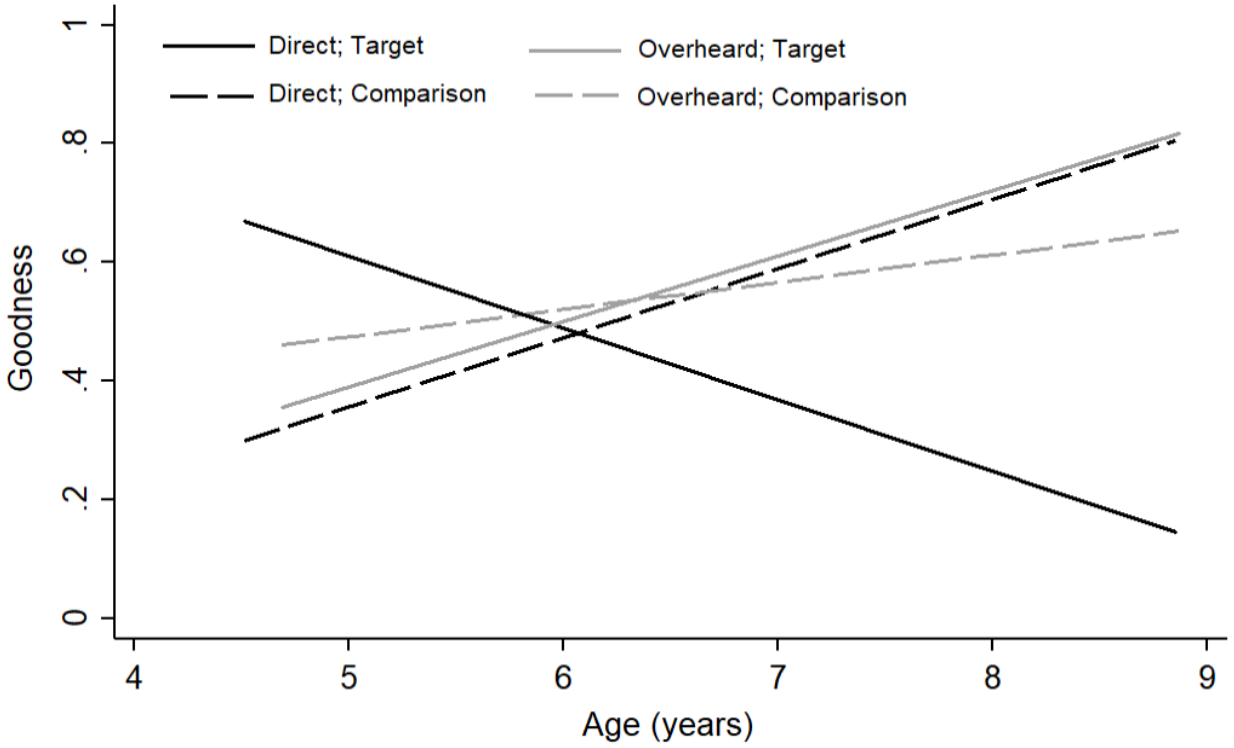

Figure 2. Study 1: Fitted regression lines for age-related trends in children's goodness ratings for the novel Target group and the novel Comparison group, following a negative message about the Target group. Messages were either provided *Directly* to children or were *Overheard*.

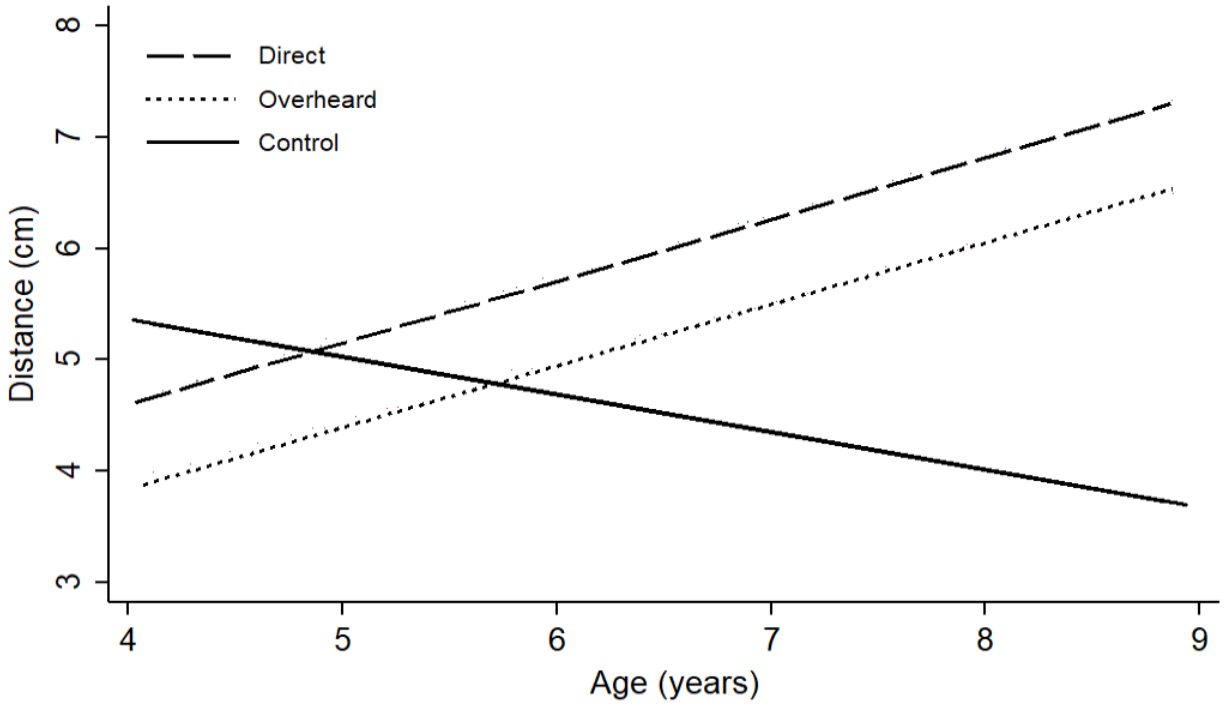

Figure 3. Study 2: Fitted regression lines for age-related trends in distance between drawings of the self and the novel group member. Children drew the group member after they were either given a negative message about the group *directly*, *overheard* the message, or heard no message (the *control* condition).

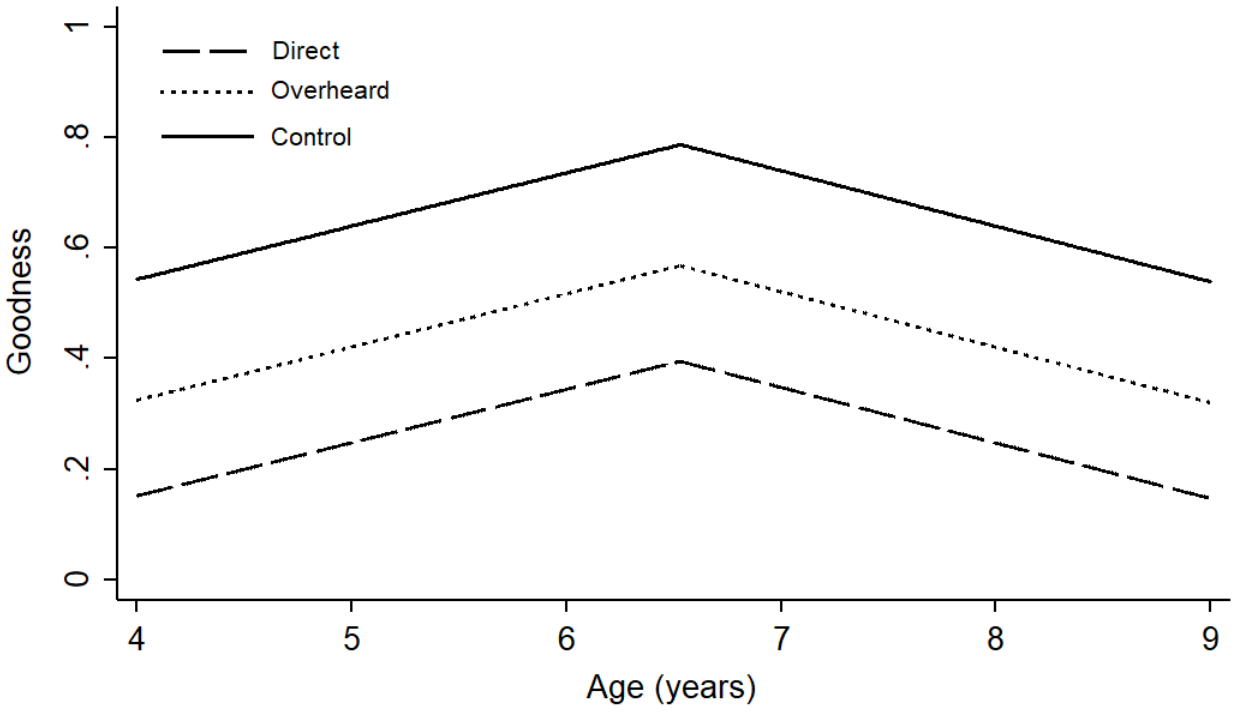

Figure 4. Study 2: Fitted piecewise regression lines for age-related trends in ratings of the novel group's goodness. Children provided these ratings after they were either given a negative message about the group *directly*, *overheard* the message, or heard no message (the *control* condition).

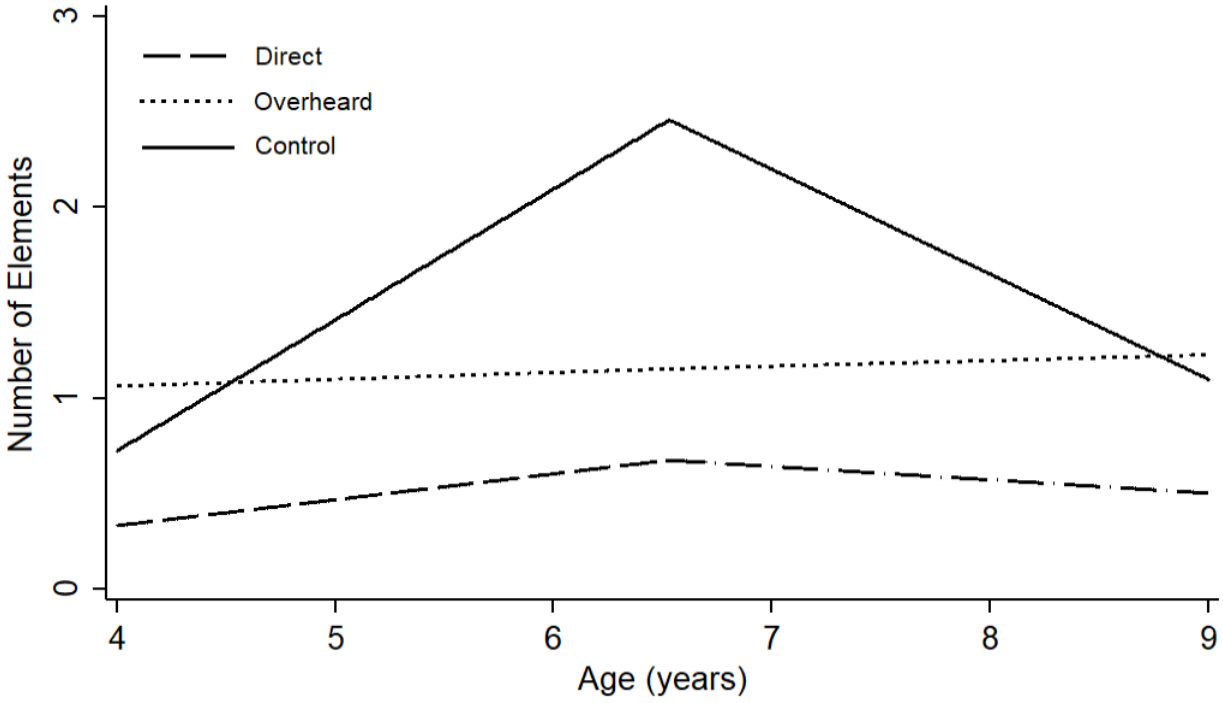

Figure 5. Study 2: Fitted piecewise regression lines for age-related trends in the number of elements of the novel culture with which children wanted to engage. Lines represent children who were given a negative message about the group *directly*, children who *overheard* the message, and children who heard no message (the *control* condition).

Table 1. Study 2: Linear hierarchical mixed-effects piecewise regression predicting number of elements of the novel culture with which participants wanted to engage.

	b	*SE*	*t*	*p*	95% Conf. Interval	
Age 1	.69	.24	2.85	.01	.21	1.16
Age 2	-1.24	.44	-2.79	.01	-2.12	-.35
Direct Message	1.81	1.85	.98	.33	-1.86	5.48
Overheard Message	2.94	1.84	1.60	.11	-.71	6.60
Direct X Age 1	-.55	.34	-1.64	.11	-1.22	.12
Overheard X Age 1	-.65	.33	-1.95	.054	-1.31	.01
Direct X Age 2	1.03	.64	1.62	.11	-.23	2.29
Overheard X Age 2	1.23	.61	2.02	.046	.02	2.44
_constant	-2.02	1.32	-1.53	.13	-4.64	.60
Model fit:	$F(8, 90) = 4.07$, $R^2 = .27$, $p < .001$					

Note. The Control condition serves as the reference group. Age 1 = slope for age in Control condition. Age 2 = shift in age slope at 6.5 years in Control condition. Interactions of Condition (Direct or Overheard) X Age are tests of whether an age slope differs between that condition and the Control condition.