

Should individuals think like their group? A descriptive-to-prescriptive tendency toward group-based beliefs

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Abstract

Across three pre-registered studies with children (ages 4-9) and adults (N = 303), we examined whether how a group is predicted evaluations of how group members should be (i.e., a descriptive-to-prescriptive tendency), under conditions in which the descriptive group norms entailed beliefs that were fact-based (Study 1), opinion-based (Study 2), and ideology-based (Study 3). Overall, participants tended to disapprove of individuals with beliefs that differed from their group, but the extent of this tendency varied across development and as a function of the belief under consideration (e.g., younger children did not show a descriptive-to-prescriptive tendency in the context of facts and ideologies, suggesting that they prioritized truth over group norms). Implications for normative reasoning and ideological polarization are discussed.

Keywords. descriptive-to-prescriptive tendency, epistemic cognition, religious cognition, ideological polarization

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If a group believes that climate change is a hoax, is it acceptable for an individual group member to believe that climate change is real? If a group believes that classical music is the best music, is it acceptable for an individual group member to instead prefer rap? How about a group that believes that the Qu'ran is the most sacred text? Is it acceptable for an individual group member to believe that the Bible is? Simply put, should individuals think like their group, and

does the answer to this question depend on the age of the participant and the type of belief under consideration (i.e., facts, opinions, ideologies)? Ultimately, our data speak to the limits and power of descriptive-to-prescriptive reasoning, and provide new insight into matters of both theoretical and social significance (e.g., normative reasoning, ideological polarization).

A Descriptive-to-Prescriptive Tendency

Preschoolers are highly efficient at recognizing, following, creating, teaching, and enforcing norms (Schmidt & Rakoczy, 2017). For example, U.S. children (and adults) often believe that girls should wear dresses and lipstick, and that boys should not (Blakemore, 2003; Levy, Taylor, & Gelman, 1995). This tendency likely stems from a variety of sources, including socialization (e.g., being taught that girls should wear dresses), ingroup membership (e.g., believing that ingroup members should follow norms in order to promote the ingroup's functioning and reputation), and human cultural evolution (e.g., recognizing, following, and enforcing group norms enables the individual to collaborate and learn, the group to function and accomplish goals, and the culture to be transmitted from one generation to the next; see Blakemore, 2003; Claudière & Whiten, 2012; Engelmann, Herrmann, & Tomasello, 2018; Gelman & Roberts, 2017; Nesdale & Lawson, 2011; Rhodes & Chalik, 2013; Schmidt & Rakoczy, 2017; Tomasello, 2016). Indeed, even infants expect group members to behave in similar ways (Powell & Spelke, 2013), and preschoolers use information about how a group is to make inferences about how individual group members should be, even when they have no prior expectations about the groups, are not personally invested in the groups, and the behaviors of the groups are innocuous (i.e., a descriptive-to-prescriptive tendency).

In the first of a series of papers on children's descriptive-to-prescriptive tendency, Roberts, Gelman, and Ho (2017a) introduced children (ages 4 to 13) and adults to two novel groups, Hibbles and Glerks, that engaged in innocuous behaviors (i.e., ate a certain food, spoke a certain language, played a certain game, listened to a certain music) and then to conforming or non-conforming individuals. If children interpret the descriptive norms as prescriptive, they should disapprove of non-conforming individuals (e.g., a Hibble who listens to the kind of music more typical of Glerks). Indeed, children, especially younger children (ages 4 to 6), disapproved of non-conformity (e.g., they disapproved of a Hibble who ate the kind of food more typical of Glerks) and they justified their disapproval prescriptively (e.g., "Hibbles are not supposed to eat that"). Simply put, once children learned that a group was a certain way, they inferred that

individuals within that group should be that way (see also Bear & Knobe, 2017; Foster-Hanson & Rhodes, 2019; Kalish, 2012; Tworek & Cimpian, 2016). Subsequent papers report that this descriptive-to-prescriptive tendency is easy to elicit (e.g., via category labels and generic statements), replicates (and varies) cross-culturally (e.g., stronger among preschoolers and adults recruited in relatively collectivistic contexts compared to relatively individualistic contexts), varies under varying situational constraints (e.g., stronger when children are encouraged to reflect upon the non-conformity), and even influences what children (and adults) think is socially and morally permissible (e.g., they evaluated someone who punched people, unlike their group, as worse than someone who did the same thing, like their group; Roberts, Gelman, & Ho, 2019; Roberts, Guo, Ho, & Gelman, 2018; Roberts & Horii, 2019; Roberts, Ho, & Gelman, 2017b). By adulthood, this tendency might contribute to biases that reinforce social inequality and hierarchy in the real-world, believing, for instance, that if there typically are gender differences in the workplace, then there should be gender differences in the workplace (Kay et al., 2009), or that if Black people typically socialize with other Black people, then Black people should only socialize with other Black people (Durkee & Williams, 2013; Eason, Kaiser & Sommerville, 2017). Thus, it is well-documented that a descriptive-to-prescriptive tendency influences beliefs about behaviors, and that this tendency has important consequences. What remains unknown is whether this tendency influences beliefs about beliefs. Should individuals think like their group?

A Descriptive-to-Prescriptive Tendency in the Context of Group-Based Beliefs

Beliefs, unlike behaviors, are private and inaccessible to others. Because of this, children (and adults) might grant individuals the right to believe whatever they want to believe, irrespective of their group membership. That is, a descriptive-to-prescriptive tendency might not influence beliefs about beliefs, unlike what was found in the context of behaviors in previous research (Roberts et al., 2017a). Indeed, children (and adults) might conceptualize social category members as socially obligated to one another, and might therefore infer that they should behave in similar ways (Chalik & Dunham, 2018), but they might not necessarily conceptualize social category members as ideologically obligated to one another, and might therefore grant them the freedom to believe whatever they want to (see also Kalish & Lawson, 2008). However, the extent to which this is true might vary as a function of the kind of belief under consideration.

Some beliefs are rooted in facts (e.g., climate change is real), others in opinions (e.g., rap is the best music), and others in ideologies (e.g., The Qu'ran is the literal word of God). Facts are

believed to be objective, verifiable, and independent of perspective and context, opinions are believed to be subjective, unverifiable, and dependent on perspective and context, and ideologies contain elements of both fact and opinion, as they are believed to be objective but they are also subject to variation across individuals and contexts (Heiphetz, Spelke, Harris, & Banaji, 2013, 2014; Nucci, 1981, 2014). These beliefs are not absolutely distinct (e.g., one person's fact may be another person's opinion), though research suggests that children and adults often conceptualize them as distinct. Heiphetz et al. (2013) introduced children (ages 5 to 10) and adults to individuals with contrasting beliefs that were fact-based (e.g., humans have one brain in their head vs. two brains in their feet), opinion-based (e.g., apples vs. oranges are the tastiest fruit), and ideology-based (e.g., spirits live underground vs. in trees), and asked them whether only one person could be right or whether both could be right (i.e., whether the beliefs were objectively correct). Children and adults believed that facts were the most objective, opinions the least, and ideologies intermediate to the two.

Despite the differences among fact-based, opinion-based, and ideology-based beliefs, all may be associated with group membership. For example, when considering climate change, people tend to attribute different beliefs to Democrats than to Republicans (Pew Research Center, 2019a). When considering the best kind of music, people tend to attribute different beliefs to Black Americans than to White Americans (Durkee, Gazley, Hope, & Keels, 2019; Durkee & Williams, 2013). When considering the interpretations of religious scripture, people tend to attribute different beliefs to Muslims than to Christians (Pew Research Center, 2019b). There is variation in the extent to which these beliefs are held within groups, but the relevant point is that group members are often believed to share beliefs. To what extent do children (and adults) believe that individual group members should share beliefs? We questioned whether the answer to this question varied as a function of the type of belief under consideration, which we examined across three pre-registered studies.

The Present Research

We tested how children and adults evaluated individuals who did or did not share group beliefs that were fact-based (e.g., believing that a red object is blue, if that is what the group believes; Study 1), opinion-based (e.g., believing that a particular fruit is the tastiest, if that is what the group believes; Study 2), and ideology-based (e.g., believing that a particular religious text is accurate, if that is what the group believes; Study 3). From a theoretical perspective, the

present research was primarily informed by research on normative reasoning, demonstrating norms are part descriptive (i.e., how something is) and part prescriptive (i.e., how something should be), thereby blurring the distinction between the two (Bear & Knobe, 2017), and that young children are quick to take a normative stance, given that doing so can be evolutionarily and socially advantageous (Schmidt & Rakoczy, 2017; Tomasello, 2016). Thus, we tested whether children (and adults) used information about how a group is to evaluate how individual group membership should be even in the context of beliefs.

Although our framework was primarily situated within the normative reasoning literature, it was informed by other theoretical orientations as well, particular those in the domain of social domain theory, epistemic cognition, social categorization and stereotyping, and social cognitive development (e.g., Bigler, Jones & Lobliner, 1997; Hofer, 2016; Olson & Dweck, 2008; Nucci, 1981, 2014; Rizzo, Cooley, Elenbaas, & Killen, 2018; Schmidt & Rakoczy, 2017; Smetana, Jambon, & Ball, 2014; Wellman, 2014). As concrete examples, social domain theory asserts that children's reasoning about norms spans three basic domains: social (e.g., concepts of social systems and conventions), moral (e.g., concepts of harm and welfare), and psychological (e.g., concepts of self and internal states; Nucci, 2014; Smetana et al., 2014). Previous research has documented a descriptive-to-prescriptive tendency in the social and moral domains (Roberts et al., 2017a; 2019), yet whether or not this tendency extends to the psychological domain remains unknown. Also, research on children's theory of mind asserts that children become increasingly skilled at reasoning about the beliefs of individuals (Wellman, 2014), yet whether children consider the beliefs of groups when doing so remains unknown.

The present research was not designed to test or compare any of these theoretical orientations, but it was informed by them to ask a straightforward yet unanswered question: Should individuals think like the group? Answering this question has important applied implications. In the U.S., political and ideological polarization has increased in recent decades, corresponding with increased negative attitudes toward social groups with opposing worldviews and a decreased willingness to interact and compromise with those social groups (Pew Research Center, 2014). Testing whether a descriptive-to-prescriptive tendency extends to group-based beliefs might reveal whether such polarization is rooted in early emerging intuitions about how groups should be. If one believes that individuals should think like the group, one might remain committed to group beliefs (e.g., climate change is a hoax) and unwilling to consider the beliefs

of others, even if those beliefs are supported by scientific evidence (e.g., climate change is real and consequential; see Mehrabi, 2019; Patz, Campbell-Lendrum, Holloway & Foley, 2005; Ramanathan & Carmichael, 2008; Sippel, Menhausen, Fischer, Székely, Knutti, 2020).

In each study, we introduced participants to novel groups that were characterized by different kinds of beliefs. As in past research (Roberts et al., 2017a), we presented participants with groups that were novel, third-party, and not in relationship with one another, in order to prevent participants from being influenced by previously learned associations, their own group membership, or concerns about intergroup dynamics. After being introduced to the groups and their beliefs, participants were introduced to a series of individual group members with either the same belief or a different belief. We assessed how participants evaluated the beliefs of the individual group members, as well as participants' open-ended explanations for their evaluations. The latter allowed participants to share their own perspectives and use their own vocabularies to reveal the reasoning behind their evaluations (Rhodes, 2014; Hart & Edelman, 1992). All studies focused on younger children (ages 4-6), older children (ages 7-9), and adults, given that descriptive-to-prescriptive tendencies decline across this age range (Roberts et al., 2017a, 2018). We employed G*Power software to ensure that the studies were sufficiently powered to detect small-to-medium interaction terms ($\alpha \leq .05$, $1 - \beta \geq .80$; Faul, Erdfelder, Buchner, & Lang, 2009). Deviations from our pre-registrations are stated in the online supplemental materials (OSM). Data, code, and materials are publicly available via the Open Science Framework (osf.io/73p9m/files/).

STUDY 1

If a group holds a false belief (e.g., believing that a square is in fact a circle), should individual group members do so as well? One possibility is that because children (and adults) question their own beliefs in the presence of a dissenting group (Asch, 1955; Kim, Chen, Smetana, & Greenberger, 2016), they might privilege group beliefs over truth (e.g., an individual should believe whatever the group believes, irrespective of what is true). However, research on children's epistemic cognition suggests that even young children understand that facts are objectively defined and verifiable, are highly concerned with truth and verifiability, and struggle to even reason about false beliefs (Heiphetz et al., 2014; Koenig, Cole, Meyer, Ridge, Kushnir, & Gelman, 2015; Wellman, 2014).

Guided by this literature, as well as previous research on children's normative reasoning, we pre-registered six hypotheses (see Table 1). First, participants would disapprove of individuals with false beliefs, irrespective of the groups' belief, suggesting that they privilege true beliefs over group beliefs (H1). Second, disapproval would decline across the age groups, in line with previous research on children's descriptive-to-prescriptive tendency (H2). Third, when the individual has a false belief, unlike their group, disapproval would be justified via fact-based explanations (rather than group-based explanations), suggesting further that true beliefs are privileged over group beliefs (H3). Fourth, when the individual has a true belief, like their group, approval would also be justified via fact-based explanations (rather than group-based explanations), again suggesting that true beliefs are privileged over group beliefs (H4). Fifth, when the individual has a false belief, like their group, approval (which we expected to be relatively low) would be justified via group-based explanations, because approval in this scenario privileges group beliefs over true beliefs (H5). Sixth, when the individual has a false belief, unlike their group, approval (which we expected to be relatively low) would be justified via individual-based explanations, because approval in this scenario privileges individuality over both true beliefs and group beliefs (H6).

TABLE 1 GOES HERE

We made no other hypotheses, but did not exclude the possibility that a descriptive-to-prescriptive tendency would influence participants' evaluations (e.g., participants could be relatively more disapproving of individuals who go against the false belief of their group to believe something true, than of individuals who go with the true belief of their group to believe the same thing, even though both scenarios involve individuals with true beliefs). We tested this possibility by presenting children and adults with groups that held either a true belief (e.g., correctly believing that a square is a square) or a false belief (e.g., incorrectly believing that a square is a circle), and with individual group members who similarly held either true or false beliefs, like or unlike their group (see Method). Importantly, in order to test whether participants privileged true beliefs over group beliefs (or vice versa), it was necessary for participants in Study 1 to have access to whether a belief was in fact true or false.

Method

Participants

We recruited three groups of U.S. participants from Ann Arbor, Michigan: 49 at ages 4 to

6, 49 at ages 7 to 9, and 50 adults. Children were recruited from a science museum and adults were recruited from a university. Across all studies, we only collected demographic information on participants' age, sex/gender, and race/ethnicity (see Table 2). We excluded an additional five children who did not complete the entire task, one child because of parent interference, and one child for failing the comprehension questions. Nevertheless, across studies, all results held even when these participants were included. Across all studies, data were collected between February and May of 2017.

TABLE 2 GOES HERE

Materials and Procedure

Materials were presented on Apple iPads via Qualtrics. There were eight novel groups (presented in pairs), with each pair characterized by contrasting beliefs. For each pair, one group held a true belief and the other group held a false belief, specifically, that: 1) a red circle is red vs. blue, 2) a square is a square vs. a circle, 3) a big triangle is big vs. small, and 4) a striped trapezoid is striped vs. solid. Thus, the beliefs pertained to an object's color, shape, size, and pattern, all of which could be verified for accuracy by the participants (see below). We used eight distinct groups to prevent the same group from holding a true belief on one trial and a false belief on another. Each group was comprised of three individuals located on one side of the screen (left or right), distinguished by clothing pattern (e.g., blue circles, yellow zigzags) and label (e.g., Hibbles, Glerks). Each group belief was depicted by a thought cloud with an image inside of it (e.g., red circle, striped trapezoid), to aid in recall.

After being introduced to two novel groups, participants were introduced to an object that appeared between both of the groups and were shown that one group had a true belief about the object and that the other group had a false belief about the object. For example, participants were told, "This group [pointing] is called Hibbles and this group [pointing] is called Glerks. Look at this [pointing to red circle that appeared in the center of the screen]. Let's see what the Hibbles and Glerks believe about this. Hibbles believe that this is red [revealing a red circle within the Hibbles' thought cloud], Glerks believe that this is blue [revealing a blue circle within the Glerks' thought cloud]." Next, participants were shown two individual group members (in randomized sequential order), who had either the same belief as the group or a different belief. For example, "Look, this Glerk believes that this is blue. Is it okay or not-okay for this Glerk to believe that this is blue?" We then repeated this procedure with the remaining three pairs of

groups (randomized). Thus, there were eight trials in total, in which participants witnessed two instances of each of four kinds of scenarios: 1) the group had a true belief and a group member had the same (true) belief, 2) the group had a true belief and a group member had a different (false) belief, 3) the group had a false belief and a group member had the same (false) belief, and 4) the group had a false belief and a group member had a different (true) belief (see Table 3). Across participants, we counter-balanced the left-right positions of the groups, as well as which group held which belief. As in past research (Roberts et al., 2017b), as a comprehension check, all participants were asked at the end of the task, “What does it mean for something to be not-okay?” and “Does not-okay mean that someone should or should not do something?” Across all studies, all participants expressed prescriptive reasoning on at least one of these questions.

Measures and Coding

The first measure was whether participants evaluated a particular behavior as okay or not-okay (0 = okay, 1 = not-okay). Participants who evaluated behaviors as not-okay were shown three increasingly unhappy faces and asked “is it a little bad, pretty bad, or very, very bad?” However, results yielded by the dichotomous data were redundant with those yielded by this continuous data (see also Roberts et al., 2017a, 2017b, 2018), so for the sake of succinctness, we focus here on the dichotomous data (though the continuous data are presented in the OSM). The second measure was how participants explained their evaluation (e.g., “Why is it not-okay for this Hibble to believe that this circle is red?”). Guided by previous research (Rhodes, 2014; Roberts et al., 2017a), we recorded the explanations verbatim and coded them into six types: a) prescriptive (e.g., “They are supposed to believe that”), b) group-based (e.g., “Glerks believe it is red”), c) individual-based (e.g., “Different people can believe different things”), d) similarity-based (e.g., “They are both red”), e) fact-based (e.g., “It is actually red”), and f) other (e.g., “I don’t know”). Participants could appeal to multiple explanation types given that the codes were not mutually exclusive. Psychology undergraduates who were blind to the hypotheses of the studies coded the responses (Cohen’s kappa: Study 1 = .77, Study 2 = .93, Study 3 = .85), with disagreements resolved by discussion. Our primary interest was in the most frequent explanation type for each response type (e.g., disapproved conformity to a false group belief) across trials.

Data Analyses

Regarding participants’ evaluations, we conducted a mixed-effects logistic regression model with Group Belief (true = 0, false = 1), Individual Belief (same = 0, different = 1), Age

Group (4-6, 7-9, adults), and an interaction among these three variables as our primary fixed-effects of interest, with participant ID as a random intercept. The three-level variable of Age Group was dummy coded so that 4- to 6-year-olds or 7- to 9-year-olds were the reference groups. The dependent variable in both models was participants' evaluations on a trial-by-trial basis (0 = okay/approval, 1 = not-okay/disapproval). Significant effects were probed by comparisons to chance (i.e., .5). Regarding participants' explanations, because not all participants provided each kind of explanation, we did not make comparisons across them. We simply report which explanations were most common across the common response types (but see Table 4 for all descriptive data). We did not examine explanations when participants disapproved of individuals with true beliefs, as this response was rare.

Results

Evaluations

There were significant main effects of Group Belief ($B = 4.73$, $SE = .44$, $z = 10.71$, $p < .001$, 95% CI [4.01, 6.63]), and Individual Belief ($B = 4.81$, $SE = .43$, $z = 11.30$, $p < .001$, 95% CI [4.05, 6.49]), a 2-way interaction of Group Belief and Individual Belief ($B = -8.21$, $SE = .59$, $z = -13.83$, $p < .001$, 95% CI [-9.38, -7.05]), and a 3-way interaction of Group Belief, Individual Belief, and Age ($B = 3.30$, $SE = 1.26$, $z = 2.61$, $p = .009$, 95% CI [.82, 5.78]). We tease these effects apart below (see Figure 1).

Participants evaluated those with false beliefs as worse than those with true beliefs

As predicted (H1), both children and adults were more disapproving of individuals with false beliefs than of individuals with true beliefs, irrespective of the group norm. That is, when the group had a true belief, both children and adults were more disapproving of individuals with different (false) beliefs than of individuals with the same (true) beliefs (mean comparisons: 4-6: $B = 6.29$, $SE = 1.06$, $z = 5.93$, $p < .001$, 95% CI [4.22, 8.37]; 7-9: $B = 5.40$, $SE = 1.05$, $z = 5.13$, $p < .001$, 95% CI [3.33, 7.47]; adults: $B = 4.93$, $SE = .92$, $z = 5.39$, $p < .001$, 95% CI [3.14, 6.73]), and when the group had a false belief, both children and adults were more disapproving of individuals with the same (false) belief than of individuals with different (true) beliefs (mean comparisons: 4-6: $B = -3.75$, $SE = .72$, $z = -5.23$, $p < .001$, 95% CI [-5.16, -2.35]; 7-9: $B = -2.34$, $SE = .57$, $z = -4.09$, $p < .001$, 95% CI [-3.46, -1.22]; adults: $B = -2.22$, $SE = .52$, $z = -4.24$, $p < .001$, 95% CI [-3.25, -1.19]). Also, among both children and adults, having a different belief than the group was evaluated as worse when it entailed having a false belief compared to a true belief

(4-6: $B = -.49$, $SE = .19$, $z = -2.55$, $p = .01$, 95% CI $[-.87, -.11]$; 7-9: $B = -1.87$, $SE = .53$, $z = -3.49$, $p < .001$, 95% CI $[-2.92, -.82]$; adults: $B = -1.31$, $SE = .30$, $z = -4.31$, $p < .001$, 95% CI $[-1.90, -.71]$), and having the same belief as the group was worse when it entailed having a false belief compared to a true belief (4-6: $B = -.86$, $SE = .17$, $z = -5.12$, $p < .001$, 95% CI $[-1.18, -.53]$; 7-9: $B = -1.59$, $SE = .31$, $z = -5.09$, $p < .001$, 95% CI $[-2.20, -.98]$; adults: $B = -1.74$, $SE = .31$, $z = -5.55$, $p < .001$, 95% CI $[-2.36, -1.13]$).

Disapproval toward individuals with false beliefs declined with age

In partial support of our prediction (H2), disapproval declined with age with respect to individuals with false beliefs. That is, only 4-to-6-year-olds disapproved of individuals with false beliefs at above chance levels. All other responses were either at or below chance (see Figure 1). Indeed, there were no age differences in disapproval when the group had a true belief and the individual had the same (true) belief, or when the group had a false belief and the individual had a different (true) belief (all $ps > .75$). However, when the group had a true belief and the individual had a different (false) belief, 4- to 6-year-olds were more disapproving than 7- to 9-year-olds ($B = -15.02$, $SE = 2.44$, $z = -6.17$, $p < .001$, 95% CI $[-19.79, -10.25]$) and adults ($B = -2.23$, $SE = .96$, $z = -2.33$, $p = .02$, 95% CI $[-4.12, -.33]$), and when the group had a false belief and the individual had the same (false) belief, 4- to 6-year-olds were more disapproving than 7- to 9-year-olds ($B = -17.98$, $SE = 2.56$, $z = -7.02$, $p < .001$, 95% CI $[-22.99, -12.96]$) and adults ($B = -18.81$, $SE = 2.61$, $z = -7.20$, $p < .001$, 95% CI $[-23.93, -13.69]$) (there with no significant differences between 7- to 9-year-olds and adults in either scenario, $ps = .64$).

Evidence for a descriptive-to-prescriptive tendency

Older children (ages 7 to 9) and adults, but not younger children (ages 4 to 6), were relatively disapproving of individuals with objectively true beliefs if those beliefs entailed a deviation from the group (e.g., they evaluated someone who believed that a red circle was red, unlike their group, as worse than someone who believed the same thing, like their group: 4-6: $B = .75$, $SE = .74$, $z = 1.01$, $p = .31$, 95% CI $[-.79, 2.19]$; 7-9: $B = 3.14$, $SE = 1.10$, $z = 2.85$, $p = .004$, 95% CI $[.98, 5.29]$; adults: $B = 3.12$, $SE = 1.23$, $z = 2.54$, $p = .01$, 95% CI $[.72, 5.52]$). In contrast, when the individual had a false belief, both child groups and adults were comparably disapproving irrespective of whether the group belief was true or false (all $ps > .30$).

FIGURE 1 GOES HERE

Figure 1. Study 1 (facts). Proportion of trials on which participants expressed disapproval across age group (4-6, 7-9, Adults), Group Belief (true vs. false) and Individual Belief (same vs. different). Bars depict 95% confidence intervals. Chance comparisons: Group belief is true and individual belief is true (4-6: $M = .05$, $SE = .02$, $t = -20.10$, $p < .001$, 95% CI [.01, .10]; 7-9: $M = .05$, $SE = .02$, $t = -20.10$, $p < .001$, 95% CI [.01, .10]; adults: $M = .02$, $SE = .01$, $t = -34.11$, $p < .001$, 95% CI [.01, .05]); Group belief is true and individual belief is false (4-6: $M = .65$, $SE = .04$, $t = 3.48$, $p < .001$, 95% CI [.56, .74]; 7-9: $M = .38$, $SE = .04$, $t = -2.51$, $p = .013$, 95% CI [.30, .48]; adults: $M = .44$, $SE = .04$, $t = -1.43$, $p = .15$, 95% CI [.35, .52]); Group belief is false and individual belief is false (4-6: $M = .63$, $SE = .06$, $t = 2.29$, $p = .025$, 95% CI [.52, .74]; 7-9: $M = .43$, $SE = .06$, $t = -1.28$, $p = .21$, 95% CI [.31, .54]; adults: $M = .39$, $SE = .06$, $t = -1.89$, $p = .06$, 95% CI [.27, .51]); Group belief is false and individual belief is true (4-6: $M = .08$, $SE = .03$, $t = -15.05$, $p < .001$, 95% CI [.03, .14]; 7-9: $M = .14$, $SE = .04$, $t = -10.05$, $p < .001$, 95% CI [.07, .21]; adults: $M = .09$, $SE = .03$, $t = -14.26$, $p < .001$, 95% CI [.03, .15]).

Explanations

See Table 4. As predicted (H3), when the group had a true belief and individuals had different (false) beliefs, disapproving children and adults most often appealed to facts (4-6: 79% of 80 responses; 7-9: 66% of 47 responses; adults: 85% of 55 responses). Similarly, when the group had a false belief and the individual had the same (false) belief, disapproving children and adults most often appealed to facts (4-6: 83% of 46 responses, 7-9: 75% of 32 responses; adults: 89% of 29 responses). As predicted (H4), when the group had a true belief and the individual had the same (true) belief, approval was most often justified via facts by 4- to 6-year-olds (66% of 93 responses) and adults (54% of 98 responses). Although 7- to 9-year-olds fairly often appealed to facts as well (34% of 93 responses), they were as likely to appeal to individuality (44% of 93 responses). Counter to our prediction (H5), when the group had a false belief and the individual had the same (false) belief, approving children and adults most often appealed to individuality (4-6: 33% of 27 responses; 7-9: 63% of 43 responses; adults: 60% of 45 responses). Lastly, and as predicted (H6), when the group had a true belief and the individual had a different (false) belief, approving children and adults most often appealed to individuality (4-6: 42% of 42 responses; 7-9: 85% of 74 responses; 82% of 71 responses). Also, when the group had a false belief and the individual had a different (true) belief, approval was most often justified via

individuality by 7- to 9-year-olds (55% of 84 responses) and adults (51% of 91 responses), though 4- to 6-year-olds most often provided fact-based explanations (62% of 90 responses).

TABLE 4 GOES HERE

Discussion

Both children and adults were more disapproving of individuals with false beliefs than of individuals with true beliefs, irrespective of what the group believed, revealing that they privileged truth over group beliefs (H1), and 4- to 6-year-olds were most disapproving of individuals with false beliefs, irrespective of what the group believed, revealing that disapproval declined with age (providing partial support for H2). Also, fact-based explanations were most common among participants who disapproved of individuals with false beliefs, unlike the group (H3), and among participants who approved of individuals with true beliefs, like the group (H4), revealing further that participants privileged true beliefs over group beliefs (i.e., they justified their evaluations by appealing to the truth rather than to the group).

Nevertheless, we found evidence for a descriptive-to-prescriptive tendency, particularly among 7- to 9-year-olds and adults. Specifically, 7- to 9-year-olds and adults were more disapproving of individuals with objectively verifiable true beliefs when the group belief was false than when the group belief was true (e.g., they evaluated someone who believed the truth, unlike their group, as worse than someone who believed the same thing, like their group). Thus, just as a descriptive-to-prescriptive tendency persists even under conditions of immoral behaviors (e.g., evaluating someone who punches people, unlike their group, as worse than a person who does the same thing, like their group; Roberts et al., 2019), Study 1 suggests that it persists also under conditions that involve objectively true beliefs, at least among older children and adults.

In contrast, 4- to 6-year-olds were approving of individuals with true beliefs, irrespective of what the group believed, and disapproving of individuals with false beliefs, irrespective of what the group believed, suggesting that their evaluations were less swayed by group norms. This is not to suggest that 4- to 6-year-olds are not concerned with group norms; it is well established that they often are (Kalish, 2012; Rizzo et al., 2018; Roberts et al., 2017a); rather, the present data suggest that they focused more often on the truth of a belief. We suspect that the reason for this is rooted in developmental change in epistemic cognition. That is, young children are highly concerned with truth and verifiability and struggle to understand that others can have

false beliefs (Koenig et al., 2015; Wellman, 2014). With age, children become more skilled at reasoning about false beliefs, which may enable them to understand that not everyone thinks alike. Consequently, 4- to 6-year-olds might simply reason that a truth is a truth, whereas 7- to 9-year-olds and adults might consider group membership in their evaluations. Indeed, when the group had a true belief, but the individual had a false belief, each age group often justified their disapproval via fact-based explanations (e.g., “Because it really does have stripes”), whereas group-based explanations (e.g., “Because his people don’t believe that”) were relatively uncommon among 4- to 6-year-olds (5% of 80 responses) but more common among 7- to 9-year-olds (26% of 47 responses) and adults (35% of 55 responses). Similarly, when the group had a false belief and the individual had a true belief, approval was most often explained via fact-based explanations by 4- to 6-year-olds (62% of 90 responses), which were less common among 7- to 9-year-olds (38% of 84 responses) and adults (47% of 91 responses), who focused mostly on individuality (55% and 51% of responses, respectively). Simply put, 4- to 6-year-olds consistently appealed to the truthfulness of an individual’s belief, whereas 7- to 9-year-olds and adults also considered the individual’s group membership and individuality.

STUDY 2

If a group has an opinion (e.g., believing that a certain type of music is the best), should individual group members share that opinion? Again, because children (and adults) question their own beliefs in the presence of a dissenting group (Asch, 1955; Kim et al., 2016), one possibility is that they might privilege the opinions of the group over those of the individual. This might especially be the case for opinions, for which there are no clear right or wrong ways of thinking. This possibility is further supported by recent research suggesting that children often interpret group-based opinions as normative and central to group membership (Rhodes & Chalik, 2013; Foster-Hanson & Rhodes, 2019; Knobe, Prasada, & Newman, 2013). However, research on epistemic cognition suggests that even young preschool-aged children understand that opinions are subjective internal states that vary across individuals as matters of personal preference (Heiphetz et al., 2014; Kalish, 2012; Lagattuta, Nucci, 1981, 2014; Nucci & Bosacki, 2010). Indeed, past research on children’s descriptive-to-prescriptive tendency revealed that when children approve of individuals who go against the group, they often appeal to individuality when justifying their approval (e.g., “People can do whatever they want,” Roberts et al., 2017a, 2017b).

Guided by these literatures, we pre-registered four hypotheses (Table 1). First, participants would be overall approving regardless of whether the individuals had the same or different opinion as the group, suggesting further that opinions are from an early age understood to be subjective (H7). Second, if participants are disapproving, their disapproval rates would decline with age, consistent with Study 1 and past research on children's descriptive-to-prescriptive tendency (H8). Third, when the individual has an opinion that differs from the group, disapproval (which we predicted to be low) would be justified with group-based explanations and prescriptive explanations, because approval in this scenario would suggest that they privilege the group over individuality (H9). Fourth, approval, regardless of whether it followed conformity or non-conformity, would be justified via individuality, revealing further that opinions are conceptualized as subjective (H10). We made no other hypotheses, but we did not exclude the possibility that a descriptive-to-prescriptive tendency would influence participants' evaluations. For instance, participants could be generally approving of individuals with different opinions than the group, but nonetheless less approving of those individuals compared to individuals with the same opinion as the group.

Method

Participants

We recruited three new groups of participants from Ann Arbor, Michigan: 27 at ages 4 to 6, 24 at ages 7 to 9, and 25 adults (see Table 2 for the demographic information). An additional 3 children were excluded because of parent interference and an additional 3 for failing the comprehension check.

Materials and Procedure

The materials and procedure were identical to those used in Study 1, except that the novel groups were characterized by contrasting opinions that were unfamiliar and unverifiable to the participants: believing that 1) red flowers vs. yellow flowers smell the sweetest, 2) red kazoos vs. green kazoos make the best music, 3) green boomerangs vs. orange boomerangs are the most fun game, and 4) red berries with blue spots vs. blue berries with yellow spots are the tastiest fruit (see Heiphetz et al., 2013). Thus, there were eight trials in which participants saw four instances of two scenarios: a group opinion that an individual group member 1) shared, or 2) did not share (see Table 3 for examples).

TABLE 3 GOES HERE

Measures, Coding, Data Analyses

The measures and coding were identical to those in Study 1. Regarding participants' evaluations, the data analyses paralleled those in Study 1, with the exception that group belief (i.e., true vs. false) was not included in any of the analyses, given that this was not a feature of the design (which focused on opinions). Regarding participants' explanations, we did not examine explanations when participants disapproved when the individual had the same opinion as the group because these responses were rare.

Results

Evaluations

There was a main effect of Individual Belief ($B = 4.28$, $SE = .75$, $z = 5.68$, $p < .001$, 95% CI [2.80, 5.75]), and a 2-way interaction of Individual Belief and Age ($B = 3.65$, $SE = 1.60$, $z = 2.28$, $p = .022$, 95% CI [.51, 6.78]). We tease the effects apart below (see Figure 2).

Disapproval declined with age

Chance comparisons revealed that both children and adults were relatively approving of individuals with the same opinion as the group and of individuals with different opinions from the group (H7), though overall, 4- to 6-year-olds were more disapproving than 7- to 9-year-olds ($B = -4.65$, $SE = 2.17$, $z = -2.14$, $p = .032$, 95% CI [-8.91, -.39]) and adults ($B = -5.93$, $SE = 2.14$, $z = -2.77$, $p = .006$, 95% CI [-10.13, -1.73]), revealing that disapproval declined with age (H8) (there were no significant differences between 7- to 9-year-olds and adults, $p = .87$).

Evidence for a descriptive-to-prescriptive tendency

Both children and adults were more disapproving of individuals with different opinions from the group than of individuals with the same opinion as the group, thereby providing evidence for a descriptive-to-prescriptive tendency (mean comparisons: 4-6: $B = 2.11$, $SE = .48$, $z = 4.42$, $p < .001$, 95% CI [1.18, 3.05]; 7-9: $B = 4.85$, $SE = 1.59$, $z = 3.04$, $p = .002$, 95% CI [1.72, 7.98]; adults: $B = 7.49$, $SE = 2.02$, $z = 3.71$, $p < .001$, 95% CI [3.53, 11.45]).

FIGURE 2 GOES HERE

Figure 2. Study 2 (opinions). Proportion of trials on which participants expressed disapproval across age group (4-6, 7-9, Adults). Bars depict 95% confidence intervals. Chance comparisons:

Same ideology as the group (4-6: $M = .10$, $SE = .03$, $t = -13.62$, $p < .001$, 95% CI [.04, .16]; 7-9: $M = .02$, $SE = .01$, $t = -32.70$, $p < .001$, 95% CI [.01, .05]; adults: $M = .01$, $SE = .01$, $t = -49$, $p < .001$, 95% CI [.01, .03]) adults: $M = .01$, $SE = .01$, $t = -49$, $p < .001$, 95% CI [.01, .03]; Different ideology as the group (4-6: $M = .33$, $SE = .05$, $t = -3.66$, $p < .001$, 95% CI [.24, .42]; 7-9: $M = .13$, $SE = .03$, $t = -11.05$, $p < .001$, 95% CI [.06, .19]).

Explanations

See Table 5. In partial support of H9, when participants disapproved of individuals who had a different opinion from their group (though this response was relatively uncommon, as predicted), children and adults most often provided group-based explanations (4-6: 39% of 36 responses; 7-9: 33% of 12 responses; adults: 78% of 18 responses), whereas prescriptive explanations were much less common. In support of H10, individual-based explanations were most common when participants approved of individuals who had the same opinion as the group (4-6: 47% of 97 responses; 7-9: 54% of 94 responses; adults: 65% of 99) and when participants approved of individuals who had a different opinion from their group (4-6: 51% of 72 responses; 7-9: 70% of 84 responses; adults: 93% of 82 responses).

TABLE 5 GOES HERE

Discussion

As predicted, both children and adults disapproved at low rates (H7), and 4- to 6-year-olds were more disapproving than 7- to 9-year-olds and adults (H8). Moreover, when participants disapproved of individuals with different opinions, which was relatively uncommon, they appealed most often to group-based explanations (thereby providing partial support for H9), and when participants approved (regardless of whether the opinion differed from or matched the group), they appealed to individuality (H10). Nevertheless, we found evidence for a descriptive-to-prescriptive tendency, such that both children and adults were more disapproving of individuals who had different opinions from the group, compared to those who had the same opinions (e.g., someone who believed that green instruments made the best music, unlike their group, was worse than someone who believed the same thing, like their group), which aligns with previous research suggesting that group-based opinions are often interpreted as normative (Foster-Hanson & Rhodes, 2019; Kalish, 2012; Knobe et al., 2013; Rhodes & Chalik, 2013). Simply put, although opinions are understood to be subjective (Heiphetz et al., 2014; Kalish,

2012; Lagattuta et al., 2010; Nucci, 1981; 2014), young preschoolers and even adults tended to evaluate those opinions in relation to the group.

STUDY 3

If a group has an ideology (e.g., believing that spirits roam the earth at night), should individual group members share that ideology? Ideological beliefs provide an interesting case given that they entail elements of both fact and opinion; they are often believed to be objectively correct (e.g., there is one true God), thereby paralleling factual beliefs, yet nonetheless are subject to individual and contextual differences (e.g., Muslims believe in Allah whereas Christians believe in Yahweh), thereby paralleling opinions (Heiphetz et al., 2013, 2014). Unlike facts, however, and like opinions, ideological beliefs are not verifiable (e.g., one cannot objectively verify whether or not there even is a God, or multiple Gods). Thus, one possibility is that participants' evaluations of individuals with different ideologies from the group would mirror their evaluations of individuals with different opinions from the group (e.g., they might be more disapproving of individuals with different ideologies, but might be approving overall). Alternatively, participants might be highly disapproving of individuals who go against the ideologies of their group, to the extent that ideologies are conceptualized as central to group membership. Unlike facts and opinions, many ideologies require a group to establish and maintain them. Indeed, the argument has been made that religious belief systems evolved to facilitate group-based cooperation (Norenzayan, Shariff, Gervais, Willard, McNamara, Slingerland, & Henrich, 2016). Thus, children and adults might conceptualize ideologies as central to group membership, and may therefore be highly disapproving of individual group members who go against the group's ideology.

Guided by these literatures, we pre-registered five hypotheses (see Table 1). First, participants would approve of individuals with the same ideologies as their group, because both children and adults are generally approving of conformity (H11). We made no a priori predictions as to whether children would disapprove of individuals with different ideologies as their group. Second, if participants were at all disapproving, their disapproval would decline across the age groups, consistent with Studies 1 and 2 and past research (H12). Third, when the individual has an ideology that differs from the group, disapproval would be justified via group-based explanations, because disapproval in this scenario privileges the group over the individual (H13). Fourth, when the individual has an ideology that is the same as the group, approval would

similarly be justified via group-based explanations, because approval in this scenario privileges the group over the individual (H14). Fifth, when the individual has an ideology that differs from the group, approval would be justified via individual-based explanations, because approval in this scenario privileges the individual over the group (H15). We made no other hypotheses, but again, we did not exclude the possibility that a descriptive-to-prescriptive tendency would influence participants' evaluations. Indeed, participants could be generally approving of individuals with different ideologies from the group, but nonetheless less approving of those individuals compared to individuals with the same ideology as the group.

Method

Participants

We recruited three new groups of participants from Ann Arbor, Michigan: 24 at ages 4 to 6, 25 at ages 7 to 9, and 30 adults (see Table 2 for the demographic information). One additional child was excluded from the analyses for failing the comprehension check questions.

Materials and Procedure

The materials and procedure were identical to those used in Study 2, with the exception that the novel groups were characterized by contrasting ideologies that were unfamiliar and unverifiable to the participants: believing that 1) spirits protect you during the day vs. the night, 2) spirits live in trees vs. on mountains, 3) you can talk to spirits while standing next to a lake vs. while standing next to a fire, and 4) the best way to learn about spirits is to read a book called "The Timmus" vs. a book called "The Spoodle" (see Heiphetz et al. 2014). Thus, there were eight trials in which participants saw four instances of two scenarios: a group ideology that an individual 1) shared, or 2) did not share (see Table 3 for examples).

Measures, Coding, Data Analyses

The measures, coding, and analyses paralleled those in Study 2. We did not examine explanations when participants disapproved of individuals with the same ideology as the group, as this response type was very rare.

Results

Evaluations

There was no main effect of Individual Belief ($B = .25$, $SE = .35$, $z = .71$, $p = .48$, 95% CI [-.44, .95]), though there was a 2-way interaction of Individual Belief and Age ($B = 2.40$, $SE = .63$, $z = 3.79$, $p < .001$, 95% CI [1.16, 3.63]). We examine this effect below (see Figure 3).

Disapproval declined with age

In partial support of H11, 4- to 6-year-olds were surprisingly at chance regardless of whether the individuals had the same or different ideology as the group, whereas 7- to 9-year-olds and adults were approving in both scenarios (see Figure 3). In support of H12, when the individual had the same ideology as the group, 4- to 6-year-olds were more disapproving than 7- to 9-year-olds ($B = -2.70$, $SE = .71$, $z = -3.81$, $p < .001$, 95% CI [-4.10, -1.31] and adults ($B = -4.81$, $SE = 1.15$, $z = -4.18$, $p < .001$, 95% CI [-7.06, -2.55]) (there were no significant differences between 7- to 9-year-olds and adults, $p = .51$), and when the individual had a different ideology than the group, 4- to 6-year-olds were more disapproving than adults ($B = -4.27$, $SE = 1.15$, $z = -3.71$, $p < .001$, 95% CI [-6.52, -2.01]), as were 7- to 9-year-olds ($B = -4.33$, $SE = 1.87$, $z = -2.32$, $p = .02$, 95% CI [-8.00, -.67]) (there were no significant differences between 4- to 6-year-olds and 7- to 9-year-olds, $p = .23$).

Evidence for a descriptive-to-prescriptive tendency

Paralleling Study 1, 7- to 9-year-olds and adults, but not 4- to 6-year-olds, were more disapproving of individuals with different ideologies from the group than of individuals with the same ideology as the group, thereby providing evidence for a descriptive-to-prescriptive tendency (mean comparisons: 4-6: $B = .11$, $SE = .16$, $z = .67$, $p = .50$, 95% CI [-.21, .43]; 7-9: $B = 1.35$, $SE = .27$, $z = 4.91$, $p < .001$, 95% CI [.81, 1.89]; adults: $B = 1.32$, $SE = .59$, $z = 2.25$, $p = .024$, 95% CI [.17, 2.48]).

FIGURE 3 GOES HERE

Figure 3. Study 3 (ideologies). Proportion of trials on which participants expressed disapproval across age group (4-6, 7-9, Adults). Bars depict 95% confidence intervals. Chance comparisons: Same ideology as the group (4-6: $M = .46$, $SE = .05$, $t = -.82$, $p = .42$, 95% CI [.36, .56]; 7-9: $M = .10$, $SE = .03$, $t = -13.27$, $p < .001$, 95% CI [.04, .16]; adults: $M = .04$, $SE = .03$, $t = -25.02$, $p < .001$, 95% CI [.01, .08]); Different ideology as the group (4-6: $M = .50$, $SE = .05$, $t = 0$, $p > .99$, 95% CI [.40, .60]; 7-9: $M = .38$, $SE = .05$, $t = -2.46$, $p = .016$, 95% CI [.28, .48]; adults: $M = .09$, $SE = .05$, $t = -15.44$, $p < .001$, 95% CI [.04, .14]).

Explanations

See Table 5. In partial support of H13, when participants disapproved of individuals who had a different ideology, 7- to 9-year-olds most often provided group-based explanations (53% of 38 responses), as did adults (55% of 11 responses), whereas responses provided by 4- to 6-year-olds were not captured by our coding scheme. In partial support of H14, when participants approved of individuals with the same ideology, 7- to 9-year-olds most often provided group-based explanations (39% of 90 responses), though adults most often provided individual-based explanations (69% of 115 response), and responses by 4- to 6-year-olds were not captured by our coding scheme. Lastly, and in partial support of H15, when participants approved of individuals with a different ideology from the group, 7- to 9-year-olds most often appealed to individuality (63% of 62 responses), as did adults (71% of 105 responses), whereas most responses by 4- to 6-year-olds were not captured by our coding scheme.

Discussion

Older children (ages 7 to 9) and adults were generally approving of an individual's ideological beliefs, irrespective of whether they were the same as or different from the group (thereby providing partial support for H11). In contrast, and counter to our hypothesis, younger children (ages 4 to 6) were at chance in both scenarios (H12). Nevertheless, we found evidence for a descriptive-to-prescriptive tendency among older children and adults (e.g., they evaluated someone who believed that you learn about spirits by reading *The Spoodle*, unlike their group, as worse than someone who believed the same thing, like their group). These findings have interesting implications for the development of religious cognition. Again, it has been argued that religious ideologies evolved to facilitate group-based cooperation (Norenzayan et al., 2016). Study 3 of the present research suggests that as early as 7-years-of-age, U.S. children might indeed believe that ideological beliefs reflect what individuals should (or should not) believe, which might enable religious groups to retain those ideologies even in the face of competing worldviews.

Notably, 4- to 6-year-olds were comparably disapproving of individuals with different ideologies than toward individuals with the same ideologies (i.e., they were at chance with both scenarios with no significant differences between the two). Our reasoning for this is similar to what we proposed in the fact-based context of Study 1, such that younger children in Study 3

were primarily concerned with the truth value of an ideology (Heiphetz et al., 2013), yet because the truth value was unverifiable, they were on average neither approving nor disapproving. If so, this would support our reasoning that younger children privilege truth over group norms, and that with age, they become increasingly likely to consider group norms in their reasoning about the beliefs of individuals.

GENERAL DISCUSSION

When children believe that a group is characterized by a behavior, they tend to reason that individual group members should be characterized by that behavior (Roberts et al., 2017a; 2017b; 2018). We tested whether this descriptive-to-prescriptive tendency extended to group-based beliefs that were rooted in facts (Study 1), opinions (Study 2), and ideologies (Study 3). In Study 1, older children (ages 7 to 9) and adults (but not younger children) showed evidence for a descriptive-to-prescriptive tendency (i.e., they evaluated someone who believed the truth, unlike their group, as worse than someone who believed the same thing, like their group). In Study 2, both child groups and adults showed evidence for a descriptive-to-prescriptive tendency (i.e., they evaluated someone with a different opinion from the group as worse than someone with the same opinion as the group). In Study 3, older children and adults (but not younger children) showed evidence for a descriptive-to-prescriptive tendency (i.e., they evaluated someone with a different ideology from the group as worse than someone with the same ideology as the group). Below, we discuss some of our key findings, highlight key theoretical and applied implications, and outline several additional questions for future research.

Young Children Prioritized Truth more than Older Children and Adults

One of our most important and interesting results was that young children (ages 4 to 6) showed the least evidence for a descriptive-to-prescriptive tendency. Our reasoning for this finding is that younger children placed a greater value on truth. Specifically, preschool-aged children have been shown to interpret facts and ideologies, more so than preferences, as objectively correct, and to be deeply concerned with truth and verifiability (Heiphetz et al., 2013; Koenig et al., 2015). In Study 1, because participants could verify whether a belief was true, younger children prioritized truth (resulting in comparable approval of individuals with true beliefs, irrespective of the group norm). In Study 2, truth was irrelevant (given the focus on preferences, which are not objective matters of truth), resulting in younger children being more disapproving of individuals with preferences that differed from the group. In Study 3, because

participants could not verify what was true, younger children may have been uncertain as to which ideology was true and which was false (resulting in them responding at chance levels, irrespective of the group norm). In contrast, older children (ages 7 to 9) and adults were more likely to consider group norms in their evaluations. In Study 1, older children and adults (but not younger children) were relatively disapproving of individuals with objectively verifiable true beliefs, if those individuals went against the false beliefs of the group. In Study 2, both age groups were relatively disapproving of individuals with preferences that differed from the group. In Study 3, although neither age group could verify which ideology was true, both were relatively disapproving of individuals with ideologies that differed from the group.

Taken together, our data suggest that preschool-aged children, compared to their older peers and adults, focused more on the truthfulness of a belief rather than group norms. An important question for future research will be to examine why this might be the case. Indeed, past research found that preschool-aged children were most focused on group norms (i.e., they showed the strongest descriptive-to-prescriptive tendency; Roberts et al., 2017a, 2017b, 2018), though the present research suggests that this is not the case when other principles, such as truth, are at stake.

Overall Approval of Individuals Irrespective of their Beliefs

Another important finding was that overall, participants were generally approving of individuals even if those individuals held beliefs that differed from the group. This contrasts with past research, in which children were highly disapproving of individuals who behaved in ways that differed from the group (Roberts et al., 2017a, 2017b, 2018). Precisely why this might be the case is an important question for future research (though note that children are not thoughtlessly approving of conformity to group-based behaviors, particularly when the behaviors are immoral; Roberts et al., 2019). One possibility is that the beliefs in these studies were conceptualized as less central to group membership than were the behaviors in past work, and therefore were conceptualized as less prescriptive. To test this possibility, we conducted an additional study with adults to assess their ratings of centrality to group membership (see the OSM). We found that the preferences and false beliefs in the present studies were rated as less central to group membership than the behaviors used in past research (Roberts et al., 2017a), but that the ideologies and true beliefs in these studies were rated as more central. Thus, differences in centrality to group membership, between beliefs and behaviors, could not account for the

patterns of results obtained. Nevertheless, the centrality of a norm to a particular group, especially when one is a member of that group, might play an important role in children's descriptive-to-prescriptive tendency. We look forward to additional research that tests this possibility more systematically.

Another possibility is that beliefs are more deeply rooted in concepts of individuality (see Nucci, 1981, 2014). That is, beliefs might be conceptualized as determined by the individuals, and not the group, and even young children and adults might be generally approving of individuals' beliefs irrespective of the group. Indeed, participants, particularly older children and adults, often justified their approval of non-conformity via appeals to individuality (e.g., "Different people can believe different things"), which aligns with past research suggesting that children conceptualize beliefs as subjective states that vary across individuals (Heiphetz et al., 2014; Kalish, 2012; Lagattuta et al., 2010; Nucci, 1981; 2014). Note that the purpose of the present research was not to compare descriptive-to-prescriptive reasoning across beliefs and behaviors, but rather, to examine the extent of this reasoning within different kinds of beliefs, though we look forward to additional research that directly compares this tendency across the two domains.

Theoretical and Applied Implications

Normative reasoning likely has evolutionary roots, given that recognizing and conforming to norms is adaptive to the self, the group, and the culture (Gelman & Roberts, 2017; Rakoczy & Schmidt, 2017; Tomasello, 2016). Consequentially, children often believe that how the world is reflects how the world should be (e.g., Kenward, Karlsson, & Persson, 2011; Schmidt, Butler, Heinz, & Tomasello, 2016). Even in the context of evaluating novel groups that one does not belong to, and that are characterized by innocuous norms, children believe that how a group is reflects how individual group members should be. The present research suggests that this descriptive-to-prescriptive tendency extends to group-based beliefs as well. Specifically, older children and adults believed that individuals should think like the group, whereas younger children were more likely to believe that individuals should believe what is true. Notably, in the domain of preferences, each age group tended to reason that individuals group members should share group preferences.

The present research has implications for other theoretical orientations as well. Social domain theory asserts that children reason about norms in the social, moral, and psychological

domains (Nucci, 1981, 2014; Smetana et al., 2014). Past research documented a descriptive-to-prescriptive tendency in the social and moral domains (Roberts et al., 2017a, 2019), and the present research documents this tendency in the psychological domain as well. This is not to say that these domains are perfectly distinct (e.g., social norms can have moral implications), though it is well-established that they are often conceptualized as distinct (Nucci, 2014), and the present research suggests that none are necessarily immune to a descriptive-to-prescriptive tendency. The present research has implications for epistemic cognition as well. A long-standing literature reveals that across the preschool years, children become increasingly efficient at reasoning about the beliefs of individuals (Wellman, 2014). We reveal for the first time that young children also consider the beliefs of the group when doing so (i.e., beliefs of individuals, to an extent, are prescriptively bound to the beliefs of the group). Ultimately, our data connect various literatures in social cognitive development, revealing how various aspects of cognition (e.g., normative, epistemic, religious) and social bias (e.g., prejudice, stereotyping) might be linked even early in development.

In the real world, if children and adults – at least to an extent – believe that the beliefs of others should depend on the group, then they might be biased toward maintaining those beliefs. On the one hand, this bias might be evolutionarily advantageous in that it could foster the transmission of group-based beliefs across generations (Gelman & Roberts, 2017; Norenzayan, et al., 2016; Tomasello, 2016). On the other hand, this bias might result in the rejection of opposing worldviews, even those supported by scientific evidence, and an increase in group-based polarization. Indeed, by adulthood, U.S. adults often use the beliefs of their political party to determine which policies they should or should not support (Cohen, 2003). Our data suggest that this tendency emerges early in development. As an illustration, consider again the findings of Study 1. Shockingly, older children (and even adults) were relatively disapproving of individuals who went against the false beliefs of the group to believe what was objectively true. This descriptive-to-prescriptive tendency might prevent individuals from abandoning group beliefs (e.g., climate change is a hoax) irrespective of scientific evidence that suggests otherwise (e.g., climate change is real and a threat to humanity; Mehrabi, 2019; Patz et al., 2005; Ramanathan & Carmichael, 2008; Sippel et al. 2020), and it might prevent them from even interacting with, listening to, and learning from individuals from groups with opposing worldviews (Lewandowsky & Oberauer, 2016; Pew Research Center, 2014). Our data suggest

that this descriptive-to-prescriptive tendency extends to group-based preferences (e.g., boys like blue) and ideologies (e.g., Christians believe in The Bible), which is reminiscent of how in the U.S., boys are often criticized for liking “girl toys,” and Black people are often criticized for liking “White music” (Blakemore, 2003; Durkee & Williams, 2015). Ultimately, our data suggest that a descriptive-to-prescriptive tendency might be one bias by which individuals remain committed to group beliefs, even false ones, and why they might expect others to do the same. This bias could contribute to group-based polarization, and lead individual to even expect such polarization.

Additional Questions for Future Research

The present research provided new insights into children’s descriptive-to-prescriptive tendency, though much is left to be examined and understood. Additional research is needed to translate the current findings to real-world beliefs among real-world groups that participants belong to, which are certainly more complex and multifaceted than the novel beliefs and groups used in the present research. We intentionally employed a novel group paradigm in a third-person context in order to prevent children from relying on past experiences or their own group membership when making judgments, which was useful for examining children’s intuitions. However, in the real-world, children (and adults) face scenarios in which their own beliefs and group identities are on the line. For instance, regarding climate change, it might be easy for a Democrat to accept a Republican who believes in human-caused climate change, but it might be more difficult for another Republican to do so. Such research could provide new insight into how a descriptive-to-prescriptive tendency is modulated by group membership and social experiences, and whether the kind of beliefs and groups matter, as some might license a descriptive-to-prescriptive tendency more than others (e.g., Democrats should believe in human-caused climate change vs. Christians should believe in God).

Relatedly, the results derived from the present samples do not necessarily generalize to other contexts. It will be important for future research to recruit samples from other contexts. Limited sampling is increasingly recognized as a serious limitation of research in cognitive development more generally (Rowley & Camacho, 2015). The present sample was recruited in a relatively liberal context, in which children have been documented to have relatively flexible concepts of social categories (Rhodes & Gelman, 2009). In such contexts, one might find a weaker tendency for children and adults to reason that individuals should think like the group.

Thus, research with children from more politically diverse contexts will be needed. Relatedly, past work found that children's and adults' descriptive-to-prescriptive tendency was higher among children recruited from a relatively collectivistic context compared to children recruited from a relatively individualistic context (Roberts et al., 2018), which aligns with the well-documented finding that individuals from relatively collectivistic contexts tend to place a greater emphasis on group solidarity and interconnectedness than individuals from relatively individualistic contexts (Markus & Kitayama, 1991). Whether or not this is the case in the domain of group-based beliefs remains an open question. Future research would do well to examine beliefs about religious ideologies among samples recruited from religious contexts, which might be more invested in maintaining those ideologies via a descriptive-to-prescriptive tendency (for cultural variation in children's beliefs about beliefs, see Lane & Dolins, 2016; Lane, Williams & Evans, 2012).

Conclusion

There is much left to be understood about children's descriptive-to-prescriptive tendency, and about the specific findings detected here. Until then, the present research suggests that, at least in one U.S. community, a descriptive-to-prescriptive tendency shapes how children and adults think about how others should think, but that the extent of this tendency varies across development and as a function of the belief under consideration. In the real-world, this early emerging tendency might contribute to the development of social biases and group-based polarization. If true, an important task for future research will be to find ways to disrupt this tendency.

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Table 1

Pre-registered hypotheses, across studies, and whether or not they were supported.

| Study | Hypotheses | Supported? |
|-------|--|------------|
| 1 | H1 Participants would disapprove of individuals with false beliefs, irrespective of what the group believes. | Y |
| | H2 Disapproval would decline across the age groups. | P |
| | H3 When the individual has a false belief, unlike their group, disapproval would be justified by fact-based explanations (e.g., “Because it is actually a square”). | Y |
| | H4 When the individual has a true belief, like their group, approval would be justified via fact-based explanations. | Y |
| | H5 When the individual has a false belief, like their group, approval would be justified via group-based explanations (e.g., “That is what the group does”). | N |
| | H6 When the individual has a false belief, unlike their group, approval would be justified via individual-based explanations (e.g., “Because they can think on their own”). | P |
| 2 | H7 Regardless of whether the individual had the same or a different opinion as the group, participants would be approving. | Y |
| | H8 Disapproval would decline across the age groups, if participants are at all disapproving. | Y |
| | H9 When the individual has an opinion that differs from the group, disapproval (which we predicted to be relatively uncommon) would be justified via group-based explanations (e.g., “That is what their group believes in”) and prescriptive explanations (e.g., “They are supposed to”). | P |
| | H10 Approval, regardless of whether it followed an individual having the same or a different opinion as the group, would be justified via individuality (e.g., “It’s their personal opinion”). | Y |

| | | | |
|---|-----|---|---|
| 3 | H11 | Participants would approve of individuals with the same ideologies as their group. | P |
| | H12 | Disapproval would decline across the age groups, if participants are at all disapproving. | Y |
| | H13 | When the individual has an ideology that differs from the group, disapproval would be justified via group-based explanations. | P |
| | H14 | When the individual has an ideology that is the same as their group, approval would be justified via group-based explanations. | P |
| | H15 | When the individual has an ideology that differs from the group, approval would be justified via individual-based explanations. | P |

Note. Y = Yes (i.e., supported), P = Partially supported, N = No (i.e., not supported).

Table 2

Sample Demographics.

| | Study 1 | | | Study 2 | | | Study 3 | | |
|--------------------|---------|------|--------|---------|------|--------|---------|--------|--------|
| | 4-6 | 7-9 | Adults | 4-6 | 7-9 | Adults | 4-6 | 7 to 9 | Adults |
| N | 49 | 49 | 50 | 27 | 24 | 25 | 24 | 25 | 30 |
| Age | | | | | | | | | |
| Mean | 4.76 | 7.88 | 22.32 | 5.33 | 7.83 | 20.16 | 4.92 | 7.72 | 20.60 |
| Standard Deviation | .75 | .83 | 7.18 | .88 | .96 | 1.59 | .78 | .89 | 1.77 |

| Sex/Gender | | | | | | | | | |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Female | 51% | 63% | 58% | 56% | 63% | 60% | 54% | 52% | 57% |
| Male | 49% | 37% | 38% | 44% | 42% | 40% | 46% | 48% | 43% |
| Other Identity | 0% | 0% | 4% | 0% | 0% | 0% | 0% | 0% | 0% |
| Race/Ethnicity | | | | | | | | | |
| Asian American | 8% | 8% | 6% | 4% | 4% | 0 | 13% | 8% | 10% |
| Black/African American | 6% | 6% | 2% | 4% | 0% | 12% | 8% | 4% | 17% |
| Hispanic/Latinx | 2% | 4% | 10% | 0% | 4% | 0% | 4% | 20% | 3% |
| Multiracial | 8% | 2% | 16% | 15% | 0% | 0% | 8% | 1% | 7% |
| Native | 0 | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 0% |
| White/European American | 69% | 65% | 62% | 70% | 88% | 84% | 54% | 48% | 57% |
| Other Identity | 6% | 14% | 2% | 7% | 4% | 4% | 13% | 4% | 7% |

Note. Children's demographic information was obtained via parental reports, whereas adults' demographic information was obtained via self-identification.

Table 3

Descriptions of the Various Behavior Types, With Examples.

| Study | Group Belief | Individual Belief | Example Trial |
|-------|--------------|-------------------|---|
| 1 | True | Same (True) | Glerks think a red circle is red; as does an individual Glerk. |
| | True | Different (False) | Flurps think a square is a square; an individual Flurp thinks it is a circle. |
| | False | Same (False) | Blickets think a large object is the smallest; as does an individual Blicket. |
| | False | Different (True) | Tuludes think a striped object is solid; an individual Tulude thinks it is striped. |
| 2 | Opinion | Same | Glerks think red flowers smell the sweetest; as does an individual Glerk. |
| | | Different | Flurps think green instruments make the best music; an individual Flurp thinks red ones do. |
| 3 | Ideology | Same | Blickets think you learn about spirits from the Spoodle; as does an individual Blicket. |
| | | Different | Tuludes think you talk with spirits while standing next to a fire; an individual Tulude thinks you talk to spirits while standing next to a lake. |

Table 4

Study 1. Mean Percentages of Explanation Types for Each Evaluation Across Behavior, Belief, and Age, on a trial-by-trial basis.

| Evaluation | Group Belief | Individual Belief | Age | # of responses | Percentage of Explanation Types M(SE) | | | | | |
|-------------|--------------|-------------------|-------|----------------|---------------------------------------|-------|---------------|------------|-------|-------|
| | | | | | Prescriptive | Group | Individuality | Similarity | Fact | Other |
| Disapproved | True | Different (False) | 4-6 | 80 | 1(1) | 5(2) | 6(3) | 4(2) | 79(5) | 13(3) |
| | | | 7-9 | 47 | 2(2) | 26(6) | 15(5) | 4(3) | 66(7) | 2(2) |
| | | | Adult | 55 | 4(3) | 35(6) | 16(5) | 0 | 85(5) | 0 |
| | False | Same (False) | 4-6 | 46 | 2(2) | 2(2) | 0 | 0 | 83(6) | 17(6) |
| | | | 7-9 | 32 | 9(5) | 13(6) | 19(7) | 0 | 75(8) | 6(4) |
| | | | Adult | 29 | 3(3) | 34(9) | 10(6) | 3(3) | 89(6) | 3(3) |
| Approved | True | Same (True) | 4-6 | 93 | 0 | 9(3) | 12(3) | 10(3) | 66(5) | 12(3) |
| | | | 7-9 | 93 | 1(2) | 18(4) | 44(5) | 9(3) | 34(5) | 6(2) |
| | | | Adult | 98 | 3(2) | 29(5) | 27(4) | 2(1) | 54(5) | 1(1) |
| | False | Different (False) | 4-6 | 43 | 2(2) | 2(2) | 42(8) | 5(3) | 37(7) | 16(6) |
| | | | 7-9 | 74 | 0 | 5(3) | 85(4) | 1(1) | 3(2) | 6(3) |
| | | | Adult | 71 | 1(1) | 14(4) | 82(5) | 0 | 6(2) | 4(2) |
| | False | Same (False) | 4-6 | 27 | 0 | 22(8) | 33(9) | 7(5) | 22(8) | 13(4) |

| | | | | | | | | |
|------------------|-------|----|-------|-------|-------|-------|-------|-------|
| | 7-9 | 43 | 0 | 26(7) | 63(7) | 2(2) | 2(2) | 7(3) |
| | Adult | 45 | 11(5) | 33(7) | 60(7) | 0 | 2(2) | 3(1) |
| Different (True) | 4-6 | 90 | 1(1) | 2(2) | 18(4) | 14(4) | 62(5) | 22(8) |
| | 7-9 | 84 | 0 | 2(2) | 55(5) | 4(2) | 38(5) | 9(4) |
| | Adult | 91 | 0 | 5(2) | 51(5) | 1(1) | 47(5) | 2(2) |

Note. Data for disapproval when the group had a true belief and the individual had the same (true) belief, and when the group had a false belief and the individual had a different (true) belief are not provided as these responses were rarely given.

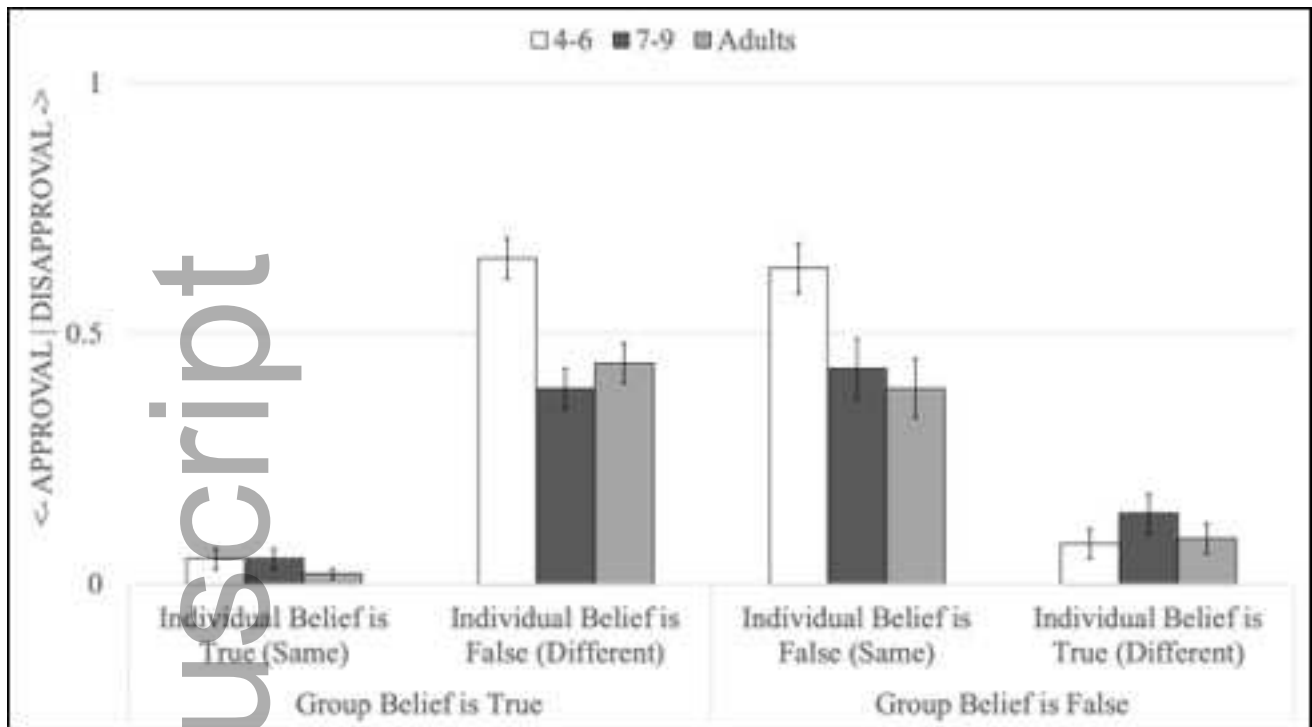
Table 5

Studies 2 and 3. Mean Percentages of Explanation Types for Each Evaluation Across Behavior, Belief, and Age, on a trial-by-trial basis.

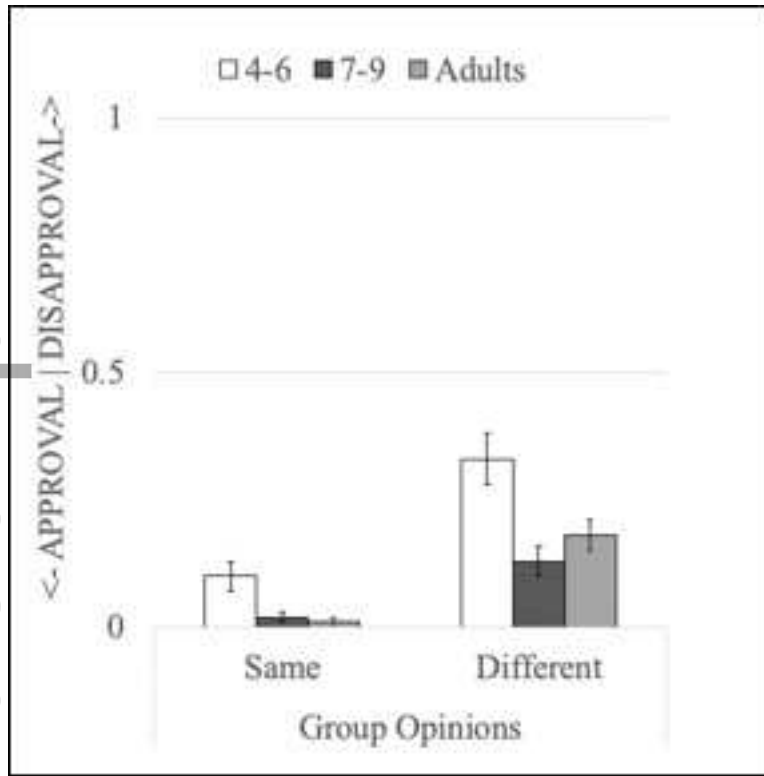
| Study | Evaluation | Individual Belief | Age | # of responses | Percentage of Explanation Types M(SE) | | | | | |
|-------|-------------|-------------------|-----|----------------|---------------------------------------|--------|---------------|------------|------|-------|
| | | | | | Prescriptive | Group | Individuality | Similarity | Fact | Other |
| 2 | Disapproved | Different | 4-6 | 36 | 11(5) | 39(8) | 33(8) | 3(3) | 0 | 33(8) |
| | | | 7-9 | 12 | 0 | 33(14) | 25(13) | 25(13) | 0 | 8(8) |

| | | | | | | | | | | |
|---|-------------|-----------|-------|-----|-------|--------|-------|-------|--------|-------|
| | | | Adult | 18 | 11(8) | 78(10) | 0 | 17(9) | 0 | 5(5) |
| | Approved | Same | 4-6 | 97 | 4(2) | 18(4) | 47(5) | 19(4) | 0 | 21(4) |
| | | | 7-9 | 94 | 0 | 23(4) | 54(5) | 18(4) | 0 | 10(3) |
| | | | Adult | 99 | 8(3) | 33(5) | 65(5) | 2(1) | 0 | 4(2) |
| | | Different | 4-6 | 72 | 3(2) | 14(4) | 51(6) | 3(2) | 0 | 29(5) |
| | | | 7-9 | 84 | 0 | 18(4) | 70(5) | 19(4) | 0 | 12(4) |
| | | | Adult | 82 | 5(2) | 11(3) | 93(3) | 2(2) | 2(2) | 6(2) |
| 3 | Disapproved | Different | 4-6 | 47 | 2(2) | 13(5) | 9(4) | 11(4) | 0 | 31(7) |
| | | | 7-9 | 38 | 21(7) | 53(8) | 8(4) | 13(6) | 0 | 13(6) |
| | | | Adult | 11 | 9(9) | 55(16) | 9(9) | 0 | 36(15) | 0 |
| | Approved | Same | 4-6 | 52 | 4(3) | 12(4) | 4(3) | 10(4) | 0 | 37(7) |
| | | | 7-9 | 90 | 6(2) | 39(5) | 19(4) | 16(4) | 0 | 21(4) |
| | | | Adult | 115 | 8(3) | 14(3) | 69(4) | 1(1) | 1(1) | 13(3) |
| | | Different | 4-6 | 48 | 4(3) | 0 | 6(4) | 2(2) | 0 | 52(7) |
| | | | 7-9 | 62 | 6(3) | 8(3) | 63(6) | 5(3) | 0 | 23(5) |
| | | | Adult | 105 | 13(3) | 12(3) | 71(4) | 0 | 0 | 0 |

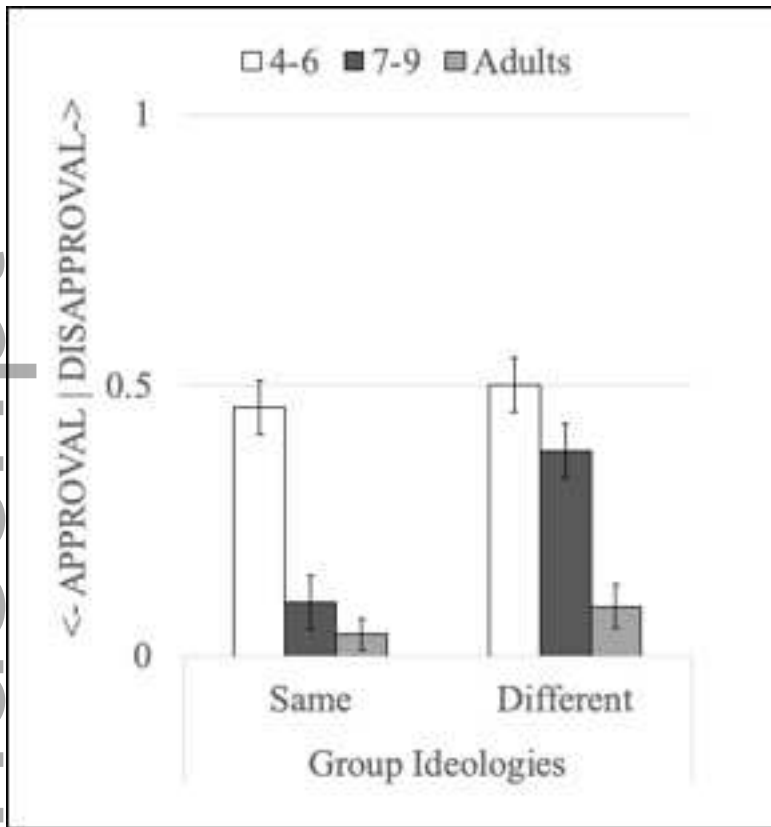
Note. Data for disapproval of individuals with the same opinion or ideology as the group are not provided as these responses were rarely given.



cdev_13448_f1.jpg



cdev_13448_f2.jpg



cdev_13448_f3.jpg