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Normative social role concepts in early childhood

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Abstract

The current studies (N = 255, children ages 4–5 and adults) explore patterns of age-related continuity and change in conceptual representations of social role categories (e.g., "scientist"). In Study 1, young children's judgments of category membership were shaped by both category labels and category-normative traits, and the two were dissociable, indicating that even young children's conceptual representations for some social categories have a "dual character." In Study 2, when labels and traits were contrasted, adults and children based their category-based induction decisions on category-normative traits rather than labels. Study 3 confirmed that children reason based on category-normative traits because they view them as an obligatory part of category membership. In contrast, adults in this study viewed the category normative-traits as informative on their own (not only as a cue to obligations). Implications for continuity and change in representations of social role categories will be discussed.

Keywords

conceptual development; normativity; deontic; dual character; concepts and categories

1. Introduction

Adults view many important categories as marking not just how things are, but also how they *should* be (Hume, 1738/2000). For instance, people expect doctors to care for their patients and men not to wear high heels (Heilman, 2012; Levy, Taylor, & Gelman, 1995) and judge harshly those who do not meet these expectations (Cialdini & Goldstein, 2004; Rudman, Moss-Racusin, Glick, & Phelan, 2012). Although adults tend to think that the way things are reflects how they *ought* to be (Eidelman & Crandall, 2014; Tworeck & Cimpian, 2016), their representations of how categories *are* and how they *should be* are often dissociable. To illustrate, Knobe, Prasada, and Newman (2013) presented adults with vignettes that contrasted the two (e.g., participants were told about an individual who was employed as a scientist but who was not at all interested in the questions he was researching). Participants were then asked whether it is true that the individual was a category member in a sense, and also not a *real* category member in another sense. For certain categories (e.g., "scientist"), participants endorsed both membership and non-membership for the same individual, indicating that, for adults, these concepts have a "dual character" with dissociable descriptive and normative dimensions. Crucially, even an

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individual who did not meet the descriptive criteria of a category could nonetheless be considered a member *in a sense* if he met the normative criteria associated with the category (e.g., a mail carrier could be considered a scientist in a sense if he applied a scientific method of systematically revising his beliefs).

Children also think of some categories, like gender, as marking how people *should* be (Blakemore, 2003; Kalish, 1998; 2012; Martin, Ruble, & Szkrybalo, 2002; Turiel, 1983). By age 3, children understand that norms shape behavior (Hardecker, Schmidt, Roden, & Tomasello, 2016) and spontaneously protest against violations of norms that do not pose them any direct harm (Heyman, Chiu, & Lee, 2016; Schmidt, Rakoczy, & Tomasello, 2012). Young children are especially attuned to norms in group contexts (Chalik & Rhodes, 2014); they expect social group members to conform to conventional norms (Liberman, Howard, Vasquez, & Woodward, 2018; Rizzo, Cooley, Elenbaas, & Killen, 2018) and negatively evaluate people who do not follow group norms (Roberts, Gelman, & Ho, 2017; Schmidt, Rakoczy, & Tomasello, 2012), suggesting that they view conforming to the group as a fundamentally important feature of group membership. In fact, across a variety of contexts and domains, younger children show a heightened focus on norms and rules compared with adults (Casler, Terziyan, & Greene, 2009; Kalish, 2012; Kalish & Lawson, 2008; Rakoczy & Schmidt, 2013; Rakoczy, Warnecken, & Tomasello, 2008). For example, in contrast with older children and adults, they judge nonconformity as wrong even among members of novel groups (Roberts et al., 2017) and think normatively about a wider range of categories (e.g., animal kinds; Foster-Hanson & Rhodes, 2019).

Despite this early focus on category norms, little is known about the role that normative information plays in the structure of young children's category representations. Do young children's social category representations have a "dual character?" For instance, would young children judge someone as "a scientist" who displays behaviors normatively associated with scientists (e.g., conducting experiments to discover new things), even if the person is not labeled as a scientist? Labels are important markers of category membership, leading even infants to focus on similarities across entities (Waxman, 2010). Preschoolers use labels to infer consistency across category members beyond perceptual dissimilarities (Diesendruck & Peretz, 2013; Diesendruck & Weiss, 2015; Gelman & Wellman, 1991; Keil, 1989; Jaswal & Markman, 2007). For example, an animal labelled "a fish" would be expected to have fish-like internal features regardless of its appearance (Gelman & Markman, 1986). Therefore it is possible that, for young children, only individuals who are labelled as category members could be judged as such. Alternatively, given young children's emphasis on normative concerns, perhaps beliefs about what category members are *supposed to be like* shape young children's judgments of category membership, even for individuals who are labeled as non-members. We address this question in Study 1.

2. Study 1

Building on adults' "dual character concepts" (Knobe et al., 2013), children in Study 1 heard vignettes about individuals who either were (or were not) labeled as members of social role categories, and who were described as either having (or not) the normative traits associated with the category. After each vignette, we asked whether the character was really a category

member “deep down.” If young children incorporate normative information into their category representations, they should judge characters with category-normative traits as category members “deep down” more often than those without, regardless of whether or not the character is also labeled as a category member.

2.1 Method

2.1.1 Participants—Participants in Study 1 were 64 4–5 year old children (M_{age} = 4.98; 37 male). For all studies, we intended to include 24 participants per condition; data collection was stopped on the day these numbers were reached. These sample sizes were determined prior to data collection, following conventions in the lab for studying early conceptual structure with similar forced-choice tasks. Of our sample of children whose parents reported demographic information (9% chose not to), 72% were White, 10% were Black, 9% were Asian, and 9% were more than one race; of these, 21% were Hispanic (of any race). Another 3 participants were excluded from analysis due to parent interference or significant interruptions during testing. Participants were recruited from and tested at the Children’s Museum of Manhattan. All participants spoke English as their primary language. Written parental consent was obtained for all participants; children provided oral assent. All study procedures were approved by the Institutional Review Board of New York University.

2.1.2 Materials and procedure—Prior to completing the study, participants first completed a warm-up phase in order to familiarize them with the paradigm and to ensure they understood that characters could be different “deep down” than they were on the outside (adapted from Wellman & Lui, 2004). In this phase, participants were presented with three questions that described a character feeling one emotion on the inside but displaying a different emotion externally; children were asked what the character was really feeling “deep down.” For example, participants heard about “Sally” who received a birthday gift from her uncle; Sally hoped it was a doll but instead it was a pair of socks. On the outside, Sally did not want to hurt her uncle’s feelings, so she smiled and said, “thank you,” but on the inside she felt sad. Participants were then asked how Sally really felt deep down (i.e., sad). If children responded incorrectly to these training questions (i.e., they answered that Sally was really feeling happy “deep down”), the experimenter provided corrective feedback. Each warm-up trial was repeated up to three times until the child responded correctly. Children generally did very well on the warm-up trials; 2 participants failed to respond correctly after three tries and therefore did not complete the study.

After the warm-up, children heard 16 vignettes about different social role categories. We began by selecting categories used by Knobe, et al. (2013) that would be familiar to most young children (e.g., “scientist,” “teacher,” “artist,” “musician”); we then chose other social role categories that young children would know and could potentially view normatively (e.g., “babysitter”). Half described male gender-typed categories and male characters (e.g., “scientist,” “firefighter”) and half described female gender-typed categories and female characters (e.g., “teacher”, “dancer”). Based on the stimuli used for adults by Knobe, et al. (2013), each vignette described an individual who either was or was not labeled as a category member (e.g., “Mike is [is not] a scientist.”) and either had, or did not have, a category-normative trait (e.g., “Mike really likes [doesn’t like] to discover new things.”)

This resulted in a 2 × 2 within-participants design, with four types of vignettes. We used a within-participants design to minimize the influence of individual differences (e.g., in language comprehension, which can vary widely in this age group). Versions of the vignettes were rotated between-participants, so that all participants heard equal numbers all four vignette types, but each participant heard only one version for each category. The vignettes in which the character had both the label and the category-normative trait, as well as those in which the character had neither, served as control conditions. Vignette types were ordered randomly in each script.

After each vignette, the participant was asked whether the character was really a category member or not "deep down" (e.g., "Now tell me, deep down, is Mike *really* a scientist? Or deep down is Mike not *really* a scientist?"). Responses were recorded on paper by the experimenter and testing sessions were also videotaped; a second coder coded all responses (initial coder agreement was 96%, with disagreements resolved by the first author). For full scripts for each study, see https://osf.io/thg94/.

2.2 Results and discussion

Responses consisted of a series of binary responses about whether a character was a category member "deep down" (yes = 1; no = 0). We analyzed these, and the binary responses in Studies 2–3, with the lme4 package in R version 3.5.2 using Generalized Linear Mixed Models (GLMMs) to specify a binomial distribution. Here we included the main and interactive effects of label and category-normative traits as within-participants predictors. We report results of likelihood ratio tests; means reflect the probability of category-inclusive responses with Wald 95% confidence intervals (CIs). Data and analysis code for all studies are available at https://osf.io/thg94/.

Children were more likely to say that characters were really category members "deep down" if they had category labels ($M = 0.54$, 95% CI [0.44, 0.64]; non-category labels: $M = 0.20$, 95% CI [0.14, 0.28]; X^2 (1) = 93.10, $p < 0.001$) and if they displayed category-normative traits ($M = 0.61$, 95% CI [0.51, 0.70]; no traits: $M = 0.16$, 95% CI [0.11, 0.23]; X^2 (1) = 174.74, $p < 0.001$; Figure 1). Children were 3.52 times more likely to say that characters with category labels were category members than those with non-category labels (95% CI [2.63, 4.72]) and 6.68 times more likely to say that characters with category-normative traits were category members than those without (95% CI [4.84, 9.21]). The label × trait interaction was not significant (X^2 (1) = 2.69, $p = 0.10$). Children were most likely to respond that characters were category members if they met both criteria (labels, category-normative traits). Nevertheless, even if a character was described as not a category member (e.g., "not a scientist"), preschoolers were more likely to say that he was *really* a category member "deep down" if he displayed the underlying trait associated with the social role (e.g., "likes to discover new things") than if he did not. Thus, like adults (Knobe et al., 2013), preschoolers represent certain social role concepts in terms of dissociable information about who is labelled a category member and who has the underlying traits associated with the category.

3. Study 2

In Study 1, children judged that characters were category members "deep down" at similar levels when labels and underlying traits conflicted—regardless of which of the two the character had. This result raises the question: if children were asked to choose between the two when making category-based inferences, which type of information would they rely on? For example, imagine learning about two individuals, one who descriptively is a category member (e.g., he is employed as a scientist) but who does not fulfill the normative expectations for the category (e.g., he is not interested in discovering new things about the world). In contrast, imagine an individual who descriptively is *not* a scientist, but who *does* instantiate the category normative trait. Imagine then, that you learned about another characteristic held by one of these individuals but not the other. Whose characteristic would you expect a new category member to share? The person who is descriptively a category member? Or the person who has the category-normative trait? This is what we ask in Study 2.

These types of induction decisions have long been used to examine category structure (e.g., Gelman & Markman, 1986; Gelman & Coley, 1990). Testing how children weight information about norms and category labels to make inductive inferences can provide particularly important insight into the role of normative information in children's category structure, as labels are often very influential on children's inductive inferences—even more than shared perceptual features (Diesendruck & Peretz, 2013; Diesendruck & Weiss, 2015; Gelman, Collman, and Maccoby, 1986; Jaswal & Markman, 2007; Sloutsky & Fisher, 2004). Thus, in Study 2 we tested whether children base inductive inferences on normative information or category labels. To our knowledge, how adults weight normative information in making these types of information has not been tested before, so to begin to reveal possible patterns of continuity and change, we included both young children and adults in Study 2.

3.1 Method

3.1.1 Participants—We tested 48 4–5 year old children in Study 2 (M_{age} = 4.90; 16 male). Of children whose parents reported demographic information (17% did not), 45% were White, 10% were Black, 20% were Asian, and 25% were more than one race; of these, 25% were Hispanic. Another 4 participants were excluded from analysis due to parent interference or significant interruptions during testing; 1 child failed warm-up trials after three tries and did not complete the study. Participants in Studies 2 and 3 were recruited from and tested at the Children's Museum of Manhattan and an afterschool program in a New York City public school; children from both sites were similar in demographics and performance, so data is collapsed across sites. All participants spoke English as their primary language. Parents of all participants gave written consent; children gave oral assent. All study procedures were approved by the Institutional Review Board of New York University.

Adults in Study 2 (N = 50; M_{age} = 28.91; 32 male; 80% White, 2% Black, 18% Asian; 12% Hispanic of any race) were recruited through Amazon Mechanical Turk and tested using

Qualtrics. An additional 10 participants were excluded from analysis because they failed attention check questions or did not complete the study.

3.1.2 Materials and procedure—Children first met a puppet named Daxy who speaks puppet language (adults were asked to imagine that they met someone named Daxy who speaks a different language); instead of saying things like *nice* or *smart*, Daxy says things like *flurpy* or *gorp*. Participants then learned about 8 pairs of characters, each presented as two photographs of neutral adult faces side by side, matched for race and gender within trial (from the Chicago Face Database; Ma, Correll, & Wittenbrink, 2015). Social role categories included in Study 2 were those showing the clearest "dual character" pattern in Study 1. In the test condition, one character in each pair was labelled as a member of a social role category (e.g., "Nick is a scientist") but did not have a category-normative trait (e.g., "Nick really doesn't like to discover new things"); the other character was labeled as a non-member but nonetheless displayed the category-normative trait (e.g., Jim is not a scientist, but Jim really likes to discover new things"). In this way, labels and normative traits were contrasted between the two characters. In the control condition, one character had both the category label and category-normative trait and the other had neither.

After being presented with each pair of characters, participants heard a novel descriptor contrasted between the two characters (e.g., "Daxy says that Nick is really *naggle*, and Daxy says that Jim is not *naggle*,") and were asked which character a new category member would be like (e.g., "imagine another scientist, do you think he's *naggle,* like Nick? Or not *naggle*, like Jim?") (Fig. 2). Order of descriptions, photograph-property pairings, and which character had the novel descriptor were counterbalanced between participants. Adults indicated their responses by selecting one face on a computer screen; children pointed to one face.

3.2 Results and discussion

Responses consisted of a series of binary choices of which character's novel descriptor would be shared by another category member; means reflect the probability of choosing characters with normative traits (coded as 1) with Wald 95% confidence intervals (CIs). Across conditions, participants generalized the descriptors of characters with normative traits more than those with category labels, although adults did so more often ($M = 0.77$, 95% CI [0.69, 0.83]; children: $M = 0.63$, 95% CI [0.54, 0.71]; main effect of age: X^2 (1) = 5.34, $p = 0.02$). Both age groups chose characters with category-normative traits more often than predicted by chance (adults: $p < 0.001$; children: $p = 0.04$). There were no main (X^2 (1) = 2.44, $p = 0.12$) or interactive effects of condition (X^2 (1) = 0.90, $p = 0.34$), indicating that participants were just as likely to generalize based on shared norms regardless of whether the person who shared the norm did or did not have the corresponding category label. Thus, normative beliefs about what category members *should* be like, rather than category labels, shape inductive inferences for both adults and children (Fig. 3).

4. Study 3

The results of Studies 1 and 2 indicate that even early representations of some social categories have a "dual character," and that beliefs about normative traits, dissociable from

labels, shape categorization and induction for children and adults. Nonetheless, young children's and adults' representations might also differ in important ways. In Study 2, while both preschoolers and adults based inductive inferences on category-normative traits more than labels, adults were more likely than children overall to generalize the properties of characters with normative traits. One possible explanation for this age effect is that young children think about traits differently than adults. Specifically, category-normative traits might shape categorization and induction for both children and adults, but for somewhat different reasons—with adults viewing them as instantiating underlying psychological traits that are generalizable in themselves, and young children interpreting the traits as the result of deontic obligations.

While adults often view underlying traits as strongly associated with category membership (e.g., Leslie, Cimpian, Meyer, & Freeland, 2015), the evidence regarding young children's trait attributions is more mixed. Young children sometimes generalize preferences and underlying psychological traits across social category members (Diesendruck & Eldror, 2011; Diesendruck & haLevi, 2006; Rhodes & Gelman, 2008). Yet, while adults and older children often explain behavior by appealing to stable underlying traits (Choi, Nisbett, & Norenzayan, 1999; Gilbert & Malone, 1995; Uleman, 1987), young children require more (or different kinds of) evidence than adults to attribute traits (Aloise, 1993; Boseovski & Lee, 2006; Miller & Aloise, 1989). Young children are also less likely to appeal to dispositions to explain behavior (Miller, 1984) or to expect individual behavior to remain stable across time and situations (Kalish, 2002; Ruble & Dweck, 1995). Thus, it is possible that young children in the present experiments may have been less likely than adults to spontaneously assume that category-normative traits reflect stable underlying psychological traits.

Instead of marking regularities in underlying psychological traits or preferences, children often view category membership as marking explicitly deontic obligations—what people are *supposed* to or are *allowed* to do (e.g., Chalik & Rhodes, 2014). Deontic properties are particularly salient for young children (Clément, Bernard, & Kaufmann, 2011; Martin et al., 2002). For instance, preschoolers often focus more on social rules than psychological states to explain behavior (Kalish & Shiverick, 2004), predict that deontic properties, but not psychological states, will be shared among social category members (Kalish & Lawson, 2008), and generalize deontic norms, but not psychological states, across members of novel social categories, whereas adults generalize both (Kalish, 2012).

Young children view a variety of tasks and behaviors through an explicitly deontic normative lens, in contrast with older children and adults. For example, young children generally expect that people want to do what they should (Costanzo, Grumet, & Brehm, 1974; Kalish, 1998; Kalish & Shiverick, 2004), and even tend to misremember preferences as deontic norms (Kalish, 2012). Young children also have trouble distinguishing events that are impossible, improbable, unconventional, and immoral, for instance saying that it would be wrong to fly in the air or impossible to steal or tell a lie (Shtulman & Phillips, 2018). Further, children, but not adults, understand norms as categorical imperatives that apply regardless of individual goals (Dahl & Schmidt, 2018). Young children also initially understand modal words (e.g., you *can* play the game) as deontic (e.g., you *are allowed to*

play the game) and only later as epistemic (e.g., you *know how to* play to game; Modyanova et al., 2010; Papafragou, 1997). For these reasons, preschoolers' expectations that social category members share preferences and underlying states might be in fact *more* normative than adults'—prioritizing category-normative traits because they view them as cues to deontic obligations. For example, whereas adults might think that "liking to discover new things" is itself an informative feature of the category "scientists," preschoolers might instead view this category-normative trait as something that people are *supposed* to do *because* they are scientists.

Given young children's focus on explicitly deontic norms, young children may have generalized underlying traits across category members in Study 2 because they viewed them as cues to deontic obligations. We explore this possibility in Study 3, by asking children and adults to make categorization and induction decisions based on either underlying psychological states or explicit deontic norms. The descriptions of characters in Studies 1 and 2 were somewhat ambiguous regarding their underlying causes (i.e., describing characters as "trying to" or "liking to" accomplish category-normative goals, without specifying *why* they valued these goals). In Study 3, characters were described as motivated either by category-normative psychological traits or category-normative deontic obligations. Here, in contrast with Studies 1 and 2, we expected that children's and adults' concepts might diverge—with adults prioritizing information about psychological states in their categorization and induction decisions, and young children relying instead on deontic obligations.

4.1 Method

4.1.1 Participants—We tested 49 4–5 year old children in Study 3 (M_{age} = 5,22; 20 male). Of children whose parents reported demographic information (22% did not), 50% were White, 16% were Black, 13% were Asian, and 21% were more than one race; of these, 16% were Hispanic (of any race). Another 2 children failed warm-up trials and did not complete the study; 1 child was excluded due to significant interruptions during testing. Adults in Study 3 (N = 60; M age = 36.21; 40 male) who reported demographics information (3% did not) were 72% White, 9% Black, 10% Asian, 2% more than one race; 3% were Hispanic (of any race). We excluded 9 adults from analysis because they failed attention check questions or did not complete the study.

4.1.2 Materials and procedure—Participants heard 8 vignettes about social role categories (e.g., firefighter), each describing a pair of characters matched for race and gender (using photographs from the Chicago Face Database; Ma et al., 2015). Social role categories in Study 3 were again those that showed the clearest "dual character" pattern in Study 1, with the additional constraint that each category included in this study would correspond to a unique psychological property. One character in each pair was described as having the deontic obligation associated with the social role (e.g., "is supposed to save people from fires") and one character was described as possessing the underlying psychological trait associated with the social role (e.g., "really cares about saving people from fires"). For half of participants, these properties were both held by the same character (control condition); for the other half, the properties were held by different characters (test condition). The

descriptions of both characters differed slightly from those used in Studies 1 and 2 (e.g., "likes to save people from fires") in order to lessen the implication that one or the other character performed the behavior in question (i.e., "liking to" save people from fires implies that the character actually does so, whereas "cares about" does not to the same extent).

In order to ensure that young children were indeed able to process and remember the descriptions in these studies, we included memory check questions after each vignette in Study 3. Following the character descriptions, participants were asked to indicate which character matched each description (e.g., "Who is supposed to save people from fires?"; "Who really cares about saving people from fires?"). Both children and adults performed at near-ceiling levels on these questions; when they occasionally responded incorrectly, they were provided corrective feedback and then asked again.

After each vignette and memory check, participants made (a) an induction decision, by choosing which of the two characters another category member would share a novel property with (as in Study 2), and (b) a category membership decision, by giving a category-relevant prop that only someone who is a "real, deep down" category member should have (e.g., a real firefighter's hat) to one of the two characters. The study hypotheses and analysis code were preregistered at https://osf.io/thg94/.

4.2 Results and discussion

Responses consisted of binary choices of which character's novel property would be shared by another category member, and which character should be given a prop for "real, deep down" category members. Means reflect the probability of choosing characters with deontic properties (coded as 1) with Wald 95% confidence intervals (CIs).

4.2.1 Induction—Induction decisions varied by age and condition (X^2 (1) = 7.94, $p < 0.001$; subsumed main effect of condition: X^2 (1) = 44.71, $p < 0.001$). In the test condition, children generalized the properties of characters with deontic properties more often than predicted by chance ($p = 0.003$), whereas adults generalized from such characters *less* than predicted by chance (meaning that they reliably generalized the properties of the characters with the category-consistent psychological traits; $p < 0.001$; main effect of age in the test condition only: X^2 (1) = 12.10, $p < 0.001$) In the test condition, children were 4.66 times as likely as adults to generalize from the character with normative traits (95% CI [1.99, 10.90]).

4.2.2 Category Membership—Category membership judgments showed the same pattern as induction decisions (condition × age interaction: X^2 (1) = 12.81, $p < 0.001$; subsumed main effect of condition: X^2 (1) = 60.23, $p < 0.001$; age: X^2 (1) = 4.01, $p = 0.05$). In the test condition, children selected characters with deontic properties at above chance levels ($p < 0.001$), while adults chose characters with deontic properties *less* often than predicted by chance, instead assigning category membership based on psychological properties ($p = 0.01$; main effect of age in the test condition only: X^2 (1) = 18.10, $p < 0.001$). In the test condition, children were 15.84 times as likely as adults to select the character with deontic properties (95% CI [4.26, 58.94]).

The current results thus support the possibility that normative beliefs about underlying states shape preschoolers' and adults' induction and categorization judgments for different reasons. When underlying psychological traits are pitted against explicit deontic obligations, adults view underlying traits as generalizable in themselves, while preschoolers prioritize explicit deontic obligations (Fig. 4).

5. General discussion

The current studies point to an important role for normative beliefs about traits in early representations of social role categories. In Studies 1 and 2, preschoolers viewed category-normative traits as important for both category membership and induction, beyond category labels. These results indicate that normative beliefs about what people *should be like* are an important aspect of even young children's social role concepts, with similar patterns between children's and adults' judgments in the current Study 2 and prior work (Knobe et al., 2013). However, Study 3 identified a crucial difference between adults' and children's representations—whereas adults viewed underlying psychological traits in themselves as important for category membership and induction, preschoolers relied on explicitly deontic obligations for these judgements. We interpret these results as suggesting that category-normative traits shape categorization and induction for both children and adults, but for different reasons. While adults may view underlying psychological traits themselves as generalizable, because they instantiate abstract values associated with certain social role categories, young children may instead rely on explicit deontic obligations as cues to these abstract values. This interpretation suggests that young children may value normative traits because they view them through a more explicitly normative lens, as cues to category-normative obligations. For example, both adults and children might think that real, deep down scientists care about their research, but for different reasons—for adults, because caring about science is an important psychological trait for being a true scientist; for young children, because scientists are *supposed* to care, and people generally do what they should.

Given that the present studies were presented verbally, it is important to consider the extent to which age-related changes in linguistic abilities might have contributed to the present patterns—particularly the pattern of age-related changes found in Study 3. For instance, one possibility is that young children might understand the terms used in Study 3 to describe deontic obligations (e.g., "supposed to") as indicating that characters in fact performed the acts in question, whereas adults may have a more nuanced understanding of these terms. The literature on young children's understanding of deontic norms blurs the line between these two possibilities. Social roles and deontic properties can be thought of as components of scripts (Hudson, 1993; Nelson, 1978), and participating in a script, or playing a role, entails a commitment to particular behaviors; these commitments themselves may be viewed normatively for adults (Del Pinal & Reuter, 2017; Leslie, 2015). However, young children may have difficulty distinguishing acts and commitment to performs those acts (Astington, 1988; Mant & Perner, 1988). Nevertheless, tasks measuring young children's normativity that have not relied exclusively on language have also found an early emphasis on explicit deontic norms (e.g., Casler, Terziyan, & Greene, 2009; Rakoczy, Warnecken, & Tomasello, 2008), suggesting that language effects are unlikely to fully explain the current results. This possibility should be explored more directly in future work.

Future research should also examine whether the patterns of age-related change and continuity found in the current studies might vary cross-culturally. For instance, Chinese children and adults are more explicitly disapproving of nonconformity to group regularities than US. children and adults, indicating that developmental shifts in normativity are shaped by culture (Roberts, Guo, & Gelman, 2018). Also, people's reliance on traits to explain behavior differ across culture (Choi et al., 1999; Morris & Peng, 1994; Norenzayan, Choi, & Nisbett, 2002). These cross-cultural differences suggest that certain aspects of children's socialization influence beliefs about traits and their centrality to category structure and use, so children's beliefs would be expected to differ from adults' as much of their socialization has not been completed (Wellman & Miller, 2006). Young children's socialization also makes deontic obligations highly salient for social categories, with parents and caregivers intentionally teaching what people should and should not do (Dahl, 2018). Yet, although adults are unlikely to focus on explicit norms of other categories, such as animal kinds, younger children nonetheless view these categories in more normative terms (Foster-Hanson & Rhodes, 2019). Future work should therefore pinpoint how cultural input shapes social role concepts, and whether young children's focus on deontic norms is specific to representations of social categories or reflects more domain-general features of conceptual structure.

For adults, beliefs about who possesses the traits necessary for certain social roles shape judgements of who is qualified for certain professions (Leslie et al., 2015) and guide individuals' choices and behavior (Bian, Leslie, & Cimpian, 2017; Cheryan, Master, & Meltzoff, 2015; Cheryan, Ziegler, Montoya, & Jiang, 2017). We interpret the results of Study 3 as suggesting that young children begin by thinking that these category-normative traits—i.e., what members of certain social categories should *be like*—are an obligatory feature of category membership. Normative expectations about categories, like gender roles, can shape expectations and behavior throughout development, from toy choice (Taylor, 1996) to who gets hired for top leadership positions (Brescoll, Dawson, & Ullmann, 2010). Beliefs about who is likely to possess certain traits can even have consequences for children's judgments and motivation (Lei, Green, Leslie, & Rhodes, 2019; Liben, Bigler, & Krogh, 2001; Rhodes, Leslie, Yee, & Saunders, 2019). Understanding how normative beliefs about social role categories change across age, and how these beliefs shape categorization and category use, are therefore crucial not only to our understanding of social role concepts, but also to the study of conceptual development in general.

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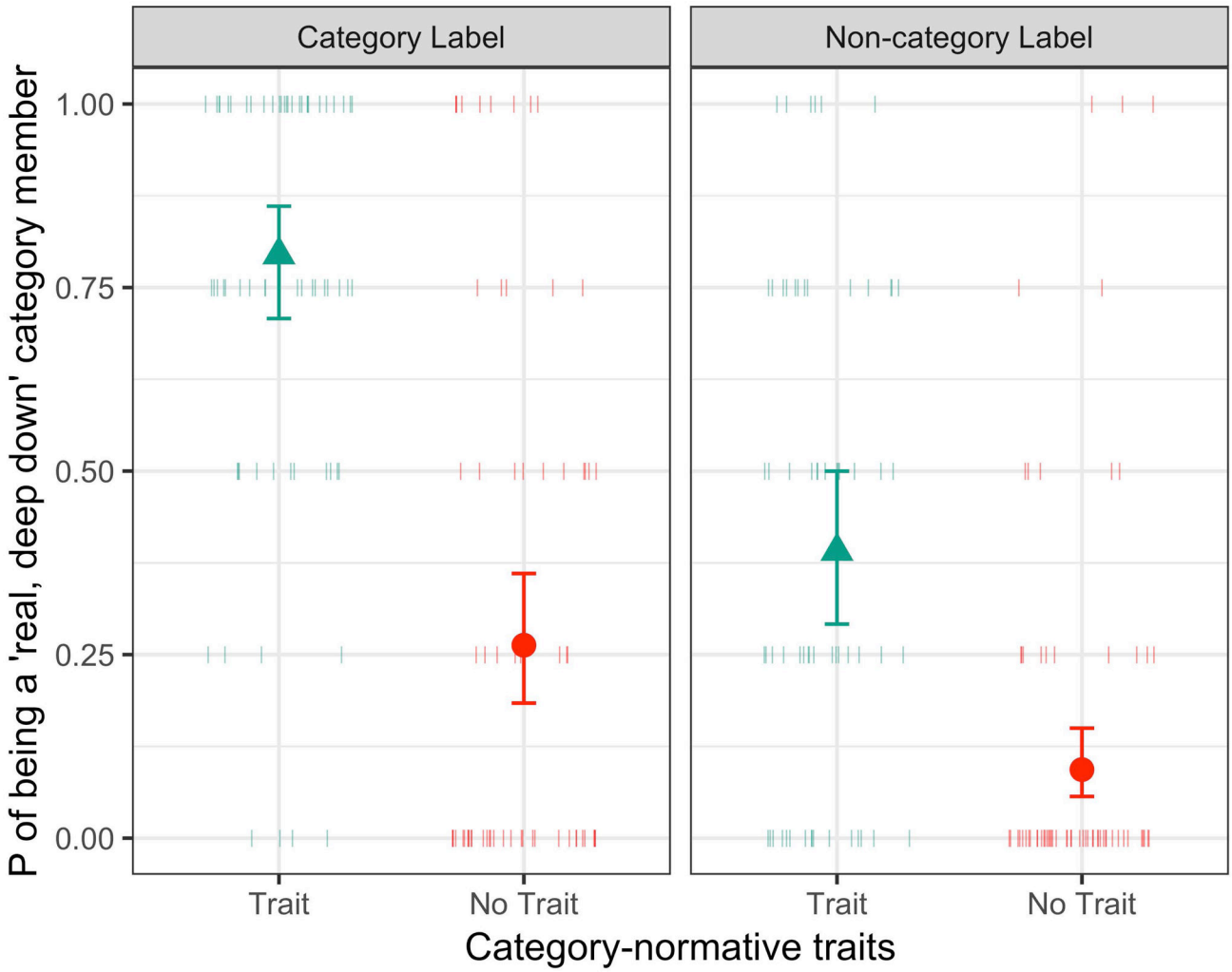

Fig. 1.

Probabilities with Wald 95% confidence intervals of responding that characters are “real, deep down” category members, by labels (category, non-category) and category-normative traits (present, absent). Large shapes represent group means, small lines show average responses per participant.

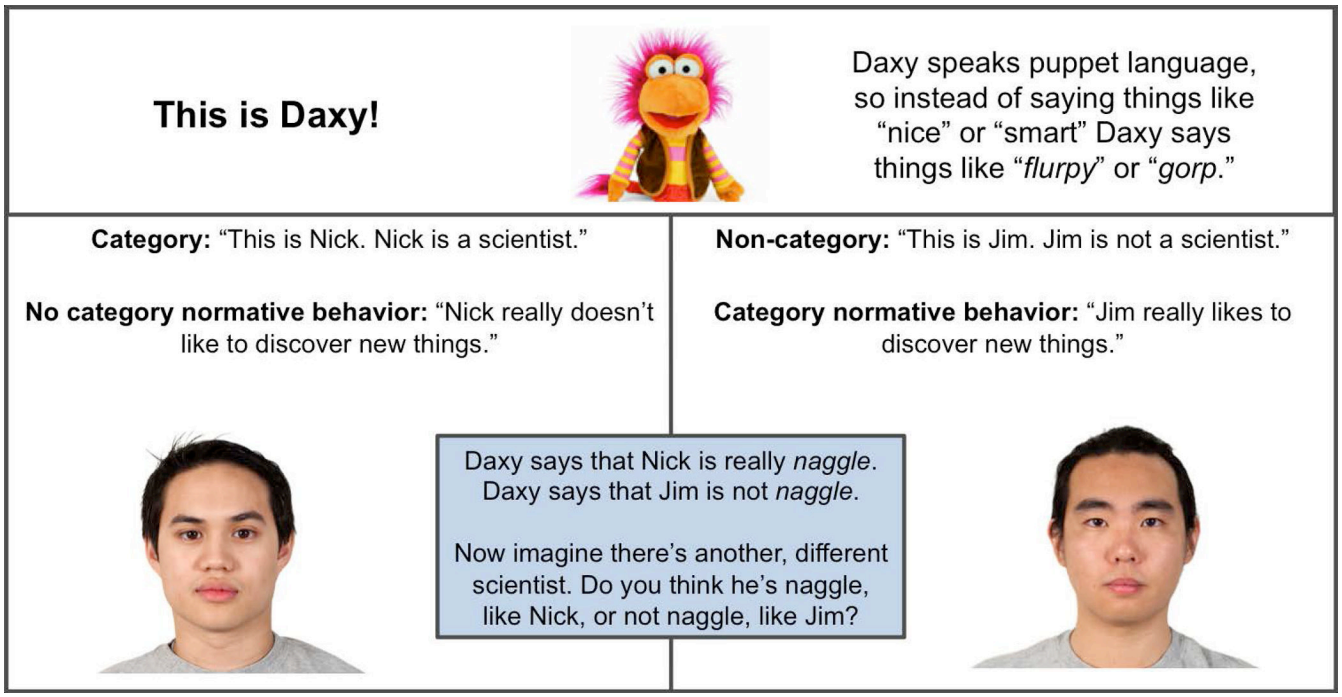

Fig. 2.

Procedure for the test condition in Study 2. Participants first met a puppet named Daxy and were told that Daxy speaks puppet language. Then, they heard about 8 pairs of characters and made an induction decision about each. In the test condition, the character who had a category label did not have a category-normative trait, and the character who did not have a category label displayed category-normative trait. In the control condition, one character had both the label and the category-normative trait, and the other had neither. Daxy then described each character using a novel word, and participants made an induction decision about which an unseen category member would be like. Order of descriptions, name-description pairings, and novel trait descriptions were counterbalanced between participants.

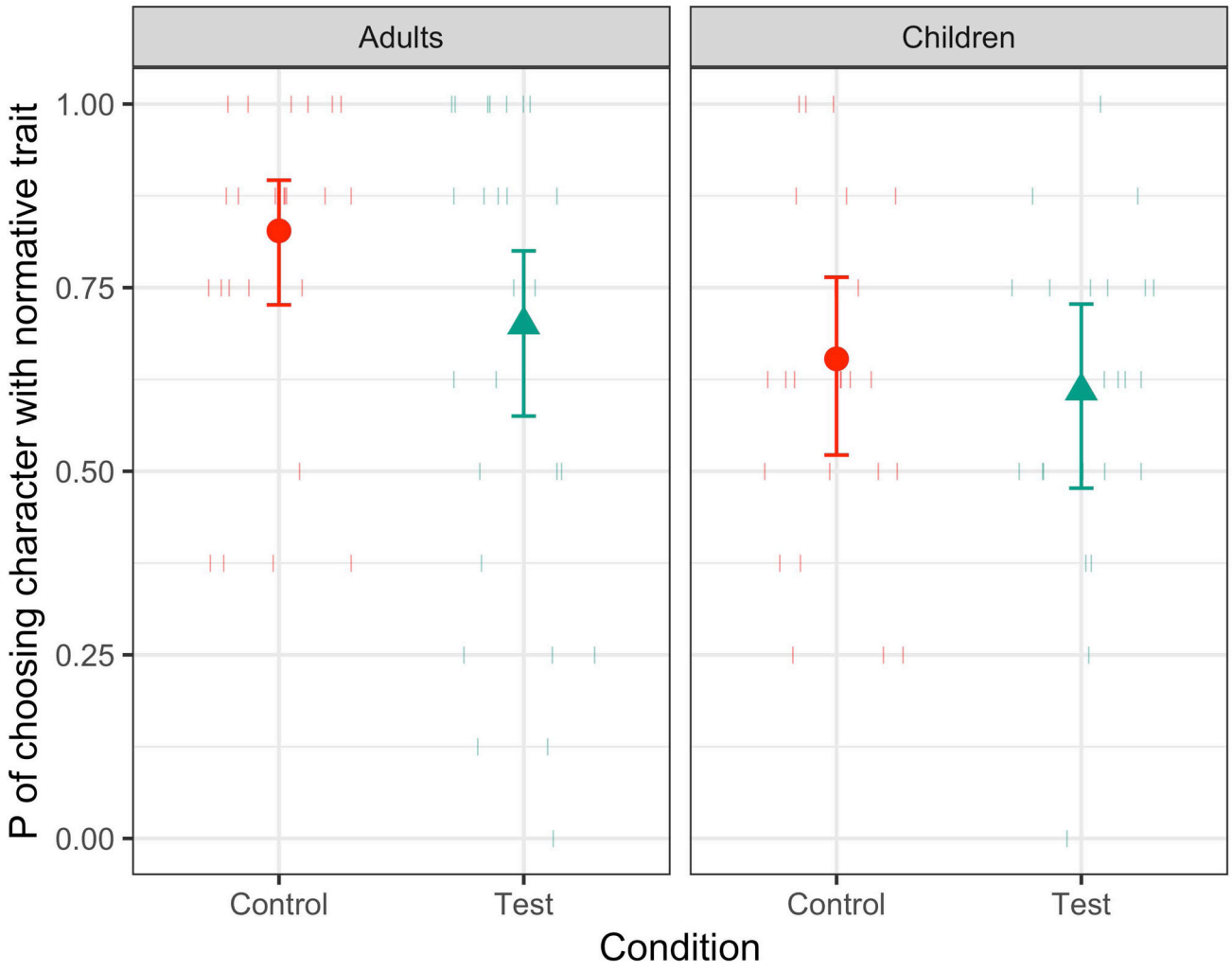

Fig. 3.

Probabilities with Wald 95% confidence intervals of selecting characters with category-normative traits, by age group and condition, Study 2. Large shapes represent group means, small lines show average responses per participant.

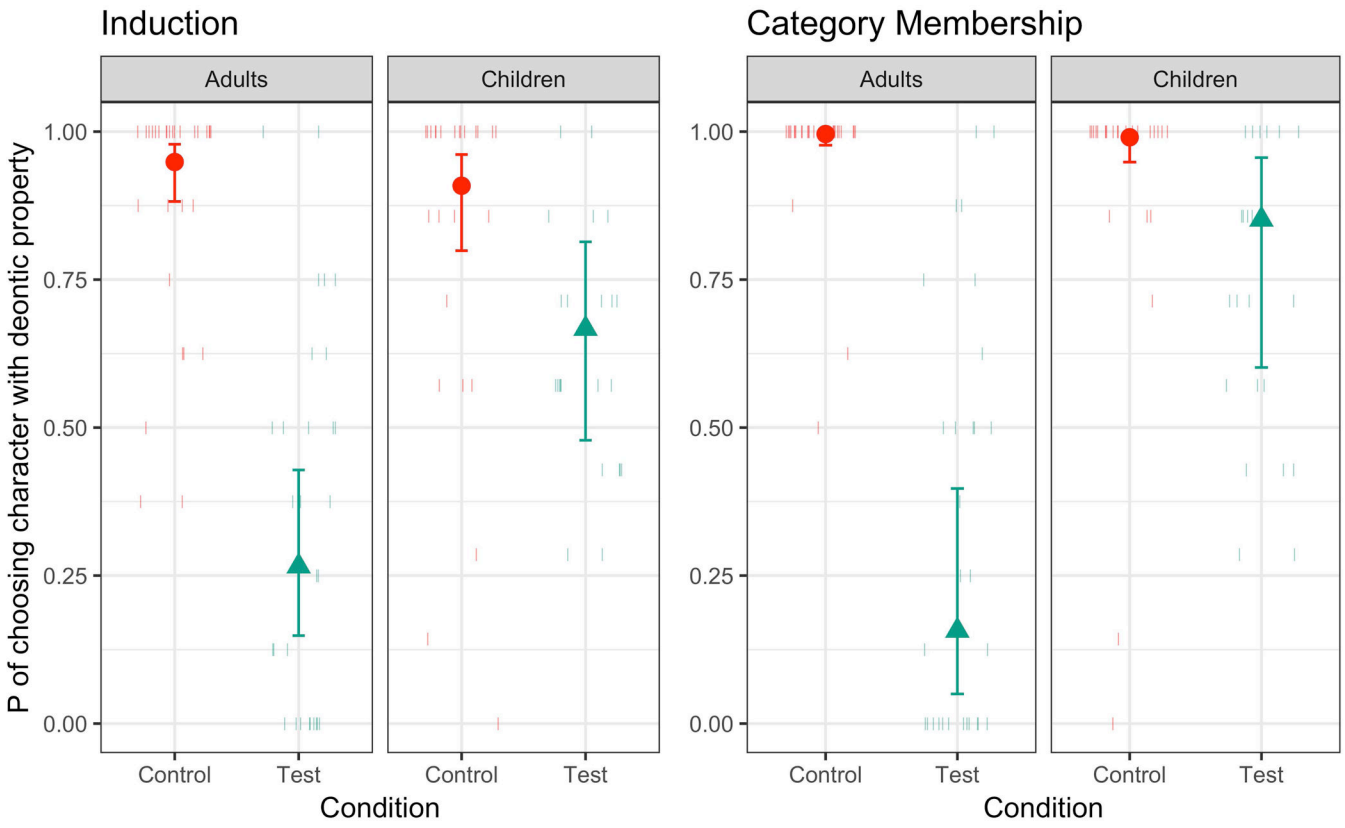

Fig. 4.

Probabilities with Wald 95% confidence intervals of selecting characters with deontic properties on induction (left panel) and category membership (right panel) questions, by age group and condition, Study 3. Large shapes represent group means, small lines show average responses per participant.