

Development of Social Category Representations: Early Appreciation of Roles and Deontic Relations

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Three experiments explored the significance of deontic properties (involving rights and obligations) in representations of social categories. Preschool-aged children ($M = 4.8$), young school-aged children ($M = 8.2$), and adults judged the centrality of behavioral, psychological, and deontic properties for both familiar (Experiments 1 and 2, $N_s = 50$ and 52 , respectively) and novel (Experiment 3, $N = 64$) social categories. Preschool-aged children were the most consistent in treating deontic properties as central: Knowing a person's social category membership was more informative about obligations than about behavioral frequencies or psychological preferences. Adults treated deontic properties as central to some categories but also recognized a set that was primarily predictive of psychological dispositions. The results argue for the significance of deontic properties in the development of social cognition.

From birth, most children are immersed in rich and varied interactions with social actors. Categories of social actors are likely among the earliest children form. By the time children are of preschool age they recognize many types of people, such as: mothers, females, adults, doctors, and neighbors. These social categories are extremely important in guiding interaction with people. Indeed, much of the research interest in social categories stems from their inordinate significance in social cognition. People tend to ascribe too much importance to social categories, expecting that members will be very similar in many ways. The current study explores the development of such expectations. What do young children assume about someone when they know to which social category the person belongs?

A traditional perspective on the development of social categories suggests a transition from behavioral/physical to more theoretical/abstract inferences (Livesley & Bromley, 1973). For young children, a person's social category predicts what the person will do or look like. For older children and adults, category membership is taken as informative about underlying causal features such as psychological traits or (quasi-)biological essences. The focus of the current study is an additional aspect of social categories, their deontic or prescriptive implications. Social

categories are informative not just about what people might do or look like, or about the attitudes and abilities they probably have, but also about what they *should* be like. This aspect of social categories is often described as role expectations (Linton, 1936). As roles, social categories encode what a person is allowed, obligated, or forbidden to do. When someone is identified as a "mother," we may expect she cares for and loves her child (behavioral and psychological properties). In addition, if someone is a mother then we expect she ought to care for and love her child. Although much research has explored the development of intuitions about behavioral, biological, and psychological (trait) properties associated with social categories, we know little about the development of role expectations. To what extent do young children associate deontic properties with social categories and how might such expectations change over development?

Research on the development of gender concepts indicates that deontic properties are an important part of young children's representations of some social categories. At least by the age of 3 or 4, children know the content of gender roles (e.g., Boys should not wear dresses. Blakemore, 2003; Kalish, 1998; Martin, 1999). Young children see features associated with male and female categories as prescriptive. For example, it is not just that boys and girls tend to, or prefer to, play with different toys; certain toys are supposed to be played with by one gender and not the other (for review see Martin, Ruble, & Szkrybalo, 2002).

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Counterstereotypic behaviors are interpreted as violations of norms, as well as violations of (statistical) expectations. Though this aspect of gender categories is well recognized, it is less clear whether deontic properties are a general part of social category representations or might be limited to special cases such as gender. Perhaps, children require extensive experience or socialization to associate deontic properties with social categories. One goal of the current study is to explore the significance of deontic properties in a broad set of social categories, both familiar and unfamiliar.

At least for adults, many social categories involve systems of rights, duties, permissions, and obligations. For example, to be a citizen of the United States is to have the rights and obligations constitutive of citizenship. Knowing that someone is a citizen allows the inference that he or she has those rights and obligations. Social categories may have biological or psychological implications, but most, if not all, also have role expectations. From knowledge that a person is a doctor, we might make behavioral predictions (e.g., wears a stethoscope), psychological predictions (e.g., is smart), and deontic predictions (e.g., is allowed to prescribe medicines). Research in person perception and stereotyping has tended to focus on adults' (at least in Western cultures) ready disposition to make psychological and trait inferences about social category members (Schneider, 2004). It is plausible that there is a corresponding disposition to make normative and role inferences as well.

The traditional claim would be that young children do not associate deontic properties with social categories because they focus exclusively on physical and behavioral properties (Aboud, 1984; Emler & Dickinson, 1993; Hoffner & Cantor, 1985; Watson, 1984). More recent research on development of person perception suggests that young children do go beyond physical properties. For example, children expect that social category members will share psychological properties (Gelman & Heyman, 1999; Heyman & Gelman, 2000a, 2000b). Heyman and Gelman (2000a, 2000b) find that social category membership may be taken as informative about ingrained underlying traits and motives. That a person is identified as a "carrot eater" implies more than just that the person frequently engages in some behavior (eating carrots). Rather the category label implies a drive or trait; the person loves to eat carrots. Diesendruck and haLevi (2006) found that young children would reliably project psychological properties by social category. Indeed, unlike adults, younger children preferred social categories over shared appearance or psychological characteristics as a basis of inductive inferen-

ces. A tentative conclusion from this literature is that preschool-aged children can make traits ascriptions, but they do not do so as readily or as confidently as older children and adults. For example, young children do not have strong expectations of consistency in people's psychological states across time (Kalish & Shiverick, 2002). Young children require more evidence and are slower to attribute traits than older children (Aloise, 1993).

What about roles and deontic properties? One hypothesis is that, like traits, deontic properties are not highly salient or significant components of young children's social categories. They may form role expectations in limited cases with significant input (e.g., gender), but in the main, social categories are organized around physical and behavioral properties. Our alternative hypothesis is that deontic properties are significant and salient components of social categories even for young children. Children will tend to expect that two members of the same social category share deontic properties. This expectation is not dependent on substantial specific experience and is not limited to just a few social categories. Beyond this very general hypothesis (people are disposed to infer deontic properties), we propose two more specific claims about the developmental significance of deontic properties in representations of social categories.

The first hypothesis is that deontic properties are preferred inferences from social categories. Specifically, people will be more confident that members of social categories share deontic properties than that they share psychological properties or specific behavioral tendencies. Although people take social category membership to be informative about personality traits and behaviors, predictions of deontic properties will be most secure. The preference for deontic over psychological inferences may be especially pronounced for young children. As noted in the literature (Ruble & Dweck, 1995), preschool-aged children seem not to conceive of people as possessing stable psychological traits and dispositions. Other research suggests that young children are more likely to focus on social rules than on psychological traits when explaining and predicting people's behavior (Kalish & Shiverick, 2004). In addition, research on inferences about gender categories indicates that deontic properties are very salient for young children (Martin et al., 2002). An absence of trait attributions has often been taken as evidence that young children do not represent motives and just attend to behaviors. Clearly, young children do understand individuals in psychological terms; they make ascriptions of beliefs, desires, and intentions (Wellman, 1992). Moreover, recent research indicates that young children do predict that social

category members will share psychological properties (Diesendruck & haLevi, 2006; Heyman & Gelman, 2000a, 2000b). Perhaps, these early inferences about psychological properties are tenuous and less reliable than inferences about deontic properties.

The second hypothesis concerns distinctions among different types of social categories. Specifically, we predict that young children will be less discriminating in the social categories expected to support deontic over psychological inferences than will older children and adults. Social categories are tremendously diverse. There is no clear boundary or taxonomy of social categories. From an adult perspective, some social categories primarily support inferences about psychological properties. That someone is "nice" or "a genius" indicates they have certain psychological qualities. Deontic expectations about generous people and geniuses are less secure; it is not clear what people are obligated or forbidden to do as a consequence of being generous. At the same time, adults likely recognize that though it is possible to infer psychological properties from membership in role categories (e.g., the national character of American citizens), deontic inferences are the more reliable in such cases. A plausible developmental hypothesis is that young children expect all social categories to support the same kinds of inferences. One possibility is that young children lack certain conceptual resources to distinguish among types of social categories (e.g., do not represent a categories organized around personality traits). Alternatively, intuitions that different properties are projectable from different kinds of categories may be acquired with more social experience.

The hypotheses offered concern representations of social categories. In evaluating these hypotheses, it is necessary to select some specific instances to test. The tests are significant only to the degree that the categories included are representative of the population of social categories. However, there are no established criteria for selecting representative instances in tests of category structure (see Kalish, 2002, for discussion). The experiments in the current study address concerns about representativeness in two ways. One strategy is to use empirical methods to select items. Language corpora and age of acquisition norms provide information for selecting social category stimuli. Property selection was informed by a property-listing pilot study. These methods are not definitive (e.g., few social categories appear in acquisition listings, people do not always list very common properties) and provide only heuristic guidance. A second strategy was to use novel properties and categories. When presented with an unfamiliar social

category, do people assume deontic properties are central? One way to make the argument that deontic properties are generally important to social categories is to show that the association is expected to hold for new cases with minimal exposure.

A second complication is specifying the nature of the association between social categories and deontic properties. Our hypotheses are framed in terms of centrality: That category membership predicts deontic properties implies the properties are central. All experiments use a common method: The task is to decide which of two people is more likely to be a member of a given social category. Potential members are described as possessing differing sets of properties (e.g., behavioral, psychological, and deontic). The logic of the design is that if membership in social category X predicts possession of property Y, then people who have property Y should be more likely to be members of category X than those who lack property Y. If I believe that mothers are loving, then someone who is not loving is unlikely to be a mother. The standard method for assessing centrality is to ask whether category membership is unlikely given absence of the property (Keil, 1989; Keil & Batterman, 1984; see Sloman, Love, & Ahn, 1998). For example, if all you know about a person is that they are not female, then you can be confident they are not a mother because femaleness is a central property of the category.

As our research questions concern the relative centrality of different properties, the comparative judgment involves the likelihood of category membership given different properties. For example, is a person lacking a deontic property less likely to be a category member than a person lacking a psychological property? If so, then the deontic property is more central than the psychological one (see Keil & Batterman, 1984). In this, and any other comparative design (e.g., Gelman & Markman, 1986), it is not clear whether participants are looking at evidence for one way of categorizing or at evidence against the alternative. Though our method does involve centrality judgments, responses may also be affected by diagnosticity or the degree to which properties are predictive of category membership. Diagnosticity and centrality are the two ways properties may be significant for categories (cue and category validity, respectively). The more conservative interpretation of the tasks is that they assess the significance of various types of properties in representations of social categories, without definitively identifying the contributions of centrality and diagnosticity.

The overall hypothesis is that deontic properties are important elements of social categories and are

especially important in young children's representations. Experiment 1 explores the significance of familiar properties for familiar social categories. Experiment 2 explores whether novel information about familiar categories is interpreted in deontic or in psychological terms. Upon learning that category membership is associated with some novel behavior, are people more likely to infer that members share a psychological trait or an obligation motivating the behavior? Finally, Experiment 3 explores intuitions about novel categories. Are members of unfamiliar social categories expected to share psychological traits or role-based obligations? Experiment 1 was designed to be the least demanding for young children (familiar items, low memory load) but was also the least definitive. Experiments 2 and 3 introduced more complexity (novel items, both positive and negative exemplars) but address concerns about interpretation and representativeness.

Experiment 1: Deontic, Psychological, and Behavioral Properties in Familiar Categories

In adults' representations of social categories, typical behaviors are often understood as consequences of more fundamental attributes. A generous person might be expected to show the behavior of sharing, but it is the underlying personality trait of generosity that is central and most reliably projected from membership. A generous person might not share often (if they are poor). For young children, the behavior of sharing may be as central as the motive for a social category like "generous." As discussed earlier, deontic properties or role expectations are another kind of central property that can account for typical behaviors. Thus, there are at least three alternatives for the centrality structure of social categories: engagement in some behaviors may be central, having certain psychological motives may be central, or having certain role expectations may be central. Experiment 1 assessed these alternatives by asking which type of feature was seen as the most reliable consequence of category membership.

The primary focus of Experiment 1 was to ask whether children and adults would generally treat deontic properties as central to social categories. At the same time, it is interesting to ask whether children and adults see the same kinds of properties as central to the same kinds of categories. Categories included in the experiment were provisionally grouped into different kinds, notably those organized around psychological properties (designated "personality" categories) and those that are not ("nonpersonality" categories). We hypothesized that young children

would show a less clear-cut distinction between the two types of categories than would older participants.

Method

Participants. Twenty adults, 15 older children ($M = 8.2$; range = 7.4–8.8), and 15 younger children ($M = 5.3$; range = 4.3–5.8) participated in Experiment 1. All participants were from the same predominately White medium-sized Midwestern, U.S. city. Adults were college students receiving course credit for participation in experiments. Children were recruited from private and university-affiliated childcare centers. No participant was included in more than one experiment reported here.

Design. Each participant responded to a set of 12 items. An item in the experiment presented two (unnamed) individuals each described using a single property. The participant selected which description was most likely to characterize a category member. The categories of actors were drawn from language corpora including age of acquisition norms (Bird, Franklin, & Howard, 2001; Wilson, 1988) and validated by pilot testing. An important constraint is that only categories labeled with common nouns were considered. We made a primary distinction between personality and nonpersonality categories. Personality categories are identities based on intrinsic psychological qualities or on motivated behaviors (things someone chooses to do). For example, a "show-off" is someone with the psychological quality of exhibitionism. A consequence of the decision to limit stimuli to nouns was that the set of personality categories was skewed toward items with negative valence. At least in English, nouns designating personality traits tend to be negative; there are very few noun antonyms for "a bully," "a jerk," or "an idiot." The goal in selecting terms was not to create an exhaustive or definitive set but rather to include a broad range. Appendix A lists the specific categories included.

Preschool-aged children in a pilot study generated properties associated with the social categories. When available, we used the modal property generated as the content of items in Experiment 1. For instance, the content "help(s) people when they are sick" was associated with doctor (see Appendix A for list). Property content appeared in one of the three forms: frequency, deontic, and psychological. Frequency properties described something that the person usually does. Deontic properties were described as something a person had to do. Psychological properties were something the person liked to do. Thus, an individual might be described as someone who: "usually helps people," "has to help people," or "likes to

help people” when the task was to select which description was likely true of a doctor. Each item involved a pair of properties: frequency–deontic, frequency–psychological, deontic–psychological. All property combinations were randomly assigned with the condition that each of the three property combinations appeared equally for each participant.

Materials and procedure. Each item was introduced with a generic silhouette of an adult. Silhouettes were randomly paired with properties and categories. Participants were told, “This person <likes to, has to, usually> <property>.” Participants were then shown a different card with the identical silhouette and told “This person <likes to, has to, usually> <property>.” After participants were given evidence about each actor, they were then asked which person they thought was the member of the social category in question. Children were interviewed individually in a quiet location at their school/day care. Adults participated on individual computers in groups of 12. The procedure lasted approximately 10 min.

Results

Figure 1 presents the proportions of times characters ascribed deontic, psychological, and frequency properties were selected as the category member depending on the type of category and type of contrasting property. As the type of property selected likely depended on the particular contrast presented, we did not combine responses into global deontic, psychological, and frequency “scores” (e.g., for an analysis of variance [ANOVA]). Rather, we consid-

ered each type of comparison on its own. Personality and nonpersonality categories were predicted to have different centrality structures. These two types of categories were analyzed separately.

Unless otherwise reported, all pairwise comparisons are two-tailed tests. Familywise error was controlled using Holm’s procedure. For nonpersonality categories, younger children and adults reliably chose deontic properties over psychological ones, $t(14) = 3.8, d = .90, p < .01$, and $t(19) = 6.8, d = 1.4, p < .001$, respectively. Older children did not show a reliable preference, $t(14) = 1.3, ns$. Older children did reliably select deontic properties over frequency properties, $t(14) = 2.8, d = .64, p < .05$; adults and younger children did not. Adults selected frequency properties over psychological properties for nonpersonality categories, $t(19) = 4.2, d = .87, p < .01$. Children did not reliably favor frequency properties.

Analyses of personality categories lack power because of the small number of items; each participant contributed only one judgment for each comparison (deontic vs. psychological, etc.). Only adults selected psychological properties more often than deontic (19 of 20, $p < .001$, sign test). Adults were also more likely to select frequency than deontic properties (18 of 20, $p < .001$, sign test). There was no reliable preference for psychological over frequency properties (12 of 20). Older children were more likely to select deontic over psychological properties (12 of 15, $p < .05$) and did reliably choose psychological over frequency properties (13 of 15, $p < .05$). Younger children did not reliably select psychological properties but neither did they

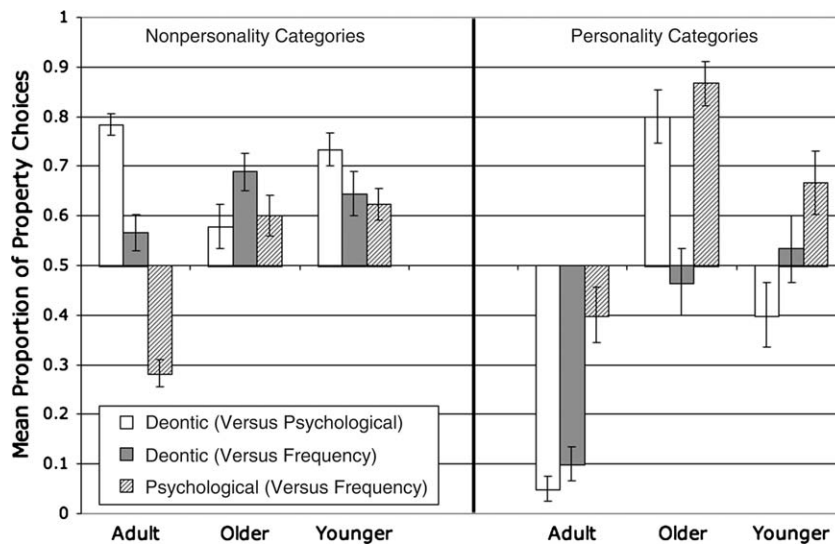


Figure 1. Mean proportions of property choices by alternative and category type: Experiment 1. Note. Error bars represent 1 SE.

prefer deontic properties (as they had for other categories).

The results provide support for the hypothesis that people find deontic properties central for at least some social categories. Although we made an a priori distinction between psychological and nonpsychological categories, it is apparent that there is significant variation within the set of nonpsychological categories. Responses for individual items are presented in Appendix A. The task design precludes reliable analyses of individual item differences: Only one third of the participants saw each property contrast for each item. Collapsing across all three age groups does provide a reasonable number of responses ($N = 33$). The chance probability of selecting the deontic property description in each instance is .5 (all items were forced choice between two options). For seven categories, the rates of deontic property selection were greater than would be expected by chance (pet owner, doctor, girl, adult, teacher, driver, neighbor, all $p < .05$, binomial theorem). This analysis is affected by the low correlation between item responses across age groups (less than .2 on average). Within each age group, we considered the number of categories for which deontic selections were the most frequent (vs. frequency or psychological, chance probability = .33). For young children, deontic selections were most frequent for eight of the nine nonpsychological categories, all but brother, $p(8 \text{ or more of } 9) < .001$ binomial distribution. For older children, the rate was six of nine, not brother, girl, or friend, $p(6 \text{ or more of } 9) < .05$. Adults were even less consistent in selecting deontic properties: five categories of nine, not adult, driver, friend, or neighbor, $p(5 \text{ or more of } 9) = .14$.

A final set of analyses considered individual patterns, again looking only at nonpsychological categories. Each participant had six opportunities to select each type of property. A participant who selected a given property on five or six of the six opportunities was considered to have done so reliably ($p = .11$). Seven of the 15 younger children reliably selected deontic properties ($p < .001$, second-order binomial test). Seven older children and 7 (of 20) adults also showed this pattern. No young child reliably selected psychological properties and only one reliably selected frequency properties. Three older children reliably selected psychological properties none reliably selected frequency properties. No adults reliably selected psychological properties and two reliably selected frequency properties.

Discussion

The focus of Experiment 1 was the relative significance of deontic, psychological, and behavioral prop-

erties. The general hypothesis was that people would treat deontic properties as central to many social categories. This hypothesis was supported; at least for some categories, deontic properties were selected over frequency or psychological properties by participants in all age groups. Although people often mention psychological properties and behaviors when asked to characterize social categories, the results of Experiment 1 suggest that deontic properties are seen as the more secure inference from category membership.

More specific hypotheses addressed in Experiment 1 concerned developmental and content differences in centrality. There was some support for the hypothesis that deontic properties are more central for preschool-aged children than for school-aged children or adults. As a group, younger children selected deontic properties most consistently across categories. Moreover, deontic properties were the only ones young children reliably treated as more central than other properties. In contrast, there were cases in which adults judged deontic properties as less central than others. Frequency properties were also central for school-aged children and adults.

Content differences were apparent among the social categories included in Experiment 1. There was some support for the hypothesis that younger children would make less clear-cut distinctions among categories than older participants. Different response patterns were apparent across categories in all age-groups. For younger children, deontic properties were more central for nonpersonality categories, but they showed no consistent pattern in centrality judgments for personality categories. As predicted, adults viewed psychological properties as more central than deontic for personality categories but showed the reverse for nonpersonality categories. Older children's responses were more difficult to interpret. Their pattern was almost the reverse of younger children's and adult's. Deontic properties were more central than psychological for personality categories, but not for nonpersonality. These category-type differences must be interpreted with caution because of the small number of participants and items.

One possible explanation for the low centrality of psychological properties among older participants in Experiment 1 is that the method manipulated only positive information about properties. We did not explicitly state that a character possessing one property lacked the others. Thus, participants may have inferred that someone who frequently engages in a behavior also likes to, or is obligated to, engage in that behavior. Experiments 2 and 3 address this possibility by providing information both about the presence and absence of properties.

Experiment 2: Novel Properties

The results of Experiment 1 are consistent with recent claims that preschool-aged children's social cognition goes beyond appearances and overt behaviors. On this perspective, when people notice a behavior associated with a social category they infer some underlying cause or motive for the behavior. If deontic properties are central to representations of social categories, then behaviors of members may be taken to reflect the rights and obligations associated with the category. Alternatively, if psychological properties are central, then behaviors will be understood to reflect shared traits or personality dispositions.

Suppose one observes a category member engage in a novel behavior. Given the inductive potential of social categories, the observation warrants the inference that another category member may also engage in the same behavior. Beyond the behavioral judgment, people may also infer that motives explaining the behavior are shared. One could learn not just that category members "do X" but also that they "like to X" and/or "are supposed to X." The specific hypothesis explored in Experiment 2 is that behaviors will be taken as indicative of deontic properties. Especially for young children inferences to deontic properties may be more compelling than those to psychological properties. The focus of Experiment 2 was whether people showed reliable tendencies to interpret behaviors displayed by category members in deontic or in psychological terms.

Experiment 2 also addresses some limitations in the design of Experiment 1. As discussed previously, it is valuable to be explicit both about the presence and the absence of properties. In Experiment 2, participants were told about a novel behavior of a target category member and asked to choose which of two candidates was also a category member: someone who likes to do the same thing but is not allowed to, or someone who has to do the same thing but does not like to? This method directly tests whether people give more weight to deontic or psychological properties in their inferences about category members.

In Experiment 1 limiting the personality categories to those labeled with nouns resulted in a potentially atypical set. For example, two of the personality categories had a more negative valence than the other categories. There are no behaviors that one is obligated to perform in virtue of being a loudmouth or show-off because one should not be in those categories. An attempt was made to select personality characteristics for which associated behaviors could, plausibly, be normative. Indeed, a significant proportion of older children selected deontic properties

even for personality descriptors. Nonetheless, research suggests that valence is a critical element of children's social judgments (Alvarez, Ruble, & Bolger, 2001). One way to avoid some of the concerns about valence is to include social categories labeled with adjectives.

An additional concern about Experiment 1 is that the modal term "has to" is ambiguous. It could be taken to refer to some sort of psychological compulsion (e.g., akin to addictive behavior). By including a more clearly deontic contrast in Experiment 2, "not allowed to," we can be more confident that judgments reflect participants' intuitions about the significance of obligations and role expectations.

Method

Participants. Twenty adults (undergraduates), 16 older children ($M = 8.0$; range = 7.2–8.8), and 16 younger children ($M = 4.7$; range = 4.2–5.3) participated in Experiment 2. Participants were recruited from the same populations as participants in Experiment 1.

Design. Participants learned about novel behaviors associated with social categories and then made category judgments based on psychological or deontic motives for the novel behaviors. Items were constructed for 18 social categories (see Appendix B for categories included). The major change from Experiment 1 was inclusion of three adjectives denoting personality traits (*shy*, *nice*, and *smart*). Additional items were selected to represent diverse kinds of social categories. Specifically, we included three categories that could plausibly be interpreted as characterizing a behavioral disposition independent of motives (actor, football player, and swimmer; all swimmers swim, but they may have different motives). Each item introduced a target character identified as a member of a social category (e.g., "This is John. John is a doctor."). A novel behavior was introduced and associated with each category. For example, one property was introduced as follows: "Because he is a doctor he does something called 'folaxing.' Doctors folax a lot. Part of being a doctor is folaxing." After checking for memory and comprehension of the story (for children), two test characters were introduced. For 15 experimental items, the two test characters were ascribed opposing preferences and obligations. Thus, one character was identified as liking to engage in the novel behavior but was "not allowed" to do so. The other character was required to do the behavior but did not like to. The participant's task was to identify which of the two test characters was a member of the same social category as the target character (e.g., "Which one is also a doctor?"). Three

control items did not present conflicts between psychological and deontic properties. For instance, participants chose between someone who “likes to folax and has to folax” versus someone who neither likes to nor is allowed. These items were included to ensure that participants would attend to both pieces of information about the test characters (i.e., would not assume properties conflicted).

Materials and procedures. Except for the content of the items and questions, the materials and procedures used in Experiment 2 were the same as those of Experiment 1. All items were presented in random order.

Results

For each experimental item, participants could either select the character matching on deontic property or the character matching on psychological property. Figure 2 presents the mean frequency of deontic property selections. Across items, participants at all ages were more likely to select characters matching on deontic properties than those matching on psychological properties: adults ($M = 0.82$), $t(24) = 8.2$, $d = 1.6$, $p < .001$; older ($M = 0.66$), $t(15) = 4.0$, $d = 1.0$, $p < .005$; younger ($M = 0.67$), $t(15) = 4.1$, $d = 1.0$, $p < .005$. Similarly, at all ages, rates of deontic selection were greater than that expected by chance for nonpersonality categories. Older children selected deontic properties for personality categories at rates significantly greater than chance as well (see Figure 2).

Item and age effects on deontic selections were tested using an ANOVA with three levels of age (between subjects) and two levels of category type (within subjects, personality, and nonpersonality).

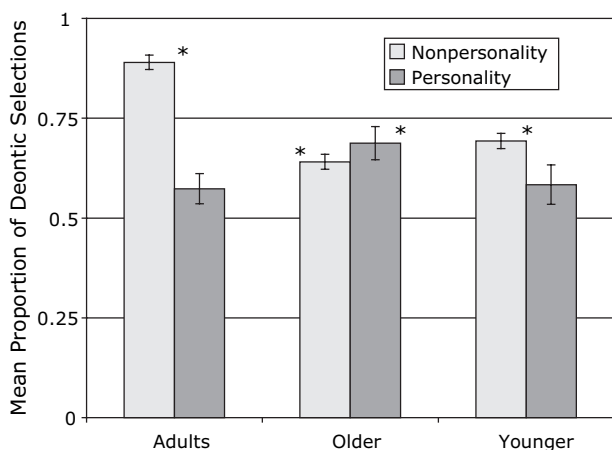


Figure 2. Mean proportions of deontic property selections by category type: Experiment 2.

Note. Error bars represent 1 SE.

* Indicates mean significantly greater than chance (.5), $p < .05$ (two-tailed t tests).

Both main effects were significant, as was the interaction. Adults were more likely to select deontic properties than were either group of children, who did not differ ($p < .05$, Tukey’s honestly significant difference [HSD]). Analysis of simple effects revealed that the effect of category type was significant only for adults, $F(1, 54) = 22.3$, $p < .001$. Adults were less likely to select deontic properties for personality categories than for other categories ($p < .05$, Tukey’s HSD).

Though participants at all ages generally selected deontic properties for nonpersonality categories, it is also apparent that there was variability across categories (see Appendix B for individual item scores). For each category, it is possible to test whether a significant number of participants selected the deontic property over the psychological property (chance probability for a single participant = .5). All categories except personality ones generated reliable deontic selections for adults (fewest participants = 20 of 25 for girl and teacher, $p < .005$, binomial theorem). Older children reliably selected deontic properties for the fewest categories (only smart, bus driver, doctor, and neighbor, generated deontic selections for 12 or more of the 15 participants, $p = .04$). Six categories generated reliable deontic selections for younger children (girl, neighbor, bus driver, king, teacher, and wife). As expected, deontic properties were not generally treated as central for personality categories. Of the remaining categories, those a priori identified as behavioral also tended not to generate deontic selections.

A final set of analyses considered individual patterns. Each participant responded to 15 experimental items. A general pattern of selecting deontic over psychological properties for 11 or more items would be expected with a chance probability of $p = .059$. Nineteen (of 25) adults, 6 (of 16) older children, and 8 (of 16) younger children showed the deontic pattern on these criteria.

Discussion

The results of Experiment 2 support and extend the findings regarding the centrality of deontic properties from Experiment 1. In Experiment 2, people judged novel deontic properties to be more central to category membership than novel psychological properties. In addition, the results suggest that people tend to interpret information about social categories in deontic terms. Participants learned about novel behaviors associated with category membership. The behaviors were introduced without information about causes or motives. From evidence that members of a social category engage in some behavior,

people reliably inferred that membership conferred an obligation to engage in the behavior. In contrast, inferences from behaviors to psychological motives (liking) were less reliable. The general pattern held across the three age groups included in the experiment.

Patterns of age and item differences were broadly consistent across Experiments 1 and 2. Older children again showed the anomalous pattern of treating deontic properties as more central for categories of personality traits. Younger children and adults did not interpret behaviors in psychological terms for these categories either. That nice people engaged in some behavior did not imply that nice people like to do so. Item analyses suggested that deontic properties may be somewhat less central for behavioral categories (e.g., "swimmer"). Only adults showed a statistically significant distinction between the different types of categories (personality vs. others). This finding supports the hypothesis that children would make less clear-cut distinctions between the centrality structure of social categories than would adults. The other hypothesis, that deontic properties would be more central for young children than for older children and adults, was not supported. Adults showed the highest rates of ascribing centrality to deontic properties. In part, this may reflect a larger element of error or random responding in young children's performance.

Experiment 3: Novel Categories

The general conclusion from Experiments 1 and 2 is that deontic properties are treated as central to social categories. A somewhat surprising finding is that psychological properties were not treated as particularly central even by adults and even for personality categories (e.g., trait labels). One explanation is that the stimuli in Experiments 1 and 2 may be non-representative or biased in some way. Only a few personality categories were included in each experiment, and it is difficult to argue they were representative. Moreover, the particular properties associated with categories may have been inappropriate. For example, it could be that some psychological properties are central to personality categories but just not the specific properties probed. Even in Experiment 2, which used novel properties, psychological attributes were always characterized as preferences (what a character "likes"). Although preferences are key psychological constructs, and the basis of many trait concepts (Yuill & Pearson, 1998), they may not be central to the specific categories selected. One response to this concern is to explore intuitions about

novel social categories. When first learning about a social category do people expect psychological or deontic properties to be more central?

The question addressed in Experiment 3 is whether people have reliable default expectations about the centrality structure of social categories. A specific hypothesis is that young children will be especially likely to treat deontic properties as central. A second hypothesis concerns distinctions among social categories. In selecting stimuli for the prior experiments, it became evident that most of the paradigmatic labels for personality categories were adjectives (e.g., trait terms), whereas most, if not all, of the terms for role categories were nouns. Research on personality types (e.g., the Big 5) relies heavily on adjective labels (e.g., Goldberg, 1992). Andersen and Klatzky (1987) suggest a distinction between traits, which refer to specific personality attributes, and social categories, which involve more organized stereotypes; the former tend to be represented by adjectives, the latter by nouns. This observation motivates the hypothesis that psychological properties will be treated as central for novel categories labeled with adjectives, whereas deontic properties will be treated as central for novel categories labeled with nouns. Combining these two hypotheses leads to the prediction that young children will treat deontic properties as central to both novel noun and adjective categories, whereas adults (and perhaps older children) will show a differentiated pattern of treating deontic properties as central to noun categories but psychological properties as central to adjective categories.

Although we predicted that young children would be less discriminating in their representations of social categories than would adults, there is evidence that even quite young children attend to the linguistic form of social category labels. Gelman and Heyman (1999) found that preschool-aged children were more likely to ascribe a stable trait-like disposition when attributes were described using noun (e.g., "a carrot eater") rather than verb phrases (e.g., "eats carrots whenever she can"). Spanish-speaking children are sensitive to different forms of the verb "to be" indicating persistent versus transient properties (Heyman & Diesendruck, 2002). Thus, it is an open question whether children will assume that the same kinds of properties (deontic or psychological) are central to all unfamiliar categories.

In addition to varying the type of label provided for categories, Experiment 3 also characterized properties using a variety of deontic modal terms. In Experiments 1 and 2, obligations were described by a narrow range of modals: "has to" or "is not allowed to." Deontic properties in Experiment 3 included different modals

indicating permission (“allowed to”), obligation (“supposed to”), and prohibition (“not allowed to”).

Method

Participants. Twenty adults, 22 older children ($M = 8.1$; range = 7.2–8.8), and 22 younger children ($M = 4.7$; range = 4.3–5.8) participated in this study. Participants were recruited from the same populations as participants in Experiment 1.

Materials. For the children, all items were presented on 5 × 8 in. index cards. Each card depicted the actors being described. Target characters were shown engaged in the activity characteristic of their novel category (e.g., feeding pigs). Test characters were depicted with no context or action. All depictions were colored line drawings. Adults received the same information but read the instructions and responded on computers.

Design and procedure. Children were interviewed individually. Adults participated in a classroom using individual computers. Each participant responded to eight requests to project novel labels. Each item involved a target character described by a deontic property (e.g., something the person was/was not allowed or supposed to do) and a preference (e.g., something the person liked or did not like to do). For the novel items, the target character was identified using a novel label: half the labels were nouns and half were adjectives. Each item was followed by a description of two test characters: one who had the same deontic property but the opposite psychological property as the target and one who had the same psychological property but the opposite deontic property as the target. After the descriptions of the two tests, participants were asked which would share the same label as the target. Two items used familiar labels as checks for random responding. These items provided behavioral descriptions of target characters consistent with the ascriptions of “rich” and “smart.” Appendix C presents a complete list of the items. Following is an example of one of the items used.

This boy is very tottrully (is a tottruw). He has to feed the pigs every morning. The boy is always happy to feed the pigs each morning. He is the most tottrully kid (the only tottruw) in the family.

- This boy has to feed the pigs every morning. He is always sad to feed the pigs in the morning.
- This boy is always happy to feed the pigs every morning. He does not have to feed the pigs.

Descriptions were blocked by label type. Order of presentation was randomized, with the only exception that one familiar item appeared last in a block. The procedure lasted approximately 10 min.

Results

Responses were scored a 1 for deontic-consistent responses (target sharing the same obligation/permission would share the same label) and a 0 for psychological-consistent responses (target sharing the same likes or emotional reactions would share the same label). Overall, children at both ages were correct on over 90% projections for familiar labels. As indicated in Figure 3, adults reliably matched novel adjectives with psychological properties and novel nouns with deontic properties. This pattern of performance is consistent with the part of speech predictions. As predicted, young children were more likely to project nouns by shared deontic property than by shared psychological property. However, there was no consistent difference for adjectives. Older children’s projections did not differ from chance in either label condition; type of property label had no consistent effect for these children.

A 3 (age) × 2 (label type) ANOVA revealed a main effect of age, $F(2, 61) = 4.5, p < .05$; post hoc analyses revealed that overall young children made more deontic-consistent responses than older children and adults (Tukey’s HSD, $p < .05$). There was also a main effect of label, $F(1, 61) = 37.3, p < .0001$. Overall, participants made more deontic projections for nouns. However, the effect of label was conditioned by an Age × Label interaction, $F_s(2, 61) = 11.22, p < .0005$. Adults projected nouns according to

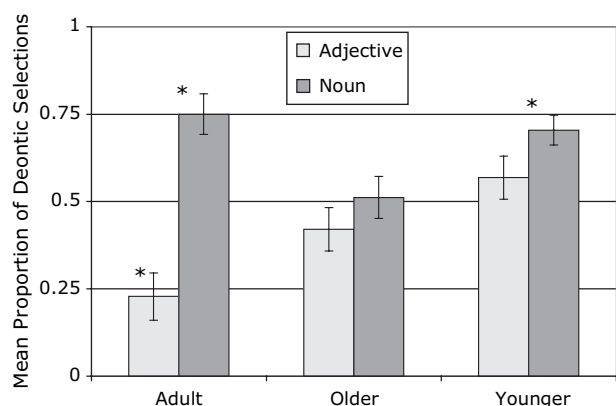


Figure 3. Mean proportions of deontic property selections: Experiment 3.

Note. Error bars represent 1 SE.

* Indicates mean significantly greater than chance (.5), $p < .05$ (two-tailed t tests).

shared deontic property more often than adjectives, $F(1, 61) = 50.1, p < .0001$. Neither older nor younger children showed a consistent label effect, $F_s(1, 61) = 1.7$ and 3.8 , respectively, both $p_s > .05$. Again, adults showed the predicted interaction between label type and property centrality. Children did not distinguish between categories labeled with nouns and adjectives.

A second step in the analyses explored individual patterns of responding. Each participant projected four nouns and four adjectives. The small number of items does not allow for a sensitive significance test. Thus, this analysis used second-order binomial tests. Table 1 presents the number of participants showing each of three patterns of responses. The deontic-based and preference-based patterns were defined as 75% or more responses using a single basis for projections, $p(6 \text{ or more of } 8) = .14$. The differentiated pattern was defined as at least three of the four adjectives projected by preference and at least three of the four nouns projected by deontic property, $p(3 \text{ or more of } 4) = .31, .31 \times .31 = .10$. In each age group, there was one modal response that occurred at rates greater than expected by chance. Adults showed the differentiated pattern. More younger children showed the deontic pattern than would be expected by chance. For older children, the preference pattern was the modal response and was shown more frequently than expected by chance. The individual pattern analyses confirm and extend the findings of the group analyses. Adults showed the predicted label by property interaction. Younger children did not; deontic properties were most likely to be judged central for all categories. The novel result of the individual analyses is that a significant number of older children used psychological properties as the preferred basis for extending novel category labels.

A final set of analyses explored differences in item content. The deontic properties used in the character descriptions varied; some involved permission (what a character was allowed to do); others involved

obligation (what a character had to or could not do). Younger children's projections were sensitive to deontic type. They projected labels (both adjective and nouns) based on shared obligations at rates greater than chance ($M = 0.67$), $t(22) = 3.6, p < .05$, but did not differ from chance for permission properties ($M = 0.53$). There were no significant differences between deontic types for older children or adults. At no age were there differences between the various modals indicating obligation ("has to," "supposed to," "not allowed to"). Preference information was either positive (something the character likes or feels happy about) or negative in valence. There were no reliable valence differences in use of preference information. Although male and female participants did not differ in the likelihood of deontic projection, there was an effect of actor gender. Older children projected by deontic properties more often for female than for male characters ($M_{\text{female}} = .55, M_{\text{male}} = .34$), $t(21) = 2.6, p < .05$. These children showed a reliable tendency to focus on preferences when labeling males, comparison versus chance, $t(21) = 2.6, p < .05$. As the analyses of modal and story character gender were unplanned comparisons, these results should be interpreted as suggestive only.

Discussion

Overall, the results of Experiment 3 are consistent with our major hypothesis: Young children tended to see shared deontic properties rather than shared psychological properties as the most reliable inference from category membership. These children did show the deontic pattern more consistently for nouns, but there was no reliable part of speech difference. The modal response pattern was to treat deontic properties as more central than psychological properties across all items. Adults also recognized deontic properties as most central to at least some novel social categories. Somewhat surprisingly, older children were largely at chance. Unlike other participants, many older children extended all labels (both nouns and adjectives) based on shared preferences.

The results from Experiment 3 also support the secondary hypothesis that young children have less differentiated understandings of the centrality structure of social categories than do adults. Neither younger nor older children reliably distinguished between categories labeled with adjectives and those labeled with nouns. In contrast, adults showed a differentiated pattern; psychological properties were more central to adjectives, deontic properties more central to nouns. Exploratory analyses suggested that factors other than the type of label may affect

Table 1
Number of Participants Showing Response Patterns, Experiment 3

	Norm based	Preference based	Differentiated	Total number of participants
Adult	2	3	11 ^a	20
Older	3	7 ^a	4	22
Younger	10 ^a	1	2	22

^aA participant was considered to have shown a pattern if 75% or more responses were consistent with the pattern. These rates of patterns differ from chance $p < .05$, second-order binomial test.

children's judgments of centrality. Younger children were more likely to see obligations than permissions as central. Older children attended to the gender of the actor. At least for male characters, the most reliable inference was that two people in the same social category would share the same preferences (there were no consistent patterns for female characters). One possibility is that children do not simply have less differentiated representations of social categories than do adults, but rather they make different kinds of discriminations. One important direction for future research is to explore the specific factors that determine the relative centrality of different types of properties in young children's social categories.

General Discussion

Even for young children, representations of social categories involve more than just associated behaviors. The person perception literature often describes a shift from behavioral to more psychologically based representations. The novel perspective offered by the current study is that deontic properties are also salient and important organizers of social categories; category membership involves role expectations of prescribed behaviors. The specific hypothesis was that deontic properties would be more central in children's representations of social categories than psychological or behavioral properties. This hypothesis was supported in each of the experiments reported above.

Experiment 1 explored intuitions about feature centrality for a range of familiar social categories. For most categories, children viewed deontic properties as the most reliable inferences from category membership. The youngest children were most consistent in weighting deontic properties over psychological and behavioral ones. Experiment 2 revealed a similar pattern of judgments about novel properties. A novel behavior associated with a social category was likely to be interpreted as reflecting a central deontic feature of category membership. That doctors "folate" warrants the inference that doctors have an obligation to do so (more strongly than the inference that they have a preference to do so). Finally, Experiment 3 examined projection of novel social categories. Young children consistently interpreted novel labels as indicating shared deontic properties (rights and obligations) rather than psychological preferences. Although there was variation across items and tasks in the consistency of centrality judgments for deontic properties, for young children it was only deontic properties that were treated as more central

than others. That is, in some cases, young children showed no centrality distinctions or chance-level performance. However, nondeontic properties were never distinguished as more central: Only deontic properties were ever rated as more central than others in young children's judgments of social categories.

The three experiments reported above support our central hypothesis that deontic properties are important elements of young children's representations of many social categories. Young children will readily associate deontic properties with social categories: Novel behaviors are interpreted deontically and novel social categories are assumed to organize around deontic commitments. The results are also suggestive with respect to our two more specific hypotheses: (a) deontic properties are central generally or to a wide range of social categories and (b) deontic properties are especially central and significant early in development. The current study represents an initial exploration of these questions. Future research is needed to establish the extent and limits of these effects.

One issue for future research is distinguishing between the centrality and the diagnosticity of deontic properties for social categories. As noted in the Introduction, though we interpret the experiments in terms of intuitions that category members are likely to display a certain property (centrality), responses may also reflect intuitions that individuals with particular properties are likely to be category members (diagnosticity). These intuitions are difficult to distinguish and are systematically related (e.g., in Bayes's theorem). We suggest that at least the familiar deontic properties in Experiment 1 were not highly diagnostic (e.g., having an obligation to take people places is not strongly predictive of being a bus driver). In Experiments 2 and 3, participants received information only about category members: Assessments of diagnosticity require information about nonmembers as well. Nonetheless, it remains a matter for future research to distinguish the centrality and diagnosticity of deontic properties for social categories.

The developmental implications of the study are somewhat unclear, especially because of the variable results with school-aged children. We suggest the data are at least consistent with the following developmental account. From the existing literature in social cognition, we know that traits and psychological motives are not particularly salient for preschool-aged children, become evident in young school-aged children's thinking, and take on increasing significance in adults' judgments about social categories (see Ruble & Dweck, 1995). Thus, young children may have treated deontic properties as central because there were no strong competitors in the stimuli.

School-aged children showed considerable variability across the three experiments. Consistent with past research (Kalish & Shiverick, 2004; Newman, 1991), there was some evidence that older children gave more importance to psychological properties than either younger children or adults (i.e., in Experiment 3). In judging centrality for familiar categories, though, older children seemed to show a general reliance on deontic properties. For example, older children, but not younger or adults, judged deontic properties as central to personality categories. One possibility is that older children's emerging attention to traits affects how they learn about new categories but has less influence on their representations of familiar categories. It may be that school-aged children are just coming to appreciate the significance of psychological properties (e.g., traits), and the limitations of roles, but have not consolidated that knowledge into a reliable set of distinctions. Finally, adults showed the clearest differentiation among social categories. For instance, in Experiment 3, novel adjectives were assumed to label personality attributes, but novel nouns assumed to label deontic relations. By adulthood, people have worked out or acquired a set of consistent intuitions about the significance of deontic and psychological properties for a variety of social categories.

There has been considerable debate over the claims that young children do not or cannot make trait ascriptions (Gelman & Heyman, 1999; Kalish & Shiverick, 2004; see Ruble & Dweck, 1995). The current study does not bear directly on this issue; the data are consistent with demonstrations that traits are not salient for young children but do not imply that they cannot understand or associate psychological traits with categories. The results do tell against one class of developmental claims. Deontic properties seem no less complicated, abstract, or conceptually sophisticated than traits or psychological properties. That young children associate the former with categories suggests that general conceptual or information processing demands are not limiting their use of the latter (cf. Costanzo & Dix, 1983). There may be domain-specific developments underlying trait ascriptions (e.g., theory of mind; Kalish & Shiverick, 2004; Wellman, 1992) that are different for deontic properties.

Our claim is that deontic properties are significant across a range of social categories. By using novel categories, Experiment 3 may make this point most effectively, but stimuli in Experiments 1 and 2 included a diverse set of categories. At the same time, item differences were apparent, although the experiments were not designed to assess such differences

and analyses were underpowered. We did make a primary distinction between psychologically based categories and a larger and more diverse set of categories for which deontic properties were central. An important direction for future research is to explore those distinctions further. Just which categories centrally involve deontic properties, and do intuitions about those categories change with development? In the remainder of this discussion, we consider some of the factors that could inform such future work.

Many aspects of people's behavior are best explained and predicted with reference to obligations and permissions associated with social category membership. Why did the waiter bring the customer's food, and what licenses the prediction that the customer will later pay the bill? In their roles as waiter and customer the social actors possess deontic properties: Waiters are supposed to serve food, and customers are supposed to pay. For such role categories, the centrality of deontic properties is apparent (Linton, 1936). Other properties associated with the categories (e.g., preferences and frequent behaviors) are less secure inferences. Roles and deontic properties can be identified as components of scripts; the restaurant script contains the roles of waiter and customer (Hudson, 1993; Nelson, 1978). Scripts are often characterized as theory-lean empirical generalizations (Carey, 1985): The restaurant script codes expectations about likely or typical actions, and roles in the script similarly involve expected regularities. However, scripts encode not just what typically happens in some social situation but also what should or ought to happen. Scripts are normative in both senses. Participating in a script, playing a role, entails commitments to particular behaviors (see Rackoczy, 2007, for similar analysis of roles in games).

One hypothesis is that those social categories closely associated with scripts will have central deontic properties. This hypothesis is consistent with the results of the experiments reported above. Deontic properties tended to be most reliably associated with occupation categories. People typically interact with members of occupation categories in reliable, script-based ways. Scripts can involve many types of categories. Even more psychological categories may have script-like aspects. For example, someone playing the role of "dutiful son" or "class clown" has their own proper or appropriate behaviors. Exploring the use and development of deontic explanatory structures (including roles and scripts) may be a productive direction for future research in social cognition.

Categories likely vary in the degree to which deontic properties are central. For example, some

categories such as “criminal” or “alcoholic” may not involve distinctive obligations because membership in the category implies violation of norms. In one sense such categories may be characterized as inverses or negative cases of categories with norms of proper behavior (e.g., “law-abider” and “responsible drinker,” respectively). Heavily stigmatized racial or ethnic categories might have a similar characterization in terms of violation rather than adherence; however, it is likely that in-group members have a more positive construction of the norms governing appropriate behavior. Again, our claim is not that all social categories are defined or constituted by deontic properties. Some social categories have a clearly biological basis (e.g., “female,” “elderly”). Nonetheless, we suggest that as social categories those biological features come to involve norms and expectations of proper behavior. Clearly, additional studies with a wider range of items are needed to address the generality of the association between deontic properties and social categories.

One question for future research is whether because deontic properties are central to many social categories, people may tend to assume there are deontic properties associated with all social categories. Role categories are inherently discriminatory: Waiters may be required to wear special clothes; citizens have rights noncitizens lack. As adults, we recognize that people may belong to different social categories without necessarily having different deontic properties. It is less clear whether young children share this intuition. Adults appreciate the specific conditions that establish role expectations (e.g., how one becomes a waiter or citizen). It seems likely that young children would have less differentiated or formulated intuitions about how permissions and obligations are assigned. Adults also have a stronger sense of personal agency, have more power to direct their own actions, and, at least in Western cultures, tend to ascribe people’s behavior to personality traits. Young children may tend to rely on scripts to organize their social knowledge (Hudson, 1993; Nelson, 1978) and feel such scripts are more binding. Adults appreciate that there may be very different types of social groups—some based on shared preferences or traits, some on shared behaviors, and others organized around biological features. Our hypothesis is that young children do not so clearly distinguish different types of social categories. This hypothesis is consistent with the results of the three experiments reported in this study. At least for the items included in the current study, it was only deontic properties that young children ever reliably associated with social categories. For young children, the central signifi-

cance of social categories may be marking deontic properties. It may be difficult to recognize social categories that do not involve differential rights and responsibilities.

Social categories have important prescriptive implications. They embody intuitions about how members ought to behave and interact with others. Such deontic properties are most strongly associated with role categories (e.g., occupations) but are important parts of many social identities. The experiments reported in the current study indicate that deontic properties are important components of adults’ social categories and may be especially important in young children’s thinking. The association of deontic properties with social categories is not limited to a few cases (e.g., gender roles), is not difficult to elicit, and does not seem to require extensive experience to acquire. An important question for future research is how children come to distinguish the centrality structure of different social categories. Social cognition involves a complex integration of physical, behavioral, psychological, and deontic properties. At least for young children, social categories may be primarily important as indicators of what people ought to do.

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Appendix A

Items Used in Experiment 1 and Mean Proportions of Property Selections

Category	Property	Age group	Deontic (vs. psychological)	Deontic (vs. physical)	Psychological (vs. physical)
Adult	Takes care of kids	Adults	1.00	0.50	0.13
		Older	0.40	1.00	0.60
		Younger	1.00	0.60	0.40
Brother	Eats dinner with his family	Adults	1.00	0.63	0.00
		Older	0.40	0.50	0.50
		Younger	0.60	0.40	1.00
Girl	Plays with dolls	Adults	1.00	0.67	0.50
		Older	0.60	0.33	0.50
		Younger	1.00	0.60	0.60
Doctor	Helps people when they are sick	Adults	0.88	0.67	0.00
		Older	0.80	0.80	0.60
		Younger	0.60	0.60	0.20
Bus driver	Takes people places	Adults	1.00	0.50	0.00
		Older	1.00	0.60	0.60
		Younger	0.40	0.80	0.60
Teacher	Helps kids learn	Adults	0.67	0.75	0.33
		Older	0.80	0.80	0.80
		Younger	0.60	0.60	0.60
Helper ^a	Does nice things for people	Adults	0.00	0.25	0.33
		Older	0.80	1.00	1.00
		Younger	0.40	0.40	0.60
Loudmouth ^a	Talks a lot	Adults	0.00	0.00	0.14
		Older	0.80	0.20	1.00
		Younger	0.40	0.80	0.60
Show-off ^a	Talks about themselves	Adults	0.14	0.00	0.71
		Older	0.80	0.20	0.60
		Younger	0.40	0.40	0.80
Friend	Does stuff with you	Adults	0.00	0.00	1.00
		Older	0.00	0.60	0.60
		Younger	0.80	0.60	1.00
Neighbor	Lives next to you	Adults	0.71	0.17	0.29
		Older	0.60	0.80	0.60
		Younger	1.00	0.80	0.60
Pet owner	Takes care of animals	Adults	0.83	1.00	0.33
		Older	0.60	0.80	0.60
		Younger	0.60	0.80	0.60

^aPersonality categories.

Appendix B

Items Used in Experiment 2 and Mean Proportions of Deontic Selections

Category	Adults	Older	Younger
A brother	0.84	0.69	0.56
A girl	0.80	0.69	0.88
An adult	0.96	0.63	0.63
A bus driver	0.96	0.75	0.75
A doctor	0.88	0.75	0.69
A teacher	0.80	0.69	0.75
A king	0.92	0.56	0.75
A neighbor	0.84	0.75	0.81
A wife	0.92	0.50	0.75
A football player	0.88	0.56	0.56
A swimmer	1.00	0.69	0.63
An actor	0.88	0.44	0.56
Nice ^a	0.40	0.69	0.50
Shy ^a	0.64	0.56	0.56
Smart ^a	0.68	0.81	0.69

^aPersonality items. Options for control items included one possibility with two consistent properties (e.g., preference and obligation matched the training item) and one with two inconsistent properties.

Appendix C: Items Used in Experiment 3

This boy is very totrully (is a totruw). He has to feed the pigs every morning. The boy is always happy to feed the pigs each morning. He is the most totrully kid (only totruw) in the family.

This boy is really eafish (is an eafi). The boy is not allowed to join when grownups dance and sing. He feels happy when singing with others. He is the most eafish kid (only eafi) in the family.

This girl is very binishy (is a binisha). She is supposed to lead the way with the lantern when

the family walks at night. The girl likes to be in front and carry the lantern on the night walks. She is the most binishy kid (only binisha) in the family.

This girl is very lobarant (is a lobarg). She doesn't like staying awake at night in the garden. The girl has to stay awake at night to keep rabbits out of the garden. She is the most lobarant kid (only lobarg) in the family.

This boy is really olushan (is an olushank). He is happy going to the market alone. The boy is allowed to shop in the market alone without a parent around. He is the most olushan kid (only olushank) in the family.

This boy is very folantish (is a folant). He hates visiting other houses and sharing news. The boy is supposed to go to other houses in the village to share news when something important happens. He is the most folantish kid (only folant) in the family.

This girl is extremely itrofish (is an itrofix). She hates to eat meat. The girl is not allowed to eat meat. She is the most itrofish kid (only introfix) in the family.

This girl is really apsary (is an apso). She is allowed to wear clothes with painted designs. The girl thinks painted design clothes are awful. She is the most apsary (only apso) in the family.

This girl is very smart (is a smart kid). She is 9 years old. The girl can speak and read 4 languages. She is the smartest (only smart) kid in the family.

This boy is very rich (is a rich kid). He is 15 years old. The boy lives in a very fancy house. He is the richest (only rich kid) in the family.

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