Generalizing Norms and Preferences Within Social Categories and Individuals

Charles W. Kalish
University of Wisconsin—Madison

AQ: 1

Under what conditions will people generalize and remember observed social information? Preschool- ($n = 44$) and young school-age ($n = 46$) children and adults ($n = 40$) heard short vignettes describing characters' actions and motives on a single occasion. Characters were introduced using either proper names or category labels. Test questions asked for prediction and memory of motives for the same (individual) or a different (category member) person in a future event. Critical items contrasted behaviors motivated by psychological states with those motivated by normative obligations. The hypothesis was that norms would generalize across members of social categories. In contrast, psychological states would be generalized to the same individual across time. Results supported both these hypotheses and revealed some developmental differences. Preschool-age children seemed most attentive to normative properties of social categories. Young school-age children were most attentive to psychological properties of individuals. Such differences may reflect a shift from early focus on within-category similarities to a later focus on within-category differences.

Keywords: social cognition, norms, preferences, social categories

A major challenge of social cognition is deciding how past experiences with people can be useful in predicting future encounters: the problem of inductive generalization. People encounter a large amount of social information every day. Much of that information seems insignificant, neither memorable nor useful. Other information is stored and used as the basis for future predictions. The useful information generalizes beyond the specific context of the immediate observation. Presumably, there are cues that distinguish generalizable from nongeneralizable social information. What are these cues and might they change with development such that young children tend to generalize differently than older children? In the present study, I explored three cues, each of which has been considered individually as a factor in children's social generalizations. The goal was to test a novel hypothesis about the interaction of these cues in developing social cognition. Young children may be especially likely to generalize and remember normative properties of social classes, with attention to psychological states of individuals becoming more pronounced during middle childhood.

A simple generalization problem involves three factors: a *predicate* ascribed to a *subject* that may be extended to a *target*. "Yesterday, I observed that John hated strawberries. Should I expect that James will hate strawberries today?" John is the subject, hating strawberries is the predicate, and James is the target. Subjects of generalization may be identified as individuals ("John") or as members of social categories ("a boy"). Existing research suggests that people may be more likely to generalize

when subjects are characterized as category members than as individuals (Rhodes & Gelman, 2008). There are many different kinds of predicates. In the present study, I followed up on suggestions that young children especially may be more likely to generalize social norms (not allowed to eat strawberries on one occasion) than psychological states (hating chocolate on one occasion; see Kalish & Lawson, 2008). Finally, generalizations are understood to be stronger the greater the similarity between subject and target. People should be more likely to generalize when the target is the same individual subject at a different time ("Will John hate strawberries tomorrow?") than when the target is a different individual at a different time ("Will James hate chocolate tomorrow?; see Gelman, 1988). Considered as independent cues, the strongest generalization should be from a category subject with a normative predicate to the same individual target: "Yesterday, this boy was not allowed to eat strawberries. Will he be allowed today?" The weakest generalization should be from a proper name subject with a psychological predicate to a different individual target: "Yesterday, John hated strawberries. Will James hate strawberries tomorrow?"

In the present study, I explore the strength of each of the hypothesized main effects of subject, predicate, and target across different ages: preschool age, young school age, and adult. These effects have only been addressed in separate studies, thus there is some value in testing them together in a common paradigm with the same participants. The central focus, though, is a hypothesis about interactions. Certain configurations promote (or inhibit) generalizations. Specifically, social categories support generalization of norms across members. Observing that one boy was not allowed to eat strawberries suggests that other boys will be subject to the same restriction. In contrast, psychological states generalize to the same individual across time. Observing that John hated strawberries in the past suggests that he will hate them in the

Correspondence concerning this article should be addressed to Charles W. Kalish, University of Wisconsin—Madison, Educational Psychology, Room 880b EdSciences, Madison, WI 53706. E-mail: cwkalish@wisc.edu

future. Of course, other inferences are possible. Perhaps the one boy has a unique restriction (e.g., a religious prohibition); perhaps it is something about the occasion or the particular strawberry that explains John's past dislike. The hypothesis is that people will tend to draw some inferences rather than others. There is also a developmental component to the hypothesis: Young children tend to focus on generalizations about different targets, category subjects, and normative predicates, with generalizations to same targets, individual subjects, and psychological predicates becoming more prominent during middle childhood. In the remainder of the introduction, I introduce each of the individual cues (target, subject, predicate) and then consider possible interactions.

Three Cues

Same Versus Different Targets

A basic principle of inductive inference is that the more similar the subject and target, the stronger the generalization from one to the other. Gelman (1988) found evidence that preschool-age children adhere to this "homogeneity" principle in making stronger generalizations to more similar targets (one robin to another) than to less similar ones (a robin to a penguin). Although this homogeneity principle has not been tested with social content, the extension seems straightforward. For the present study, research motivates the hypothesis that people will make stronger generalizations to same individual targets than to different individual (but same category) targets. It is unclear whether memory for same and different targets will differ.

Category Versus Individual Subject

A recent article by Rhodes and Gelman (2008) illustrates the importance of categories in social inference. If told that John hates strawberries, but James (same social category) likes strawberries, then John's preference is informative about him as a unique individual. If told that "a boy" hates strawberries, but "a girl" likes strawberries, then the boy's preference is informative about the social category he represents. Rhodes and Gelman found that young children did not infer that John generally hates strawberries, but they did infer that boys generally hate strawberries. People are also more likely to generalize when properties are presented "categorically" as noun phrases (e.g., "a chicken-liker"; Gelman & Heyman, 1999) or using generic constructions (Gelman, Ware, & Kleinberg, 2010).

Children may remember information about categories better than information about individuals. For example, though children readily learn words from knowledgeable speakers, they do not even remember a label provided by an idiosyncratic speaker across a relatively short time span (Sabbagh & Shafman, 2009). Sabbagh interprets this effect as involving a distinction between semantic and episodic encoding. A similar process may be at work in schema-consistent memory (Martin & Halverson, 1983; Ruble & Stangor, 1986). Children often misremember individuating information (e.g., a girl who likes trucks) as category consistent (e.g., the actor was a boy). For the purposes of the present study, past research motivates the hypothesis that category subjects will support stronger memory and generalization than will individual subjects.

Psychological and Normative Predicates

Although preschool-age children ascribe desires and motives to others (Wellman, 1992), they tend not to generalize such states as dispositions (Kalish, 2002; Rhodes & Gelman, 2008; Rholes & Ruble, 1984). Young children can understand stable psychological dispositions and use them to infer future behaviors (Cain, Heyman, & Walker, 1997; Gelman & Heyman, 1999), but they may require more examples or contextual support to generalize psychological states (Aloise, 1993). Psychological predicates are relatively weak cues for generalization for young children.

Other research suggests that young children may tend to focus on norms as (stable) motivators of behavior (Kalish & Shiverick, 2004). Research in moral development illustrates that quite young children appreciate that norms hold across individuals (e.g., "Stealing is wrong for everyone"). Moreover, these children also recognize that certain norms are characteristic of particular social groups (Turiel, 1998). Children readily generalize normative constraints (e.g., rules of a game) from one individual to another (Rakoczy, Warneken, & Tomasello, 2008). Young children generally expect that people will do what they are supposed to (Kalish, 1998; Kalish & Shiverick, 2004). This literature suggests a developmental hypothesis: Preschool-age children will be more likely to generalize social norms than psychological preferences. Older children and adults may be more likely to generalize preferences than norms, as psychological dispositions become increasingly salient over development, at least in Western cultures (Miller, 1986). There is little direct evidence regarding memory for norms and preferences. However, the gender-schema effects (Martin & Halverson, 1983; Ruble & Stangor, 1986) suggest that children are remembering social norms (trucks are for boys) better than information about someone's psychological preferences (this girl likes trucks).

Interactions

Every generalization problem involves a subject, a predicate, and a target. Though each factor has been considered separately, there is very little work exploring their interaction. The effects of subject and target would seem to be independent main effects: People are more likely to generalize when subjects are identified with category labels than with proper names, and they are more likely to generalize to same-individual targets than to different individual members of the same category. However, young children sometimes make stronger generalizations to different individual members of the same category than to the same individual (Lawson & Kalish, 2006). For example, children who heard, "Yesterday, I went to the zoo and saw this wombat sleeping in a tree" expected that a visit to another zoo would reveal other wombats sleeping in trees as well. Interestingly, preschool-age children frequently failed to generalize the behavior to the same individual animal on another occasion (see Lawson & Kalish, 2006). They thought that on the next visit to the same zoo, the wombat would be sleeping somewhere else. This effect would be like thinking that other boys would enjoy playing with a particular toy after observing one boy enjoying it, but not thinking that the original boy would enjoy that toy again.

The combination of categorical subjects and different individual targets is often described as "category-based induction." There is substantial evidence that children are strongly disposed to

category-based inductions, and the context of making such inductions may trigger special cognitive mechanisms (e.g., intuitive essentialism; Gelman, 2003). The first configural hypothesis is that category-based induction is a privileged case: The combination of categorical subjects and different targets cues strong generalization. Other combinations of cues, for example, categorical subject and the same individual target, may not promote strong generalization. Thus, learning about one wombat promotes generalizations about others, but not about the same individual across time.

The homogeneity principle predicts that people will generalize more strongly to the same individual than to a different individual (Gelman, 1988). The previous paragraph describes a possible violation of homogeneity: more generalization to different than to same targets. A variant of the category-based hypothesis that does not violate homogeneity is that people may only generalize more to same than different targets in the context of individual subject. For example, when told about John's behavior, one may be more likely to expect the same behavior of John again than of James (a different individual). Using two different proper names to describe the individuals highlights their difference. In contrast, thinking about subject and target as members of the same category may tend to obscure those differences. If both subject and target are described as "boys," the greater similarity of one boy to himself than to another member of the same category may be obscured. The implication is that the effect of target may only be significant given individual subjects.

In contrast to category-based inductions, generalizations about personal dispositions concern a specific individual. Psychological or behavioral traits are salient as distinctive features of individuals. To call someone "generous," "smart," or "strong" is to indicate that they are exceptional, unlike most other people. If there is high consensus (everyone agrees), then it is unlikely that the behavior will be ascribed to the person (Ruble, Feldman, Higgins, & Karlovac, 1979). If John reliably chooses strawberries, and everyone else does too, then I do not conclude that it is something about John that caused his behavior. Of course it is possible to generalize a trait from one individual person to another (such generalizations are the basis of many social stereotypes), just as it is possible to make a category-based inference to the same individual. The hypothesis, though, is that describing an event in terms of a specific individual (e.g., by using a proper name label) orients the learner toward generalizations about that same person across time.

More generally, the suggestion is that there is a canonical structure for category-based induction (categorical subject to different individual member of the same-category target) and a canonical pattern for personal-disposition induction (proper name subject to the same individual). Generalizations will be stronger given these canonical patterns than given noncanonical patterns.

Researchers have long noted that different predicates are generalized differently (Kalish & Gelman, 1992). There is some evidence that different predicates are generalized to social categories than to individuals. Kalish and Lawson (2008) found that children and adults expected that two individuals from the same social category were more likely to share obligations than preferences. This effect held when category membership was indicated by a novel noun phrase (e.g., "He is a bisha"). However, when individuals were identified with novel adjectives (e.g., "He is very bishy"), adults and school-age children expected preferences rather than obligations to be shared (preschool-age children showed

chance-level performance in this condition). Norms generalize to members of social categories: Preferences generalize to an individual across time. In combination with the canonical pattern hypothesis above, the prediction is strong generalization of norms for categorical subjects to different individual targets, and strong generalization of preferences for individual subjects to same-individual targets.

Finally, all of the above hypotheses are conditioned by some general developmental factors. Previous studies suggest that young children are most attentive to normative information about social categories. These children may generally fail to generalize information about preferences, or information about individuals. Individual dispositions become salient during the early school-age years. Previous research (Kalish & Lawson, 2008; Kalish & Shiverick, 2004) suggests that older children may show a reverse of the pattern of social judgments shown by preschoolers; information about individuals' psychological dispositions is the most salient and significant. Research on the development of stereotyping and prejudice suggests a similar trend (Aboud, 1984, 1988). Preschool-age children tend to see social categories as homogeneous (and so readily generalize from one member to another); school-age children appreciate individual variability within categories. Thus, school-age children may be most likely to generalize about the same individual from one time to another but be reluctant to generalize from one category member to another. Finally, adults are predicted to attend to all types of social information (Kalish & Lawson, 2008).

The remainder of this article reports the results of an experiment exploring children's and adults' responses to different combinations of subjects, predicates, and targets. The primary focus is generalization: Under what conditions are people more or less likely to generalize a predicate of a subject to a target? However, following Sabbagh and Shafman (2009), the task also measured memory. If an observation is to be generalized, then it must first be remembered. The memory measures focused on recall of predicates, as the primary developmental hypotheses concerned the conditions under which norms and preferences are generalized. People encounter a wide variety of social information. What cues inform them that the observations are memorable and generalizable?

The task presented participants with a series of vignettes describing peoples' choices on specific occasions in the past. Of interest was how these observations would be remembered and generalized. Vignettes were composed of three (binary) factors. The actor was described using either a proper name (Lisa) or a category label (a Lissian). The target of generalization was either the same individual (Lisa) or a different person (Julie). The motive for the original choice was either a preference (liking) or a norm (obligation). Each of these factors has been shown to affect generalization, at least under some circumstances. The specific hypothesis was that the three factors would interact, producing two configurations. Norms would generalize from one category member to another. Preferences would generalize from one observation of a specific individual to another observation of the same individual. Specifically, there would be two configurations of factors that would produce strong generalization: category-different-norm and proper name-same-preference. Participants in the study were preschool- and young school-age children and adults. These age groups were chosen because of suggestive evidence that pre-

schoolers might tend to generalize and remember normative category-based information better than information about an individual's preferences. Young school-age children might show just the reverse effect.

Method

Participants

Forty-four younger children (mean age = 4 years 6 months, range = 4 years 1 month–5 years 2 months), 46 older children (mean age = 8 years 3 months, range = 7 years 2 months–8 years 10 months), and 40 adults participated. Children were recruited from day care facilities and after-school programs serving a largely middle-class population in a midsized midwestern city. Adults were college students participating for extra credit in courses at a large midwestern university.

Design

AQ: 2

T1

Participants heard a series of short stories in which a subject displayed a predicate at some time in the past. Participants then predicted whether a target at a future time would share the subject's predicate. Stories varied in subject-category or individual label; predicate-norm, preference, or control; and target-same or different individual. Subject was a between-subjects variable, with half the participants receiving all category stories and half receiving all individual stories. Predicate and target were manipulated within subjects. Participants heard 12 stories, two of each Predicate × Target combination. Stories were presented in random order, blocked with respect to target. Table 1 presents the structure of the design and provides examples of story types.

The subject manipulation involved labeling the subject of the story with a novel category label (e.g., "a Lissian") or an individual proper name (e.g., "Lisa"). Importantly, the label type used for the subject was continued for the target (see Table 1). Targets varied by whether they were the same as the subject or a different individual member of the same social category. For category subjects, same targets were described as "this same [category label]" and different targets as "a different [category label]." For individual subjects, same targets received the same proper name; different targets received a different proper name. Same targets were always identical in appearance to the subject. Different targets were different individuals matching subjects on age, gender, race, and ethnic dress.

There were three types of predicates: preference, norm, and control. In preference stories, the subject chose one of two options. The selection was ascribed to the subject's likes and dislikes (see Table 1 for an example and the Appendix for a complete list of stories). Norm stories described a past selection motivated by rules or obligations. The norm version of the preference story above was, "A few days ago, Lisa got to choose either a chocolate ice cream or a vanilla ice cream. Lisa picked chocolate because she is not allowed to eat vanilla. She is only allowed to eat chocolate." After hearing each story, participants predicted whether the same preference or norm would hold in a similar future situation. A third set of control stories involved predicates expected to remain constant or vary. Control stories involve a morphological property (had a part of her ear called an "auricle"), family size (had two older brothers), a date-specific property (had her birthday), and a transitory property (had some dirt on his knee). Two sets of stories were constructed, with norm and preference predicates switched between the stories in the sets. For example, in Set 1, the ice cream choice was motivated by a preference (dislikes chocolate). In Set 2, the ice cream choice was motivated by a norm (not allowed to eat chocolate). Approximately half the participants in each age group heard Set 1 stories and half heard Set 2 stories.

After hearing all stories (and making all predictions), participants received a surprise memory test. The test probed memory for the predicates presented in each of the stories. The memory test began with a prompt reminding participants of the content of one of the stories (e.g., "Remember the item that asked about ice cream flavors?"). Participants then responded to a recognition test for the predicate type (preference, norm, or control). This was a three-item forced-choice question asking, "Now try to remember what you learned about the person," with response options as follows: *What they did and did not like*, *What they were and were not allowed*, or *Something else (not liking or allowed)*. Memory items appeared in the same order as the stories did (i.e., the first appearing story was the first memory item).

Materials and procedure

Participants saw stories and answered questions using individual computers. Adults participated in a computer classroom equipped with 12 workstations. Children participated individually in a quiet place within their child care sites. An experimenter led each child through the computer-based presentations, reading all text, making or assisting with responses, and ensuring attention/comprehension. Each story consisted of a computer "screen" composed of text

Table 1
Examples of Story Types

Subject	Individual	Category
	A few days ago, Lisa got to choose either a chocolate ice cream or a vanilla ice cream. Lisa picked chocolate because she does not like to eat vanilla. She only likes to eat chocolate.	A few days ago, this Lissian got to choose either a chocolate ice cream or a vanilla ice cream. The Lissian picked chocolate because she does not like to eat vanilla. She only likes to eat chocolate.
Same target	Now today, will LISA like vanilla, or will she only like chocolate ice cream, like last time?	Now today, will this LISSIAN like vanilla, or will she only like chocolate ice cream, like last time?
Different target	Now today, will JULIE like vanilla, or will she only like chocolate ice cream, like Lisa?	Now today, will this DIFFERENT LISSIAN like vanilla, or will she only like chocolate ice cream, like the other Lissian?

boxes, a picture of a story character, and a solid background color. Story characters were depicted as children or adolescents with distinctive ethnic features and dress. For example, one pair was females in Japanese kimonos. Another pair was males in Scandinavian dress. Characters' clothing was quite different from clothing typically worn in participants' local environments, suggesting membership in unfamiliar social categories.

Coding

Predicting that the target would have the same property as the subject counted as an instance of generalization. Predictions were coded as 1 for a consistent response (target has same predicate in the future as displayed by the subject) or 0 for an inconsistent response (different predicate). As questions were posed as two-item forced-choice, .5 can be considered chance-level generalization. Memory responses were coded both as correct/incorrect and categorized by the kind of predicate recalled (norm, preference, or other).

Results

Before considering the generalizations that are of most theoretical interest, it was important to establish that children followed the stories and procedures. The control predicates provided important manipulation checks. In general, participants made the expected predictions for control predicates. They predicted consistency in morphological features for both same and different targets (adults and older children, all Ms = 1.0; younger children same M = 0.85, different M = 0.76; largest $p < .013$, all one-tailed sign tests). Participants did not expect consistency in the transitory property (dirty knee, greatest consistency was younger children for same targets, M = 0.19, $p < .004$). In general, participants did not expect that same targets might also have a birthday "a few days" after already having one (greatest consistency, younger children M = 0.26, $p < .017$) but were more likely to accept that it "might be" a different target's birthday (greatest consistency, younger children M = 0.80, $p < .004$). Finally, adults (M = 0.92, $p < .001$) and older children (M = 0.71, $p < .019$) expected consistency in the same target's number of brothers, whereas younger children did not (M = 0.32, ns). All age groups, though, predicted consistency less often for different targets (M = 0.33, 0.22, and 0.11 for adults, older children, and younger children, respectively; all less than chance largest $p = .05$). As subject description (individual, kind) was not predicted to affect predictions for control predicates, we did not consider this factor. In general, participants at all ages seemed to be following the task and making reasonable predictions for the control predicates.

Analysis of Norm and Preference Items Proceeds in Two Steps

First, I considered the patterns of generalizations (predictions of consistency) within each age group separately. The second set of analyses considers the memory for predicates. Given the complexity of the design, considering all factors together (e.g., in a single analysis of variance [ANOVA]) would result in the most interesting effects appearing as three- or four-way interactions.[1] To simplify analyses, I considered each age group in separate ANOVAs,

with subject (category/individual) as a between-subjects factor and target (same/different) and predicate (norm/preference) as within-subject factors. Given concerns about the normality of the data, I also conducted a parallel set of nonparametric tests. As the same patterns held in both sets of analyses, only ANOVA results are reported. Figure 1 presents the mean proportions of generalizations. These responses are judgments that target characters had the same preferences or obligations in the future as those of the subject established in the past. Each panel of Figure 1 presents results from a single age group (adults, older children, and younger children).

Adults. The ANOVA showed significant main effects for both subject and target, $F(1, 38)$ = 10.5, η^2 = .22; and $F(1, 38)$ = 17.1, η^2 = .31, largest p = .002. Adults made more generalizations for category than individual subjects, and more generalizations to same than to different targets. These factors combined as independent (additive) effects: There were no significant interactions. Although predicate was not a significant factor, chance comparisons revealed that adults did show some tendency to generalize norms more strongly than preferences (see Figure 1). Adults expected that a norm applying to one category member would hold for another (different) member. They did not reliably generalize preferences across category members. Adults were significantly less likely to generalize norms across individuals when subjects were described using proper names (Tukey's honestly significant difference [HSD] test, $p<.05$). Thus, adults showed the predicted sensitivity to the category-based configuration: Norms generalized from one category member to another, but not from one individual to another. When the target was the same as the subject, adults generalized both norms and preferences equally and at rates greater than expected by chance. Thus, adults did not restrict generalizations of individua l dispositions to preferences (the second configural hypothesis): An individual's obligations and likes were expected to remain stable across time.

Older children. These participants showed a very clear and limited pattern of generalization. They generalized preferences more often than norms, $F(1, 44)$ = 4.7, η^2 = 09, p = .035. However, this main effect was conditioned by a three-way interaction with subject and target, $F(1, 44)$ = 4.3, η^2 =.09, p = .044. Older children generalized preferences of individual subjects to same targets more than any other combination of factors (Tukey's HSD, $p < .05$). No other pairwise comparisons differed significantly. Similarly, only preferences of individual subjects to the same target led to greater than chance levels of generalization (see Figure 1). Older children did generalize more to same than to different targets, but only for preferences, and only when subjects were identified as individuals. Thus, older children showed the opposite effect of subject compared with adults: Individual subjects promoted stronger generalization than did category subjects. Older children also showed something of an opposite predicate effect. Adults never generalized preferences more than norms (and in one combination, they generalized norms more). Older children never reliably generalized norms, and in one condition generalized preferences more. In effect, older children showed exactly the one configural effect that adults did not: These children generalized preferences in the personal-disposition configuration—a unique

---

[1] Note that the overall four-way interaction was not significant, $F(2, 1245)$ = 2.7, ns.
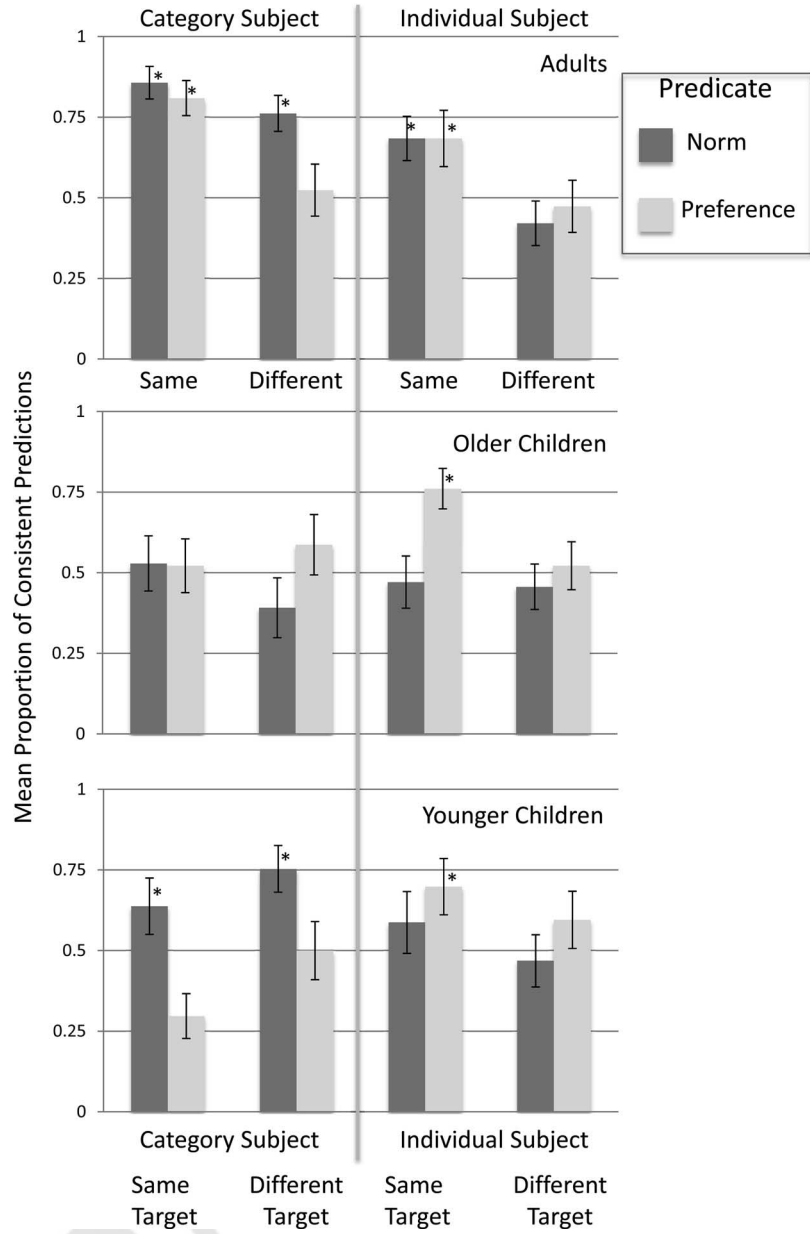
Figure 1. Mean proportion of generalizations (predictions that the target's preference or norm will be the same as the subject's). Each panel represents generalization responses for a single age group. Error bars represent one standard error. *different from chance at $p < .05$.

individual's preferences would be stable across time. Unlike adults, older children did not generalize norms in the category-based configuration.

Younger children. Preschool-age children showed the two predicted configural effects most clearly. The ANOVA revealed a significant interaction between subject and predicate, $F(1, 42) = 14.3$, $\eta^2 = .25$, $p = .0005$. The way a subject was described had different effects for norm and preference generalizations. Younger children were especially likely to associate norms with social categories. Simple effects revealed that young children generalized norms more than preferences given

category subjects, $F(1, 42) = 7.6$, $\eta^2 = .15$, $p < .01$. There was no significant predicate difference with individual subjects. Younger children generalized preferences more with individual than with category subjects, $F(1, 42) = 6.1$, $\eta^2 = .13$ $p = .017$. Finally, the opposite effect of more norm generalization with category than individual subjects approached statistical significance, $F(1, 42) = 3.6$, $p = .06$. Chance comparisons support this simple effect. Younger children predicted consistency for norms at above-chance rates with category but not individual subjects (category-based configuration). Younger children also generalized preferences at above-chance rates, but only when

reasoning about the same target identified as an individual subject (personal-disposition configuration).

The ANOVA analysis revealed an additional significant interaction in younger children's responses. Subject interacted with target of the inference, $F(1, 42) = 7.8$, $\eta^2 = .16$, $p < .008$. However, none of the component simple effects reached statistical significance. The chance comparisons in Figure 1 allow some interpretation of this interaction. Younger children generalized at rates significantly above chance to different but not to same targets given category subjects, at least for norm predicates: They reliably projected norms to a different individual, but not to the same individual when subjects were characterized by category membership. A similar pattern held for preferences, though, here, responses were below chance for same targets and at chance for different targets. This target effect was the opposite of that shown by older children and adults. Older participants never generalized more to a different target than to the same target (and often generalized more to the same than to the different target). However, young children only showed this reverse target effect with category subjects. Given individual subjects (proper names), young children predicted consistency for same targets but not for different targets (though only for preference properties). Social categories seem to support inferences about normative properties from one member to another (but not the same individual across time). Information about an individual supports inferences about that same individual's preferences across time (but not across individuals).

The analyses presented above suggested a number of age differences. To make cross-age comparisons, the data were reanalyzed in a single ANOVA, with age and subject as between-subjects variables and target and predicate as within-subjects variables. The most important comparisons for the purposes of this study concern relative differences between conditions. Overall, adults generalized more often than did older or younger children, $F(1, 84) = 12.7$; and $F(1, 84) = 11.6$, respectively; largest $p = .001$. But, did the same combinations of subject, predicate, and target tend to increase or decrease generalizations at the different ages? To conduct these relative comparisons, I subtracted each age group's mean level of generalization from all scores. For example, the mean rate of generalization across all conditions for adults was 0.63. This number was subtracted from adults' mean generalization for each condition. The result is like a z-score and indicates whether a given condition produced above- or below-average generalizations at each age. A series of pairwise comparisons (with familywise error controlled with Holm's procedure) explored age differences suggested above.

The most reliable age differences came in the category subjects conditions. Older children saw the canonical category-based configuration (category subjects to different targets) with norm predicates as a relatively weaker context of generalization than did younger children or adults, $F(1, 40) = 9.1$ and $F(1, 44) = 14.1$, respectively, largest $p = .004$. Generalizations of preferences to same targets given category subjects were relatively weaker for younger children than for older children and adults, $F(1, 44) = 13.1$ and $F(1, 40) = 45.7$, both $ps < .001$. Older children saw the canonical personal-disposition configuration (preferences of individual subject to same targets) as relatively stronger than did adults, $F(1, 40) = 8.8$, $p = .005$. Younger children did not differ

from either older children or adults in their relative judgments of the personal-disposition configuration.

Memory for Predicates

The significance of different features of social information was explored in the present study. One way to measure significance is to ask when people generalize from one situation to another. Another, perhaps more basic question is what people remember. Memory for the kind of predicate that was ascribed to each subject was probed in the present study; was it a norm, a preference, or something else? Participants in all age groups remembered the content of predicates at rates greater than expected by chance (33%): adults, $M = 72\%$ correct, $t(39) = 13.9$, $p < .001$; older children, $M = 60\%$ correct, $t(45) = 12.4$, $p < .001$; younger children, $M = 42\%$ correct, $t(43) = 3.8$, $p < .001$.

Of most interest is how memory performance varied across the different conditions. Each age group showed a single (different) main effect, with no significant interactions. Adults were more accurate in memories for subjects introduced with proper names (person condition) than for those introduced with category labels, $F(1, 39) = 14.9$, $\eta^2 = .24$, $p < .001$. Older children were more accurate for stories involving the same targets (generalization to same individual) than for those involving different targets, $F(1, 45) = 7.0$, $\eta^2 = .13$, $p = .011$. Finally, younger children remembered norm predicates more accurately than preference predicates, $F(1, 43) = 6.6$, $\eta^2 = .13$, $p = .014$. Younger children were at chance for memory of preference items (33%; see Figure 2). If **F2** memory performance is taken as an index of interest or attention, then adults and older children seemed to attend most to stories about individuals. Younger children showed the most attention to stories involving social norms. Contrary to predictions, younger children showed no evidence of increased attention to information about social categories.

The final set of analyses considered the nature of memory errors and the relations between memory performance and generalization. Two errors in the memory task were particularly revealing: misremembering a norm as a preference or misremembering a preference as a norm. Figure 2 presents the mean proportion of correct memory for norm and reference items as well as the proportions of each of these two "conversion" errors (actual and remembered control items are not represented in the figure). Adults and older children did not make one kind of error significantly more often than the other (both $ps > .7$). Younger children, however, were significantly more likely to misremember a preference item as involving a norm than they were to misremember a norm item as involving a character preferences, $t(42) = 3.3$, $p = .002$. Indeed, younger children were equally likely to misremember a preference item as involving a norm as they were to accurately remember a preference item as involving a preference. Even when younger children heard about characters' likes and dislikes, they tended to encode that information as concerning what characters were or were not allowed to do. This result is consistent with the hypothesis that younger children are especially interested in learning about social norms.

That younger children consistently misremembered preference items as involving norms suggested that it was important to reexamine the effect of predicate type on generalizations. Recall that younger children generalized norms more often than preferences.
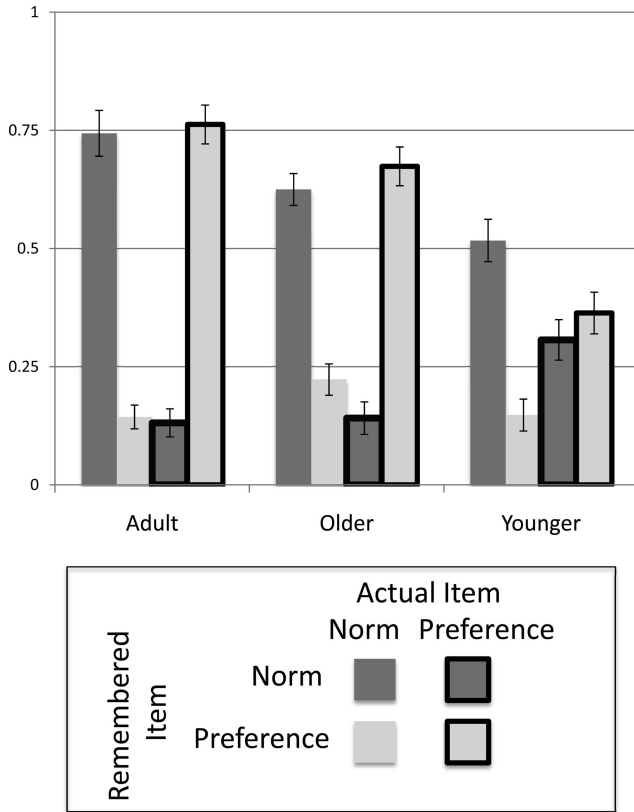
KALISH

Figure 2. Memory for norm and preference predicates. Bars indicate mean frequencies with which norm and preference predicates were remembered as norms or as preferences. Error bars represent one standard error.

These children were significantly more likely to generalize a preference item remembered as a norm than they were a correctly remembered preference item (mean norm $= 0.69$, $SE = .07$; mean preference $= 0.54$, $SE = .08$), $t(29) = 2.9$, $p = .007$. The reverse effect of weaker generalizations for norm items remembered as preferences did not reach statistical significance (likely because very few children ever made this error, resulting in an underpowered test; mean norm $= 0.75$, $SE = .05$; mean preference $= .55$, $SE = .13$), $t(12) = 1.2$, *ns*. One way to interpret this result is that predicates encoded as involving norms were generalized. Alternatively, and perhaps more consistent with the temporal order of the measures, generalized items were more likely to be recalled as involving norms; children misremembered preferences as norms 39% of the time after generalizing ($SE = .06$), but only 22% of the time after failing to generalize (predicting inconsistency, $SE = .05$). In either case, the results indicate that younger children associate norms with generalizable social properties.

Discussion

The cues that lead people to generalize about social actors were explored in the present study. By manipulating the subjects, predicates, and targets of social inferences together, a novel hypothesis about the interaction of these cues was tested in the present study. The general hypothesis motivating the present work is that children are sensitive to two canonical patterns of cues: category-based and personal-disposition. Each pattern is associated with a particular type of predicate: Norms are an important component of social category representations, whereas preferences are more central to representations of individuals. Developmentally, the salience of norms, and their association with social categories, may be especially strong for younger children. As older children move in to the world of peers, psychological dispositions of individuals become the most salient aspects of experience. The results provide support for each of these hypotheses.

The category-based pattern involves using information about one category member to make a prediction about another, different member of the same category. Both adults and younger children were more likely to make category-based predictions for norms than for preferences. Two social category members were more often expected to share norms than to share preferences. Older children in this study did not use social category membership to predict norms or preferences. These children made no reliable category-based generalizations. At least for adults and younger children, norms seemed central to representations of social categories; two members of the same social category are expected to share norms. Younger children showed this effect most reliably.

Participants at all ages tended to generalize psychological states within an individual: A person (described with a proper name) would show the same preference in the future as she or he had shown in the past. This was the only condition in which older children reliably expected consistency. Adults generalized to same individuals for both norms and preferences. Younger children generalized preferences but not norms at rates greater than chance, though rates of prediction for the two kinds of properties did not differ significantly, and the results from the memory probes suggest younger children often encoded preferences as norms. Though adults showed evidence of generally predicting that the same individual's characteristics would remain stable across observations, children's expectations of consistency were more limited to the canonical personal-disposition pattern.

One implication of the present results is that the cues supporting generalization (and perhaps memory) are not independent/additive for children. For example, researchers have suggested that categorical or generic framing supports generalization (Gelman et al., 2010). Although this effect did hold for adults, children sometimes generalized more strongly when subjects were identified by proper names (same-target, preference-predicates condition). Adults respected the principle of homogeneity: The more similar two things are, the more one can generalize from one to the other. Younger children, though, sometimes generalized more strongly to different targets than to the same targets. Younger children thought that a different member of the same category was more informative about a person than was that person's behavior on a past occasion. Framing the task in terms of category membership seemed to prime younger children to make cross-individual generalizations. The results support the hypothesis that children distinguish (at least) two patterns or contexts of generalization: category-based and personal-disposition. Moreover, the relative significance of those two patterns seems to shift from preschool to the early school-age years.

There have been conflicting findings regarding how readily younger children generalize psychological states within and across individuals (Aloise, 1993; Heyman & Gelman, 1999). In the present study, younger children were more likely to generalize prop-

AQ: 4

AQ: 5

erties they remembered as involving norms, regardless of how the properties were actually presented (i.e., as involving preferences). One methodological point is that researchers need to be aware of how children encode information presented to them. A second point is that it is difficult to draw general conclusions about children's tendencies to make dispositional or trait inference: The content (predicate) matters quite a bit. The present study focused only on preferences, or causes of "liking" reactions. There is some evidence that younger children might generalize preferences more readily than other psychological states (Kalish, 2002). Whether children would show the same effects for more classic traits such as fearfulness, generosity, or intelligence remains an open question. The present study is limited in that a very small set of psychological states and normative properties were explored.

One question raised by the present study is why younger children tended to generalize norms but showed less clear generalization for preferences, whereas older children showed almost the opposite effect? Kalish (2005) has argued that younger children tend to assume consistency between norms and preferences; people want to do what they should. In middle childhood, preferences come to be seen as contrasting with norms; rules keep you from doing what you want. The sense that rules contrast with preferences may underlie older children's reluctance to generalize about norms. Although the items in the present study were designed to provide information either about a person's preferences or about norms governing a person's behavior, in fact the two are rarely independent. When younger children hear about psychological preferences, they may tend to expect that those preferences reflect social norms; if someone likes strawberries, then he or she is allowed to have them. Social norms are thus good guides to people's preferences. When older children hear about social norms, they may tend to expect that there are conflicting preferences: If someone is not allowed to have strawberries, she or he must really like them (see Kalish & Shiverick, 2004). Social norms are also good guides to people's preferences but suggest that people dislike whatever they are supposed to do.

The results from the present study suggest that group and individual social cognition have fairly different qualities for younger children. One way children approach the task of social inference is to think about collections, about social categories (Hirschfeld, 2001). The challenge is to identify those features that generalize across distinct members of the category. A second perspective is to treat social actors as unique persons with stable dispositions. The challenge is to identify those features of individual persons that generalize across encounters with the same individual. Preschool-age children generalized most reliably when presented with one of these two forms of inference problems. Older children generalized reliably given personal-disposition configurations. Deviation from the two canonical patterns (e.g., inference to the same individual category member) weakened children's generalizations. Moreover, these two perspectives seem to focus attention on different kinds of features or predicates. Younger children and adults were more likely to make category-based generalizations about norms than about preferences. Older children were more likely to make personal-disposition generalizations about preferences than about norms. Adults showed evidence of having integrated these two perspectives. For example, they showed a robust main effect of stronger generalization to same than to different targets. Children, though, seemed to apply distinct perspectives of category-based and personal-disposition inference.

Developmental differences reflected distinct patterns of category-based and personal-disposition inferences. Preschool-age children seemed most affected by the category-based pattern; older children tended not to generalize in this context, and adults responded to main effects of subject and target. Preschool-age children also showed the strongest association between category-based inferences and normative predicates. The context of projecting a social norm from one category member to another seems to cue preschool-age children to expect constancy, to suggest there is something general to be learned from the context. This pattern is consistent with prior research emphasizing younger children's interest in acquiring conventional forms (Kalish & Sabbagh, 2007). For example, children are quite sensitive to cues that the linguistic forms they are encountering are not conventional, but are rather unique and idiosyncratic to a particular communicative partner (Sabbagh & Baldwin, 2001). A learner does not want to learn a word that someone just invented on the spot. One of the hypotheses motivating the present study is that social norms are conventional in this way. Norms are significant as general features of social categories. Indeed, conventional linguistic forms just are social norms: ways members of the social category or "speakers of the language" ought to use words. When children are learning about social categories, they are very attentive to information about social norms; when children are learning about social norms, they are very attentive to information about social categories.

Learning is not restricted to conventional forms, not even all language learning (e.g., proper names are not conventional in this sense; Diesendruck, 2005). Preferences are not conventional; a social learner should not necessarily ignore information about preferences just because the context suggests they may be restricted to the specific individual encountered. School-age children in the present study seemed less interested in acquiring information about conventional forms. These children showed better memories for stories about a particular individual across time. It was only in these cases that they showed consistent patterns of generalization.

The focus on the personal-disposition pattern may reflect increased attention to individual relationships (e.g., friendships) and peer relations in middle childhood. For example, preschool-age children often nominate all members of their peer group as their friends. Older children make distinctions within the general category of peers based on individual personality (Howes, 2009). By definition, peers share social category memberships. Thus, social cognition focused on peers and peer relationships will involve attention to within-category variability and individual rather than group attributes. Older children also have a wider and more varied experience with the social categories than do younger children. They will likely have encountered many different individuals in the same social category (e.g., different teachers, doctors, mothers). This experience might promote attention to individual rather than group characteristics (Aboud, 1988). School-age children are more expert social cognizers than are preschoolers. Older children may have mastered the basic attributes that characterize social categories in their environment; they are no longer so focused on acquiring information about general conventional forms. With expertise, they turn their attention to the more subtle patterns of individual within-category variability. One direction for future research would be to explore the conditions under which children of different ages attend to individual versus group information. Preschool-age children must encode individual information (e.g.,

in tracking ownership), whereas school-age children must encode group information (e.g., about novel categories).

Social cognition involves learning about both general kinds of social actors (categories) and about particular individuals. In addition to asking whether children learn more readily about categories or individuals, we may also ask what children learn in the two cases. The specific hypothesis in the present study is that norms are associated with categories, whereas preferences are associated with individuals. Adults and preschool-age children showed one half of this pattern clearly; they generalized norms but not preferences when tasks involved category membership. Young school-age children showed the other half; preferences generalized more than norms in the context of judgments about specific individuals. Preschool-age children also tended to misencode preference items as actually concerning norms. Properties generalized when they were remembered as norms, and properties tended to be misremembered as norms when they were generalized. The general developmental conclusion is that younger children are most attentive to learning about norms, and norms are especially associated with social categories. Somewhat older children are most attentive to learning about individual social actors, and what they learn about those actors are their preferences.

References

Aboud, F. E. (1984). Social and cognitive bases of ethnic identity constancy. *Journal of Genetic Psychology, 145,* 217–230.

Aboud, F. E. (1988). *Children and prejudice.* London, England: Blackwell.

Aloise, P. A. (1993). Trait confirmation and disconfirmation: The development of attribution biases. *Journal of Experimental Child Psychology, 55,* 177–193. doi:10.1006/jecp.1993.1010

Cain, K. M., Heyman, G. D., & Walker, M. E. (1997). Preschoolers' ability to make dispositional predictions within and across domains. *Social Development, 6,* 53–75. doi:10.1111/j.1467-9507.1997.tb00094.x

Diesendruck, G. (2005). The principles of conventionality and contrast in word learning: An empirical examination. *Developmental Psychology, 41,* 451–463. doi:10.1037/0012-1649.41.3.451

Gelman, S. A. (1988). The development of induction within natural kind and artifact categories. *Cognitive Psychology, 20,* 65–95. doi:10.1016/0010-0285(88)90025-4

Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought.* Oxford, England: Oxford University Press.

Gelman, S. A., & Heyman, G. D. (1999). Carrot-eaters and creature-believers: The effects of lexicalization on children's inferences about social categories. *Psychological Science, 10,* 489–493. doi:10.1111/1467-9280.00194

Gelman, S. A., Ware, E. A., & Kleinberg, F. (2010). Effects of generic language on category content and structure. *Cognitive Psychology, 61,* 273–301. doi:10.1016/j.cogpsych.2010.06.001

Hirschfeld, L. A. (2001). On a folk theory of society: Children, evolution, and mental representations of social groups. *Personality and Social Psychology Review, 5,* 107–117. doi:10.1207/S15327957PSPR0502_2

Howes, C. (2009). Friendship in early childhood. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 180–194). New York, NY: Guilford Press.

Kalish, C. W. (1998). Reasons and causes: Children's understanding of conformity to social rules and physical laws. *Child Development, 69,* 706–720.

Kalish, C. W. (2002). Children's predictions of consistency in people's actions. *Cognition, 84,* 237–265. doi:10.1016/S0010-0277(02)00052-5

Kalish, C. W. (2005). Becoming status conscious: Children's appreciation of social reality. *Philosophical Explorations, 8,* 245–263. doi:10.1080/07418820500219359

Kalish, C. W., & Gelman, S. A. (1992). On wooden pillows: Multiple classification and children's category-based inductions. *Child Development, 63,* 1536–1557. doi:10.2307/1131574

Kalish, C. W., & Lawson, C. A. (2008). Development of social category representations: Early appreciation of roles and deontic relations. *Child Development, 79,* 577–593. doi:10.1111/j.1467-8624.2008.01144.x

Kalish, C. W., & Sabbagh, M. A. (2007). Conventionality in cognitive development: How children acquire shared representations in language, thought, and action. *New Directions in Child and Adolescent Development, 115,* 1–97.

Kalish, C. W., & Shiverick, S. M. (2004). Children's reasoning about norms and traits as motives for behavior. *Cognitive Development, 19,* 401–416. doi:10.1016/j.cogdev.2004.05.004

Lawson, C. A., & Kalish, C. W. (2006). Inductive inferences across time and identity: Are category members more alike than single individuals? *Journal of Cognition and Development, 7,* 233–252. doi:10.1207/s15327647jcd0702_5

Martin, C. L., & Halverson, C. F. (1983). The effects of sex-typing schemas on young children's memory. *Child Development, 54,* 563–574. doi:10.2307/1130043

Miller, J. G. (1986). Early cross-cultural commonalities in social explanation. *Developmental Psychology, 22,* 514–520. doi:10.1037/0012-1649.22.4.514

Rakoczy, H., Warneken, F., & Tomasello, M. (2008). The sources of normativity: Young children's awareness of the normative structure of games. *Developmental Psychology, 44,* 875–881. doi:10.1037/0012-1649.44.3.875

Rhodes, M., & Gelman, S. A. (2008). Categories influence predictions about individual consistency. *Child Development, 79,* 1270–1287. doi:10.1111/j.1467-8624.2008.01188.x

Rholes, W. S., & Ruble, D. N. (1984). Children's understanding of dispositional characteristics of others. *Child Development, 55,* 550–560. doi:10.2307/1129966

Ruble, D. N., Feldman, N. S., Higgins, E. T., & Karlovac, M. (1979). Locus of causality and the use of information in the development of causal attributions. *Journal of Personality, 47,* 595–614. doi:10.1111/j.1467-6494.1979.tb00211.x

Ruble, D. N., & Stangor, C. (1986). Stalking the elusive schema: Insights from developmental and social-psychological analyses of gender schemas. *Social Cognition, 4,* 227–261. doi:10.1521/soco.1986.4.2.227

Sabbagh, M. A., & Baldwin, D. A. (2001). Learning words from knowledgeable versus ignorant speakers: Links between preschoolers' theory of mind and semantic development. *Child Development, 72,* 1054–1070. doi:10.1111/1467-8624.00334

Sabbagh, M. A., & Shafman, D. (2009). How children block learning from ignorant speakers. *Cognition, 112,* 415–422. doi:10.1016/j.cognition.2009.06.005

Turiel, E. (1998). The development of morality. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol 3. Social, emotional, and personality development* (5th ed., pp. 863–932). New York, NY: Wiley.

Wellman, H. M. (1992). *The child's theory of mind.* Cambridge, MA: MIT Press.

Appendix

Predicate Stories

~~Predicates used in stories.~~ All examples are illustrated using person subjects and individual targets. All stories are presented in the Set 1 form. Approximately half the participants heard Set 2 stories in which the norms and preferences are reversed. For example, in Set 1, the pants versus dress choice was motivated by a preference. In Set 2, this choice appeared motivated by an obligation.

Control. This is Wanda. A few days ago, Wanda had her birthday. Now, today, here is Wanda again. Do you think it might be her birthday today, or is it not her birthday?

Control. This is Erica. A few days ago, Erica had two auricles, one on each side of her body. The auricles were inside her, and were part of her ears. This is Erica again today. Do you think she has two auricles inside her today like last time, or will she have a different number?

Control. This is Mike. A few days ago, Mike had two older brothers. Here is Mike again. Now, today, do you think Mike has two older brothers, or does he have some other number of older brothers?

Control. This is PanFu. A few days ago, PanFu had some dirt on his knee. Now, today, here is PanFu again. Do you think that PanFu has some dirt on his knee like last time, or is his knee clean?

Preference. This is Alexa. A few days ago, she chose between wearing a skirt or pants to school. Alexa wore a skirt because she likes wearing a skirt to school. She does not like to wear pants. Now here is Alexa again. Today, she is getting dressed for school. Do you think she will like to wear pants, or will she only like to wear a skirt to school like last time?

Preference. This is Vaisha. A few days ago, she chose between beef and chicken for lunch at school. Vaisha ate beef because she does not like to eat chicken. She likes to eat beef. Now here is Vaisha again, and she is going to have lunch at school. Do you think she will like chicken, or will she only like beef like last time?

Preference. This is Diego. A few days ago, he chose between playing cards and playing baseball after school. Diego played cards because he does not like to play baseball after school. He likes to stay in and play cards. Now today, here is Diego again. Do you think Diego will like to play baseball today, or will he only like to play cards like last time?

Preference. This is Winslow. A few days ago, Winslow was making a birdhouse. He could choose either metal or wood for the birdhouse. He used metal because he likes using metal. He does not like making wood birdhouses. Here is Winslow again. Today, Winslow is making another birdhouse. Will Winslow like to use wood to make the birdhouse this time? Or will he only like using metal like last time?

Norm. This is Lisa. A few days ago, Lisa got to choose either a chocolate ice cream or a vanilla ice cream. Lisa picked chocolate because she is not allowed to eat vanilla. She can only eat chocolate. Now today, here is Lisa again. There is chocolate and vanilla ice cream. Do you think she will be allowed to each vanilla or only chocolate, like last time?

Norm. This is Karolo. A few days ago, he chose between playing a matching video game and a driving video game. Karolo played the matching game because he is not allowed to play the driving game. He has to play the matching game. Now today, here is Karolo again. He's going to play a video game. Do you think he will be allowed to play the driving game, or does he have to play matching game like last time?

Norm. This is Ornal. A few days ago, she chose between a red or a blue necklace. Ornal wore the blue necklace because she is not allowed to wear the red necklace. She can only wear the blue one. Now, today, here is Ornal again. Do you think she will be allowed to wear the red necklace today, or will she have to wear the blue one like last time?

Norm. This is Jimmy. A few days ago, Jimmy could choose either colored pencils or crayons to color with. Jimmy chose pencils because he has to use colored pencils. He is not allowed to use the crayons. Now today, here is Jimmy coloring again. Do you think he can use the crayons, or will he have to use the pencils like last time?