Research Article

Going With the Flow
Preschoolers Prefer Nondissenters as Informants

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ABSTRACT—In two experiments, 3- and 4-year-olds were tested for their sensitivity to agreement and disagreement among informants. In pretest trials, they watched as three of four informants (Experiment 1) or two of three informants (Experiment 2) indicated the same referent for an unfamiliar label; the remaining informant was a lone dissenter who indicated a different referent. Asked for their own judgment, the preschoolers sided with the majority rather than the dissenter. In subsequent test trials, one member of the majority and the dissenter remained present and continued to provide conflicting information about the names of unfamiliar objects. Children remained mistrustful of the dissenter. They preferred to seek and endorse information from the informant who had belonged to the majority. The implications and scope of children’s early sensitivity to group consensus are discussed.

Several recent studies have established that young children do not trust all informants equally. Three- and 4-year-olds keep track of which of two informants offers more accurate information about, for example, the names or properties of familiar objects. Subsequently, when invited to evaluate the two informants, children prefer the more accurate one. They explicitly describe that informant as better at answering questions, they address more of their own questions to that informant, and they endorse the claims made by him or her (Birch, Vauthier, & Bloom, 2008; Clément, Koenig, & Harris, 2004; Pasquini, Corriveau, Koenig, & Harris, 2007). This selective trust is robust. One week after exposure to informants’ differential accuracy, 3- and 4-year-olds continue to invest more trust in the previously accurate informant (Corriveau & Harris, in press; Jaswal & Neely, 2006). Moreover, although preschoolers show an initial preference for information supplied by a familiar as opposed to an unfamiliar informant and also for information supplied by an adult as opposed to a child, either bias can be reversed if the initially preferred informant proves to be less accurate (Corriveau & Harris, in press; Jaswal & Neely, 2006). In summary, young children safeguard themselves against being misled by placing more trust in previously accurate informants.

Despite its utility, this accuracy-monitoring strategy has a major limitation. Informants make many claims that cannot be checked for accuracy. For example, if informants supply the names of unfamiliar objects, make predictions about the future, or assert the existence of invisible creatures (Harris, Pasquini, Duke, Asscher, & Pons, 2006), the accuracy of those claims cannot be assessed easily. Under these circumstances, when no immediate index of an informant’s accuracy is available, it would be useful to monitor informants for the extent to which they form a consensus. Classic studies in social psychology have shown that adults are quite sensitive to group consensus when making a judgment (e.g., Asch, 1956; Sherif, 1936). More recent research with adults has emphasized the related principle of social proof. By examining the pattern of responses made by other people, adults can determine what would be an appropriate response for themselves (Cialdini, 1993; Cialdini & Trost, 1998). Yet little is known about the developmental origins of the tendency to look for and follow a consensus.

One recent study (Fusaro & Harris, 2008) suggests that preschool children may be able to monitor informants’ agreement and disagreement. We presented 4-year-olds with two informants who made conflicting claims about the names of unfamiliar objects. One informant’s labels were greeted by nonverbal signs of approbation on the part of two bystanders—they smiled and nodded their heads. The names supplied by the other informant were greeted by nonverbal signs of disapprobation—the bystanders frowned and shook their heads. When invited to choose between the conflicting names, children preferred the names supplied by the informant who had received approbation. Moreover, in subsequent tests, some children continued to show greater trust in that informant even when the two bystanders had left and no longer supplied nonverbal cues. Thus, just as children trust informants who have proven accurate, so do they also appear to trust informants who are part of a consensus.

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We conducted the present study in an attempt to provide stronger evidence of an early sensitivity to agreement among potential informants. Three- and 4-year-olds were presented with four adult informants and tested in two phases. In pretest trials, the children received information from the adults about the referent of an unfamiliar name. More specifically, in each of four pretest trials, the experimenter presented three unfamiliar objects and asked the adults to indicate which was, for example, a modi. Three adults pointed to one object, but the fourth adult served as a lone dissenter and pointed to a different object. The children were then asked for their opinion.

Next, two members of the three-person majority left the room. The subsequent four test trials proceeded with only two informants present: the sole remaining majority adult and the previously dissenting adult. On each test trial, the experimenter presented a single, unfamiliar object. The children were probed in three ways. Ask questions invited them to ask one of the two informants about the name of the unfamiliar object. Endorse questions invited them to accept one of the two conflicting names supplied by the informants. Finally, explicit-judgment questions asked them to characterize each informant in terms of how good she was at naming objects.

We made two separate but related predictions. First, if the children were sensitive to agreement among informants, and used that agreement as a form of social proof during pretest trials, they would select the referent indicated by the unanimous majority, rather than the referent selected by the lone dissenter. Second, in test trials, after the departure of all but one of the majority, if the children regarded a member of the majority as more trustworthy than the dissenter, they would display that selective trust in their responses to the three types of test questions.

Note that agreement among members of the majority and disagreement by the lone dissenter were always indexed by the same emotionally neutral, pointing gestures. Thus, selective trust during pretest trials, test trials, or both would provide persuasive evidence that children are sensitive to agreement and disagreement among informants. Such sensitivity to social proof would not depend on the nonverbal expression of approbation versus disapprobation toward informants, as it did in our previous study (Fusaro & Harris, 2008).

EXPERIMENT 1

Method

Participants

Participants were sixteen 3-year-olds (M = 3 years 6 months, range: 3 years 2 months–4 years 0 months; 7 females, 9 males) and sixteen 4-year-olds (M = 4 years 6 months, range: 4 years 2 months–5 years 0 months; 8 females, 8 males). Children were recruited from preschools in Cambridge, Massachusetts. Most were White, although a range of ethnicities and socioeconomic statuses was represented.

Procedure

During four pretest trials, children’s preference for the particular referent endorsed by the majority (three informants) or the minority (one informant) was measured. Next, during four test trials, their preference for asking the majority informant for labels and for endorsing that informant was measured. In addition, their explicit judgments regarding the accuracy of the two informants were obtained immediately after these four test trials. We now describe each phase in more detail.

Pretest. Children were tested individually. A film featuring four female informants wearing different, solid-colored shirts (green, blue, purple, and red) was used in each trial of the pretest phase. Three novel objects were set out in front of them. Each trial began with a voice-over saying, for example, “Show me the modi.” Simultaneously, three informants pointed to the same object, but the fourth informant pointed to a different object. Finally, a still frame of the four informants and the three novel objects was shown. The location of the dissenter (on the outside or in the middle) and the color of the dissenter’s shirt (green or blue) varied systematically across participants.

To introduce the task, the experimenter pointed to a still frame of the four informants and asked about each color in turn, “See these four people? Which one is wearing a green/blue/purple/red shirt?” These girls are going to help us learn the names of some things.” The experimenter then pointed to a still frame of the four informants and the first set of three novel objects and said, “See these funny-looking things? Do you know what they are called? One of them is called a ____. Maybe these people can help us. Let’s watch.” If the child claimed to know the name of an object, the experimenter said, “Actually, I don’t think that’s what it is called. But I bet these people can help us.” After the child viewed the video clip, the experimenter again showed the still frame of the four informants and the three objects and asked the child what he or she thought. For example, the experimenter said, “They pointed to this one, and she pointed to this one. Which one is the modi?” The child was invited to point to the object that he or she thought was the modi, and this response was recorded. This procedure was repeated for all four trials, with different objects and labels (see Table 1 for a complete list of objects and labels). The order in which informants were mentioned in the test question was varied across trials.

Test. A film featuring one member of the three-person majority and the dissenting informant (green shirt or blue shirt) was used in each trial of the test phase. Each trial began with a voice-over asking, “Can you tell me what this is called?” One informant responded by producing a novel label (e.g., “That’s a linz”), and the other informant then produced a different novel label (e.g.,
“That’s a slod”; see Table 2 for a complete list of objects and labels). The order in which the informants named the object varied across trials.

To introduce the task, the experimenter pointed to a still frame of the two informants and said, “Some of the girls had to leave, but the girl in the green/blue shirt and the girl in the blue/green shirt stayed. They’re going to help us learn the names of some more things.”

The children were asked three sets of questions in test trials. An ask question preceded each video clip, for a total of four ask questions. The experimenter pointed to a still frame of the first novel object and said, “Do you know what this is called? Who would you like to ask? The girl in the green/blue shirt or the girl in the blue/green shirt?” If the child claimed to know the name of the object, the experimenter said, “Actually, I don’t think that’s what it is called. But I bet these people can help us. Who would you like to ask?”

Each of the four endorse questions occurred immediately after the child viewed one of the video clips. The experimenter paused the video and asked the child what he or she thought the object was called (e.g., “The girl in the green/blue shirt said it was a zazz, and the girl in the blue shirt said it was a yiff. What do you think it’s called—a zazz or a yiff?”).

Three explicit-judgment questions were asked following the fourth endorse question. The experimenter pointed to the informant in the green shirt and asked, “Was the girl in the green shirt very good or not very good at saying the names of those things?” The same question was posed in regard to the other informant. Finally, the child was asked, “Which girl was better at saying the names of those things? The girl in the green shirt or the girl in the blue shirt?”

For all questions, both verbal and nonverbal (e.g., pointing) responses were accepted.

### Results

**Pretest Trials**

Table 3 displays the children’s mean preference for the referent indicated by the majority in the pretest trials, along with statistical results comparing mean preference with chance performance. Although only two of the three objects were pointed at in each trial, some children (25%) selected the object that was not indicated by any informant. Accordingly, chance was calculated to be 1.33 out of a possible total of 4. Overall, both 3- and 4-year-olds displayed a systematic preference for the object indicated by the majority. There was no age difference in the strength of this preference, \( t(30) = -0.41, p = .68 \).

**Test Trials**

Table 3 also displays results for the test trials. For the ask, endorse, and explicit-judgment questions, chance level was 50%. Four-year-olds systematically preferred the nondissenter in their answers to all three types of questions. Three-year-olds systematically preferred the nondissenter in their answers to the endorse and explicit-judgment questions. To determine whether these differences across question type were significant, we conducted an analysis of variance with question type (ask, endorse, explicit-judgment) as the within-subjects variable and age (3, 4) as the between-subjects variable. Explicit-judgment scores were multiplied by 4/3 to allow comparison across the question types. No main effects and no interaction were found. Therefore, a total score (maximum = 11) was created by collapsing across the three question types. As Table 3 shows, both 3- and 4-year-olds displayed a significant preference (chance = 50%) for the majority informant in their total scores.

**Discussion**

In pretest trials, both age groups tended to accept the claims made by the majority. Moreover, in test trials, they invested more trust in the informant who had belonged to the majority than in the lone dissenter. This selective trust was evident among both 3- and 4-year-olds. These findings support the conclusion that preschoolers are sensitive to agreement and disagreement among informants. Not only did the preschoolers in this experiment favor the majority view—as indexed by their agreement with the majority during pretest trials—but they also subsequently favored an informant who had belonged to that majority—as indexed by their selective trust during the test trials.

### TABLE 1

<table>
<thead>
<tr>
<th>Stimuli Used in Pretest Trials in Experiments 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Novel label</strong></td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Modi</td>
</tr>
<tr>
<td>Toma</td>
</tr>
<tr>
<td>Wug</td>
</tr>
<tr>
<td>Dax</td>
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</table>

### TABLE 2

<table>
<thead>
<tr>
<th>Stimuli Used in Test Trials in Experiments 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Novel object</strong></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Red and white metal</td>
</tr>
<tr>
<td>Black and gold pizza spatula</td>
</tr>
<tr>
<td>Yellow sprinkler head</td>
</tr>
<tr>
<td>Metal bathroom hook</td>
</tr>
</tbody>
</table>
TABLE 3

Mean Scores, Comparisons With Chance Performance, and Effect Sizes in Experiments 1 and 2

<table>
<thead>
<tr>
<th>Experiment and score</th>
<th>3-year-olds</th>
<th>4-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>t</td>
</tr>
<tr>
<td>Pretest score (max = 4)</td>
<td>2.69</td>
<td>5.74***</td>
</tr>
<tr>
<td>Total test score (max = 11)</td>
<td>6.75</td>
<td>3.02**</td>
</tr>
<tr>
<td>Ask questions (max = 4)</td>
<td>2.44</td>
<td>1.70</td>
</tr>
<tr>
<td>Endorse questions (max = 4)</td>
<td>2.38</td>
<td>1.96*</td>
</tr>
<tr>
<td>Explicit-judgment questions (max = 3)</td>
<td>1.93</td>
<td>2.57*</td>
</tr>
<tr>
<td>Pretest score (max = 4)</td>
<td>2.53</td>
<td>7.91***</td>
</tr>
<tr>
<td>Total test score (max = 11)</td>
<td>6.82</td>
<td>3.27**</td>
</tr>
<tr>
<td>Ask questions (max = 4)</td>
<td>2.47</td>
<td>2.70*</td>
</tr>
<tr>
<td>Endorse questions (max = 4)</td>
<td>2.29</td>
<td>1.23</td>
</tr>
<tr>
<td>Explicit-judgment questions (max = 3)</td>
<td>2.06</td>
<td>2.23*</td>
</tr>
</tbody>
</table>

Note. Mean scores indicate the number of trials on which the children preferred the object endorsed by the majority (pretest) or the number of questions for which the children’s replies indicated greater trust in the member of the previous majority than in the dissenter (test). Standard errors are given in parentheses.

*p < .05, \( p_{rep} = .95 \), **p < .01, \( p_{rep} = .99 \), ***p < .001, \( p_{rep} = .99 \).

There is, however, a possible procedural objection to the findings, particularly in the case of the pretest trials. Recall that the children saw three adults pointing to one object and the lone dissenter pointing to a different object. The convergence of the three pointing gestures on one object may have heightened the children’s attention to it relative to the object that received only one pointing gesture (from the lone dissenter). The children may have selected the convergent object because they remained attentive to it or because they were inclined to mimic the three pointing gestures directed toward it. Admittedly, this attention or mimicry hypothesis does not easily explain why the children showed selective trust in the majority adult during the subsequent test trials. Still, it could be argued that the convergent pointing also elicited heightened inspection of members of the majority, thereby increasing their familiarity and apparent trustworthiness during the pretest trials and the subsequent test trials.

To rule out this alternative interpretation, we repeated Experiment 1 with two changes. First, the total number of adult informants was reduced from four to three. On pretest trials, two of these three adults simultaneously pointed to one object, and the lone dissenter pointed to a different object. To control for the number of pointing gestures directed at each object, the lone dissenter pointed with each hand. Thus, whether the children looked at the referent indicated by the majority (of two) or the referent indicated by the lone dissenter, they saw two hands pointing at it. If the children in Experiment 1 had been influenced simply by the number of pointing gestures, the children in Experiment 2 would not be expected to show selectivity in either pretest or test trials. However, if the children in Experiment 1 had been sensitive to agreement and disagreement among informants, the children in Experiment 2 would also be expected to show selectivity.

EXPERIMENT 2

Method

Participants

Participants were seventeen 3-year-olds (M = 3 years 6 months, range: 3 years 1 month–4 years 0 months; 9 females, 8 males) and sixteen 4-year-olds (M = 4 years 7 months, range: 4 years 2 months–5 years 0 months; 9 females, 7 males). Children were recruited from preschools in Cambridge, Massachusetts. Most were White, although a range of ethnicities and socioeconomic statuses was represented.

Procedure

The procedure was identical to that in Experiment 1 with the following changes to the pretest trials. First, only three informants were present (and thus, the majority group consisted of two informants). Second, the lone dissenter pointed using both hands, whereas the majority informants each pointed with one hand. Thus, two of the three objects were each endorsed with two pointing hands. Test trials proceeded as in Experiment 1, with one member of the majority and the lone dissenter serving as informants.

Results

Pretest Trials

Table 3 displays the children’s mean preference for the referent indicated by the majority in the pretest trials, along with sta-
sensitivity toward consensus during the pretest trials. Indeed, the majority informant in the test trials if they had shown more preference for the referent object. Nevertheless, an independent-samples t test of pretest performance revealed that this preference was stronger among 4-year-olds than among 3-year-olds, t(31) = −2.95, p < .01, p_{rep} = .98, d = 1.03.

**Test Trials**

Table 3 also displays results for the test trials. Four-year-olds showed a preference for the nondissenter in their answers to the ask and endorse questions. Three-year-olds showed a preference for the nondissenter in the answers to the ask and explicit-judgment questions. To determine whether these differences across question type were significant, we conducted an analysis of variance with question type (ask, endorse, explicit-judgment) as the within-subjects variable and age (3, 4) as the between-subjects variable. Explicit-judgment scores were multiplied by 4/3 to allow comparison across question types. No main effects and no interaction were found. Therefore, a total score (maximum = 11) was created by collapsing across the question types. As Table 3 shows, both 3- and 4-year-olds displayed a significant preference for the majority informant (chance = 50%) in their total scores.

**Relationship Between Pretest and Test Trials**

Figure 1 displays children’s mean test performance as a function of the number of times they chose the majority in the pretest trials, collapsed across Experiments 1 and 2. Inspection of this figure indicates that children displayed a stronger preference for the majority informant in the test trials if they had shown more sensitivity toward consensus during the pretest trials. Indeed, more than two thirds of the preschoolers tested (45 out of 65) chose the majority three or four times in the pretest trials. Of these 45 children, 48% went on to choose the majority informant on at least 8 of the 11 test questions, and 71% went on to choose the majority informant on at least 7 of the 11 test questions.

To further assess whether children behaved similarly in the pretest and test, we examined the relationship between test and pretest performance using a multiple regression with test scores as the dependent variable and age in months and pretest scores as the independent variables. Although age in months was not a significant predictor of test performance, β = .02, SE = .02, pretest performance accounted for 18% of the variation in test performance, β = .95, SE = .26, p < .001, p_{rep} = .99. Thus, children’s endorsement of the majority during pretest trials predicted their preference for the nondissenter in test trials.

**GENERAL DISCUSSION**

The alteration in the total number of informants, the size of the majority, and the distribution of pointing gestures during pretest trials did not alter the basic pattern of findings in Experiment 2. Taken together, Experiments 1 and 2 support the conclusion that preschoolers can recognize and trust a consensus. During the pretest, both age groups preferred to accept the claims of the majority, rather than those of the lone dissenter. This preference was observed whether the majority consisted of three informants (Experiment 1) or two informants (Experiment 2). Thus, when faced with competing claims in a word-learning context, preschoolers appear to use the heuristic of accepting the majority view. Furthermore, during test trials, children displayed more trust in the informant belonging to the earlier majority than in the previously dissenting informant. When replies to all test questions were grouped together, both age groups invested more trust in the majority member. Finally, a regression analysis confirmed that children’s sensitivity to the majority during pretest trials was linked to their preference for the majority informant, rather than the dissenter, during test trials.

When combined with the studies of accuracy monitoring reviewed in the introduction, our findings show that children are flexible in assessing the trustworthiness of prospective informants. They can monitor an informant’s past accuracy and invest greater trust in a more accurate informant. In addition, however, they can monitor an informant’s agreement and disagreement with other informants and invest greater trust in a nondissenting informant.

Why do preschoolers prefer nondissenters? Two explanations seem feasible. Children might make an epistemic assessment of a potential informant. Thus, they might judge that an informant who belongs to a consensus is more reliable from an epistemic standpoint. Alternatively, they might make an emotional assessment of a potential informant. They might be more attracted to nondissenters than to dissenters and hence prefer to learn from nondissenters. It should be possible to evaluate these two
interpretations by checking whether children prefer nondis- senters only with respect to epistemic matters, or also in terms of social interactions, such as giving, sharing, and helping.

One further important question concerns the scope of children’s sensitivity to consensus. In both of the present experiments, children were presented with informants who supplied information about the names of objects. Given the key role of agreement in the transmission and maintenance of word meaning, consensus might be an especially potent index of an informant’s trustworthiness in this particular domain. For other domains, such as the attribution of object properties, consensus might be a less potent index of trustworthiness. Research on preschoolers’ sensitivity to informant accuracy has shown, however, that they can base their judgment of trustworthiness on accurate property attribution, as well as accurate naming (Clément et al., 2004). Future research should investigate whether the same flexibility operates with respect to the type of information conveyed by the majority.

Children do not always encounter uniformity and agreement when they interact with other people. The people that children encounter will vary in the way they speak, in the beliefs they express, and in the values they endorse. Our findings provide initial evidence that young children navigate that social variation with the help of a simple but powerful strategy. They seek and endorse information from a majority and its members, rather than from a dissenter. Many recent developmental findings have highlighted the early development of a naive theory of mind—preschoolers’ ability to deploy and attribute fundamental psychological concepts, such as desires and beliefs (Bartsch & Wellman, 1995; Wellman, Cross, & Watson, 2001). The present findings indicate the possibility that preschoolers may also use fundamental sociological concepts. They may survey their immediate social group and profile its members in terms of their social conformity or deviation. Such sociological skills are likely to play a key role in channeling children’s judgments and behaviors.

In this regard, one particular finding warrants further comment. In previous research on the development of epistemic trust, the transfer from pretest trials to test trials was robust. However, because the preschoolers in that study had observed informants being accurate or inaccurate in pretest trials, it was not particularly surprising that they expected those informants to display that same tendency in subsequent test trials—even if those trials took place up to 1 week later (Corriveau & Harris, 2009). In the present study, however, the distinctive profiles of the two test informants were strictly a function of the informants’ prior agreement or disagreement with other people. Once those other people had left the room, the conformist tendencies of the one informant and the nonconformist tendencies of the other might easily have been ignored or forgotten. This was not the case. Apparently, children’s tendency to regard particular individuals as disposed to conform with—or dissent from—the majority is established early and guides decision making even in the absence of the relevant reference group.

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REFERENCES


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