*Social Development* Vol 00 No. 00 00–00 July 2016
doi: 10.1111/sode.12205

# Role of Expertise, Consensus, and Informational Valence in Children's Performance Judgments

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**Abstract**

*Two experiments examined the role of expertise, consensus, and informational valence on children's acceptance of informant testimony about the quality of work produced by a target child. In Experiment 1, 96 4- to 5.9-year-olds and 6- to 8-year-olds were told about an expert who gave a positive or negative assessment of art or music that was contradicted by one layperson or a consensus of three laypersons. Generally, participants endorsed positive assessments as correct irrespective of expertise and consensus, but older children were more likely than younger children to want to learn from the expert in the future. To examine whether reluctance to accept expertise was due to the negative quality of the information, the expert in Experiment 2 simply stated that additional work was needed. Both age groups selected the expert as correct and reported wanting to learn from the expert in the future. Contributions to social learning models are discussed.*

*Keywords*: social cognition; attribution; social learning

Young children are sensitive to individual differences in people's knowledge about the world. For example, preschoolers understand that informational access is necessary to gain knowledge (e.g., Nurmsoo & Robinson, 2009), and they monitor the accuracy of information obtained from others to make decisions that guide learning (e.g., Koenig, Clément, & Harris, 2004). Awareness of credible sources of knowledge is important for social judgments (e.g., Boseovski, 2012; Brosseau-Liard & Birch, 2010), word learning (e.g., Birch, Vauthier, & Bloom, 2008), problem solving (Cluver, Heyman, & Carver, 2013), and critical thinking (Heyman, 2008). Consequently, it is important to understand the factors that children take into account when learning from others.

Expertise is a particularly potent cue for learning new information (e.g., Aguiar, Stoess, & Taylor, 2012; Danovitch & Keil, 2004). Given discrepant facts about a

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novel animal, children as young as 3 years of age endorsed those that originated from a person described as a zookeeper rather than a layperson (Boseovski & Thurman, 2014). Three-year-olds also understand that different types of expertise are associated with different types of knowledge (e.g., doctors vs. mechanics; Lutz & Keil, 2002), and 4- and 5-year-olds further appreciate the scientific principles that underlie knowledge when the domain of expertise is familiar. By 5 years of age, children can organize knowledge by disciplines that map on to university academic divisions (e.g., natural vs. social sciences; Keil, Stein, Webb, Billings, & Rozenblit, 2008). Young children also engage in belief revision more readily following the advice of an expert as compared with an ignorant advisor; this decision is associated with perceptions of experts as competent (Rakoczy, Ehrling, Harris, & Schultze, 2015, Exp. 1). At 6 years of age, children understand when they should ask an expert a question rather than rely on their own knowledge (Aguiar et al., 2012).

Although there is age-related improvement in the understanding of expertise, it is clear that even young children are sensitive to this epistemic cue. Nonetheless, children also rely on social cues for learning. In particular, there is considerable evidence that children use consensus, or majority agreement, to learn new information (e.g., Chen, Corriveau, & Harris, 2013; Corriveau, Fusaro, & Harris, 2009; Corriveau & Harris, 2010; Corriveau, Kim, Song, & Harris, 2013). In a study that examined children's word learning, Fusaro and Harris (2008) exposed 4-year-olds to two informants and two bystanders. Each informant offered a different label for an unknown object (e.g., "feppal" vs. "merval"), and the testimony of one informant was met with agreement from two bystanders (e.g., nodding heads), whereas testimony of the other was met with disapproval from the bystanders (e.g., shaking heads). Participants endorsed testimony of the informant with bystander approval. In another study, 3- and 4-year-olds accepted a toy label offered by a group of informants over one offered by a single dissenter (Corriveau et al., 2009). In an age-appropriate modification of the Asch line judgment task, the majority of 3- to 5-year-olds, and over one third of 6- to 8-year-olds and 9- to 11-year-olds, conformed to an incorrect consensus judgment (Walker & Andrade, 1996).

Based on the literature described above, expertise and consensus are influential in early social learning when their effects are assessed independently. The present study is the first to examine what happens when these cues are put in direct competition. We asked whether children would defer to an expert or novice opinion about the quality of art and music and assessed whether putative deference to an expert's opinion might be reduced in the face of dissenting views from multiple laypersons (i.e., a consensus) as compared with a single layperson. We were also interested in the effects of the type of information (i.e., positive or negative) on children's selections, which is another unique element of these studies that we will describe further below.

Examination of the relative importance of expertise and consensus will provide insight about the mechanisms that drive children's social learning. On one hand, expertise should be especially salient because it is considered to be an epistemic cue; people with expertise in a given domain are legitimately considered to be more knowledgeable than laypersons in that domain (e.g., Koenig & Jaswal, 2011). On the other hand, consensus can also be considered good evidence for a claim even if it cannot speak to the validity of the claim (see Bernard, Harris, Terrier, & Clément, 2015). In part, consensus exerts its effects for affiliative reasons, including deference to others. In one study, preschoolers endorsed the testimony of a consensus of

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adults who made a clearly incorrect line judgment, but proceeded to respond accurately in a follow-up task that required independent line judgments in the absence of the adult consensus (Corriveau & Harris, 2010; see also Haun & Tomasello, 2011).

Despite strong consensus effects in some studies, there are other studies in which such effects have been restricted, and these studies provide insight about how children prioritize other available cues for learning (e.g., DiYanni, Corriveau, Kurkul, Nasrini, & Nini, 2015; Einav, 2014). Schillaci and Kelemen (2014) found that children were less likely to defer to a consensus when objective information was clearly available. Three and 4-year-olds were shown objects for which plausible and implausible functions were described (e.g., a sieve-like item described as an egg holder or a vessel for drinking, respectively). Four-year-olds rejected implausible functions and 3-year-olds responded unsystematically. In contrast, participants accepted consensus information when claims about object functions by the consensus and dissenter were equally plausible (e.g., a mallet-like device described as suitable for pounding fruit or knocking fence posts into the ground). Thus, consensus effects are qualified when there are objective grounds for judgment (Schillaci & Kelemen, 2014). Relatedly, DiYanni et al. (2015) found that 3- to 5-year-olds from the US overlooked a consensus that endorsed a non-affordant tool (e.g., implausible cookie crusher).

Of particular relevance here, only one study (Souza & Legare, 2011) compared the relative influence of consensus vs. expertise information on the willingness to accept informant testimony, and it was conducted with adults. Participants heard conflicting views about the efficacy of a pai-de-santo (i.e., religious healer) from an expert as compared with a layperson consensus. Although both cues were influential, expert testimony outweighed consensus influence. In a study by Einav (2014), 5- and 6-year-olds heard a three-person consensus and a dissenter label a drawing differently (e.g., orange vs. ball). Participants trusted the dissenter's label when they were told that the dissenter had privileged knowledge (i.e., had drawn the item) and deferred to the majority when the dissenter did not have privileged knowledge. Although this latter study did not examine expertise per se, it is clear from the findings that young children prioritize knowledge over social cues for learning in some circumstances.

The current research examined children's preference for expertise vs. consensus information to make a judgment about art or music performance. We focused on performance judgments for three reasons. First, the majority of research on social learning has focused on learning about object labels, object functions, or object search (see Boseovski, 2012). In examining performance judgments, we can determine whether children prioritize social learning cues in the same manner across domains. Indeed, research on social judgments reveals that children only begin to use consensus reliably in middle to late childhood (e.g., Boseovski & Lee, 2008; Divitto & McArthur, 1978) and instead rely on other cues when making trait attributions. From a practical standpoint, these studies can provide insight about what kind of performance feedback might be potent to young children. Second, we wanted to use a domain in which children had to rely on informants to make decisions rather than one in which they could use their own perceptions (e.g., a mathematics solution), given that a good deal of research has already investigated children's trust in their own perceptions as compared with informant testimony (e.g., Chan & Tardif, 2013; Lapan, Boseovski, & Blincoe, 2016). Third, we wanted

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a domain for which evaluative judgments would be relevant given our interest in the role of valence (i.e., positive or negative information) in children's social learning.

Children's use of both consensus (e.g., Boseovski & Lee, 2008) and expertise (e.g., Boseovski & Thurman, 2014) varies based on valence. Boseovski and Lee found that participants made positive judgments about actors and targets of behavior irrespective of whether they received negative or positive consensus information. Boseovski and Thurman found that participants were less willing to accept negatively valenced information about an animal (e.g., "very dangerous") as compared to positively valenced information (e.g., "very friendly"), even when the information was delivered by a zookeeper. These results are consistent with findings of a positivity bias in social judgments that peaks in middle to late childhood (see Boseovski, 2010, for a review). However, these effects vary by age. For example, 3- to 5-year-olds in Boseovski and Thurman were more likely than older children to accept information from the zookeeper, and this finding was pronounced for negative information, supporting reports of a negativity bias in situations that provoke concerns about personal safety (see Vaish, Grossmann, & Woodward, 2008). Thus, we might expect children's use of both expertise and consensus in the current study to vary based on valence and age.

We focused on 4- to 8-year-olds because this is an age period during which multiple learning cues are relevant to children's social learning as described above. Moreover, between early and middle childhood, children begin to use trust heuristics in flexible ways that are context-dependent (Einav, 2014). The current study is unique in providing information about the relative importance of consensus, expertise, and valence in children's social learning in a performance context. In Experiment 1, participants were told stories about a child informant with expertise in art or music who judged the work produced by a target child as either "very good" or "very bad." Participants were also told about the dissenting opinion of a lone layperson child or a consensus of three layperson children. We chose to tell stories about child experts based on research that indicates that children take into account credibility, irrespective of age, when judging informant testimony (e.g., Jaswal & Neely, 2006). This decision was amenable to our story context (i.e., given that there is a higher plausibility that there would be three child layperson informants as compared to three adult layperson informants in a classroom). We did not vary the number of experts, as our question concerned whether expertise would override a layperson consensus. Stories were presented such that participants had to rely on informants' judgments of the target child's work.

Participants were asked which informant was correct and which informant they would prefer to learn from in the future. Inclusion of both questions was an important design feature because it enabled us to assess whether disregard of expertise might reflect reluctance to make a negative evaluation, in which case we would expect stronger performance on the learning endorsement question, where such an evaluation was not required. To determine whether impressions of the informants were related to the valence of evaluation given, we also asked participants to make personality judgments about the characters.

Overall, we predicted that participants would show increased sensitivity to expertise with age, but that this would be qualified by the presentation of negative information (see Boseovski & Thurman, 2014). Consistent with previous findings of a decreased reliance on consensus with age (e.g., Bernard, Proust, & Clément,

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2015; Einav, 2014), younger children were expected to endorse the dissenting views of multiple laypersons to a greater extent than one layperson whereas no difference in endorsement was expected for the older children based on consensus level. We also expected that participants would be more likely to attribute niceness to informants who gave positive evaluations of the work and meanness to those who gave negative evaluations, and that this effect would increase with age, consistent with children's putative perception that positive behavior is normative (Boseovski, 2010). Experiment 2 was a follow-up study that provides insight about valence effects in Experiment 1.

## Experiment 1

### *Method*

*Participants.* There were 96 participants, with 48 4- to 5.9-year-olds (49–71.9 months, $M = 59.2$, $SD = 6.2$, 23 girls), 47 6- to 8-year-olds, and one 9-year-old (72–108 months, $M = 88.2$, $SD = 11$, 25 girls). Participants were recruited from day cares or a database of parents who expressed interested in research participation. Parents signed written consent forms for participants; additionally, children older than 7 years of age signed their own assent form. Testing took place in a laboratory or a day care in a mid-sized Southeastern city. Information about sample composition was obtained from parents of participants and indicated that 54.3 percent of participants were White, 15.6 percent were Black or African-American, 3.1 percent were Asian or Pacific Islanders, 3.1 percent were Hispanic, and 8.3 percent identified as "other." The parents of 15.6 percent of the participants did not disclose racial or ethnic information.

*Materials.* Illustrations of the story characters drawing or playing instruments were shown to participants during the story presentations. Illustrations were constructed so that participants could not judge the quality of the target child's work themselves (e.g., an easel with an obstructed view of the artwork).

*Design and Procedure.* A mixed design was used with age (4- to 5.9-year-olds vs. 6- to 8-year-olds), valence of the expert's judgment (positive vs. negative), and layperson consensus level (no consensus/lone layperson vs. consensus/three dissenting laypersons) as between-subject variables and story type (art or music) as a within-subjects variable. Half of the participants in each age group were assigned randomly to receive information from one expert and one layperson whereas the remaining participants heard about one expert and three laypersons. Half of the participants received positive information from the expert and negative information from the layperson(s) and the remaining participants received negative information from the expert and positive information from the layperson(s). Order of presentation of information was randomized across children for experts/laypersons and counterbalanced for story type. An unrelated distractor task was presented between stories. Participants heard stories about characters of their own gender; stories with females are presented here. Sessions lasted approximately 15 minutes.

First, participants were told about a target child who was drawing or playing music. Participants were told that the child "sometimes draws pictures/plays music, but she can only draw/play a few easy things. [Target] has never taken an art class

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on how to draw/play music. She only draws pictures in her free time. Right now, [Target] is drawing a picture." Participants were then introduced to the expert and layperson(s), for which story content differed by condition.

*Positive Expert-Lone Layperson.* Participants heard about an expert child informant who "draws pictures/plays music every day after school and has taken many art/music classes. She knows how to draw shapes/play music. . .she practices drawing/plays music every chance she gets. She shows her pictures/plays her music to many people." Participants were told that the expert child "looks at [Target's] picture and she thinks that it looks very good." Participants also heard about the counter-opinion of a single layperson child who "draws pictures/plays music only once in a while after school and has never taken art classes. She can't draw shapes and she can only draw one thing. . .she practices drawing/plays music only when she needs something to do. She has only shown her pictures to her family." Participants were told that the layperson child "looks at [Target's] picture and she thinks that it looks very bad."

*Negative Expert-Lone Layperson.* This story was identical to that above except that the expert judged the drawing/music as "very bad" and a single layperson judged it as "very good."

*Positive Expert-Layperson Consensus.* Participants were presented with the same information about the expert informant as described in the positive condition above (i.e., a judgment of "very good"). However, participants heard about a consensus of three laypersons who made an opposing judgment about the drawing/music (i.e., "very bad"). Participants were given the same description of these layperson characters as above, except that the information was pluralized (e.g., "they draw pictures. . ."). Participants were told these layperson characters "look at [Target's] picture and they all think that it looks very bad."

*Negative Expert-Layperson Consensus.* Participants were presented with the same information about the expert informant as described in the negative condition above (i.e., a judgment of "very bad"). Participants then heard about three layperson characters who made the opposing judgment (i.e., "very good").

Afterward, a manipulation check was conducted to ensure that participants recalled the information. Participants were asked if they remembered whether the characters "knew a little or a lot" about drawing/music. Order of the options was randomized. Participants were also asked to re-state each character's judgment of the art/music, "What did [expert/laypersons] say about [Target's] song/picture?" The correctness question was the main dependent measure of interest, "Who do you think is right about [Target's] picture?" for which they were asked to explain "Why?" to determine the basis for their judgment. Then, they were asked trait attribution questions about the experts and layperson(s), "What kind of girl(s) is/are [character(s)]? Are they nice, mean, or not nice or mean?" Order of options was randomized except that the "not nice or mean" option was presented last. Participants were asked a learning endorsement question: "If you wanted to learn how to draw/play music, who would you rather learn from?" and to judge whether they thought that the art/music was "good or bad," with options presented in a random order.

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**Table 1. Means (and standard deviations) for correctness question in Experiment 1 by age, layperson consensus level, and expert valence**

| | Layperson consensus | | | | Lone layperson | | | |
|---|---|---|---|---|---|---|---|---|
| | Positive expert | | Negative expert | | Positive expert | | Negative expert | |
| Age Group | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) |
| Younger | 12 | 2.00+ (0.00) | 12 | 0.25* (0.45) | 12 | 1.75* (0.45) | 12 | 0.33* (0.65) |
| Older | 12 | 2.00+ (0.00) | 12 | 0.25* (0.62) | 12 | 1.83* (0.39) | 12 | 0.67 (0.98) |

*Note:* * indicates significance at $p < .01$; + indicates no statistical analyses due to lack of variability.

*Results*

There were no significant differences in children's responses to questions based on story type (i.e., art vs. music); thus, this variable was omitted from the analyses reported below. Scores for quantitative variables were combined across stories.

*Manipulation Check.* We examined whether children remembered if each character knew a little or a lot and whether they could recall what each character said about the work. All participants answered these questions correctly except for two 4-year-old males (one in the negative expert-lone layperson condition and one in the positive expert-layperson consensus condition) and two 4-year-old females (one in the positive expert-lone layperson condition and one in the positive expert-layperson consensus condition). The experimenter corrected the children and repeated the story.

*Choice of Expert or Layperson(s) as Correct.* Two-tailed $t$ tests against chance indicated that younger children's selections, $t\ (47) = .63$, $p = .53$, and older children's selections, $t\ (47) = 1.35$, $p = .18$, were unsystematic when collapsed across valence. Both younger children, $t\ (23) = 12.69$, $p < .0001$, and older children, $t\ (23) = 15.91$, $p < .0001$, were more likely than expected by chance to choose the expert in the positive valence conditions. Both younger children, $t\ (23) = -6.31$, $p < .0001$, and older children, $t\ (23) = -3.19$, $p = .004$, were less likely than expected by chance to choose the expert in the negative valence conditions; see Table 1.

For each story, participants were assigned a score of 0 if they chose the layperson(s) as correct and a score of 1 if they chose the expert as correct. Thus, scores ranged from 0 to 2 for this variable. A 2 (age: 4–5.9 years vs. 6–8 years) x 2 (expert valence: positive vs. negative) x 2 (layperson consensus level: no consensus vs. consensus) ANOVA revealed no significant effect of age, $F\ (1,\ 88) = .89$, $p = .35$, $\eta_p^2 = .01$. There was a significant effect of expert valence, $F\ (1,\ 88) = 189.7$, $p < .001$, $\eta_p^2 = .68$. Participants were more likely to choose the expert as correct when he or she provided a positive rather than negative evaluation. There was no significant consensus effect, $F\ (1,\ 88) = .03$, $p = .856$, $\eta_p^2 = .000$, but there was a significant valence x consensus interaction, $F\ (1,\ 88) = 4.31$, $p = .04$, $\eta_p^2 = .047$; see Figure 1.

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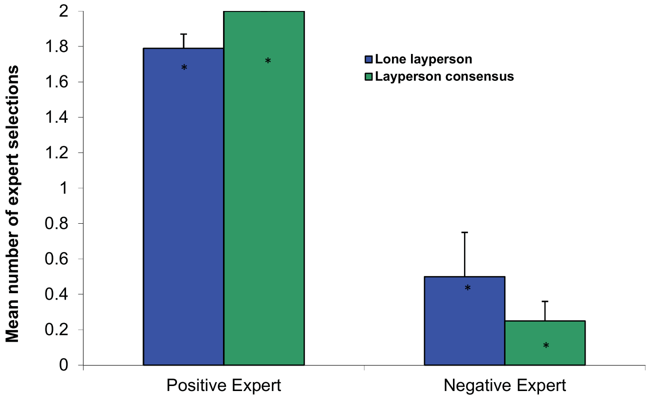


*Figure 1.* Mean Number of Expert Selections by Expert Valence and Layperson Consensus Level for Correctness Question in Experiment 1.
Asterisks indicate that performance differed significantly from chance ($p$s $< .0001$, except for the positive expert-consensus condition, for which no test was produced due to lack of variability).

Follow-up analyses revealed significant valence effects for the no consensus condition, $F$ (1, 46) = 46.1, $p < .0001$, $\eta_p^2 = .50$, and the consensus condition, $F$ (1, 46) = 260, $p < .0001$, $\eta_p^2 = .850$. Irrespective of consensus level, participants were more likely to choose the expert as correct when he or she provided a positive rather than negative evaluation. Concerning consensus effects across valence, there was a significant effect only in the positive expert condition, $F$ (1, 46) = 6.05, $p < .018$, $\eta_p^2 = .116$. Participants were less likely to choose the expert when there was a lone layperson dissenter rather than a consensus of negative layperson dissenters; however, there was a strong preference for the expert in both cases. There was no significant difference in choice of a negative expert based on whether there was a consensus of positive laypersons as compared with a lone positive layperson, $F$ (1, 46) = 1.53, $p = .222$, $\eta_p^2 = .032$. In both cases, participants showed a systematic preference for the positive layperson(s).

*Justification of Choice of Expert or Layperson.* Responses were coded into categories and are presented for Stories 1 and 2 respectively: no response/don't know (10.4 percent; 9.3 percent), appropriate reference to expertise or lack of expertise (9.4 percent; 8.6 percent), positive evaluation of the informant (12.5 percent; 15.6 percent) or target's work (44.8 percent; 50 percent), negative evaluation of informant (3.1 percent; 0 percent) or target's work (1 percent; 3 percent), and other/irrelevant response (18.8 percent; 13.5 percent). Chi-square analyses indicated that these categories did not differ based on participant age, valence of expert testimony, layperson consensus level, or whether the child endorsed expert testimony; all $p$s $> .05$. Data were coded independently by two raters, one of whom was blind to hypotheses. Cohen's Kappas were 1 and .95 for stories 1 and 2 respectively.

*Trait Attributions About the Expert.* Descriptive data are shown in Table 2. As we were interested specifically in children's global trait attributions (i.e., niceness; meanness), children who did not generate these descriptions spontaneously (16

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**Table 2. Mean trait attributions for experts by age, story, expert valence, and layperson consensus level in Experiment 1**

| | Story 1 | | | | | | | | Story 2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Layperson consensus | | | | Lone layperson | | | | Layperson consensus | | | | Lone layperson | | | |
| | Positive expert | | Negative expert | | Positive expert | | Negative expert | | Positive expert | | Negative expert | | Positive expert | | Negative expert | |
| Age | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) |
| Younger | 12 | 1.58 (0.79) | 12 | 0.83 (0.94) | 12 | 1.83 (0.39) | 12 | 0.83 (0.94) | 12 | 1.83 (0.58) | 12 | 0.58 (0.90) | 12 | 1.75 (0.62) | 12 | 0.75 (0.87) |
| Older | 12 | 2.00 (0.00) | 12 | 0.64 (0.81) | 12 | 1.92 (0.29) | 12 | 0.42 (0.67) | 12 | 1.58 (0.79) | 12 | 0.83 (0.83) | 12 | 1.92 (0.29) | 12 | 0.45 (0.69) |

*Note*: Trait attribution scores: 0 = mean, 1 = not nice or mean, 2 = nice.

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children in Story 1 and 10 children in Story 2) were given options of "mean," "not nice or mean," or "nice," which earned scores of 0, 1, and 2 respectively. Scores were summed across stories and thus ranged from 0 to 4. A 2 (age: 4–5.9 years vs. 6–8 years) x 2 (expert valence: positive vs. negative) x 2 (layperson consensus: no consensus vs. consensus) ANOVA revealed no significant effect of age, $F$ (1, 86) = .02, $p = .89$, $\eta_p^2 = 0$ or consensus, $F$ (1, 86) = .003, $p = .95$, $\eta_p^2 = 0$. There was a significant valence effect such that participants gave greater ratings of niceness in the positive than negative valence conditions, $F$ (1, 87) = 92.2, $p < .0001$, $\eta_p^2 = .44$. There were no significant interactions between any of the variables (all $p$s > .30).

*Trait Attributions About Layperson(s).* Descriptive data are shown in Table 3. Children who did not generate a global trait attribution spontaneously (19 children in Story 1 and 15 children in Story 2) were given the same options as above and scoring was the same as described above. A 2 (age: 4–5.9 years vs. 6–8 years) x 2 (expert valence: positive vs. negative) x 2 (layperson consensus: no consensus vs. consensus) ANOVA revealed a significant effect of valence, $F$ (1, 87) = 244.3, $p < .0001$, $\eta_p^2 = .74$; this was qualified by a significant age by expert valence interaction, $F$ (1, 87) = 7.86 $p = .006$, $\eta_p^2 = .08$. Younger children expressed greater liking of layperson(s) who gave a negative evaluation as compared with older children, $F$ (1, 45) = 7.2, $p = .01$, $\eta_p^2 = .14$. In contrast, there was no significant difference in liking of a layperson who gave a positive evaluation, $F$ (1, 45) = 7.2, $p = .01$, $\eta_p^2 = .14$. Both younger children, $F$ (1, 46) = 52.1, $p < .0001$, $\eta_p^2 = .53$, and older children, $F$ (1, 45) = 346.1, $p < .0001$, $\eta_p^2 = .88$, showed greater liking of laypersons who gave positive rather than negative evaluations.

Finally, there was a significant age x consensus interaction, $F$ (1, 87) = 6.26 $p = .014$, $\eta_p^2 = .07$. Younger children expressed greater liking of a single layperson than did older children, $F$ (1, 87) = 9.27, $p = .003$, but there was no age difference in the liking of three laypersons, $F$ (1, 87) = .174, $p = .678$. Within age groups, younger children expressed greater liking for a single layperson than for three laypersons, $F$ (1, 87) = 5.93, $p = .017$ whereas older children did not show a difference in liking for one vs. three laypersons, $F$ (1, 87) = 1.03, $p = .311$.

*Choice of Expert or Layperson(s) for Future Learning.* Two-tailed $t$ tests indicated that both younger children, $t$ (47) = 2.61 $p = .012$, and older children, $t$ (47) = 8.17, $p < .0001$ were more likely than expected by chance to report wanting to learn from the expert. Younger children were more likely than expected by chance to do so in the positive valence conditions, $t$ (23) = 6.91, $p < .0001$, but were unsystematic in the negative valence conditions, $t$ (23) = −7.20, $p = .479$. Older children were more likely to choose the expert in both the positive valence conditions (with no statistical test produced due to lack of variability; all participants endorsed the expert) and the negative valence conditions, $t$ (23) = 2.93, $p = .007$; see Table 4.

For each story, participants were assigned a score of 0 if they endorsed the layperson(s) and 1 if they endorsed the expert for future learning. Thus, scores ranged from 0 to 2 for this variable. A 2 (age: 4–5.5 years vs. 6–8 years) x 2 (expert valence: positive vs. negative) x 2 (layperson consensus: no consensus vs. consensus) ANOVA revealed that older children ($M = 1.75$, $SD = .63$) were significantly more likely than younger children ($M = 1.31$, $SD = .83$) to want to learn from the expert in the future, $F$ (1, 88) = 10.76, $p = .001$, $\eta_p^2 = .11$. Children were

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**Table 3. Mean trait attributions for layperson(s) by age, story, expert valence, and layperson consensus level in Experiment 1**

| | Story 1 | | | | | | | | Story 2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Layperson consensus | | | | Lone layperson | | | | Layperson consensus | | | | Lone layperson | | | |
| | Positive expert | | Negative expert | | Positive expert | | Negative expert | | Positive expert | | Negative expert | | Positive expert | | Negative expert | |
| Age | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) |
| Younger | 12 | 0.67 (0.98) | 12 | 1.67 (0.78) | 12 | 0.83 (0.94) | 12 | 2.00 (0.00) | 12 | 0.25 (0.62) | 12 | 1.67 (0.78) | 12 | 0.75 (0.97) | 12 | 2.00 (0.00) |
| Older | 12 | 0.09 (0.30) | 12 | 2.00 (0.00) | 12 | 0.00 (0.00) | 12 | 2.00 (0.00) | 12 | .058 (0.90) | 12 | 1.83 (0.58) | 12 | 0.08 (0.29) | 12 | 1.83 (0.58) |

*Note*: Trait attribution scores: 0 = mean, 1 = not nice or mean, 2 = nice.

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**Table 4. Means (and standard deviations) for learning preference question in Experiment 1 by age, layperson consensus level, and expert valence**

| | Layperson consensus | | | | Lone layperson | | | |
|---|---|---|---|---|---|---|---|---|
| | Positive expert | | Negative expert | | Positive expert | | Negative expert | |
| Age Group | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) | *n* | *M* (*SD*) |
| Younger | 12 | 2.00+ (0.00) | 12 | 0.83 (0.83) | 12 | 1.50**(0.67) | 12 | 0.92 (0.90) |
| Older | 12 | 2.00+ (0.00) | 12 | 1.50*(0.80) | 12 | 2.00+ (0.00) | 12 | 1.50*(0.90) |

*Note:* * indicates significance at $p = .05$; ** indicates significance at $p < .01$; + indicates no statistical analyses due to lack of variability.

significantly more likely to choose the expert when he or she made a positive evaluation, ($M = 1.87$, $SD = .39$) rather than a negative evaluation ($M = 1.19$, $SD = .89$); $F$ (1, 91) = 25.6 $p < .0001$, $\eta_p^2 = .23$; see Figure 2. There was no significant consensus effect $F$ (1, 88) = .61, $p = .44$, $\eta_p^2 = .007$ and no significant interactions (all $F$s < 1.90, all $p$s, > .16, all $\eta_p^2 < .02$).

*Participants' Impressions of Target's Work.* For each story, participants received a score of 0 if they said that the target's work was "bad" and a score of 1 if they said that it was "good." Thus, scores ranged from 0 to 2 for this variable. Eighty-eight of the 96 participants earned scores of 2, one participant earned a score of 1, 5 participants earned scores of 0, and 1 participant did not answer the question. A 2 (age: 4–5.5 years vs. 6–8 years) x 2 (expert valence: positive vs. negative) x 2 (layperson consensus: no consensus vs. consensus) ANOVA revealed that participants were

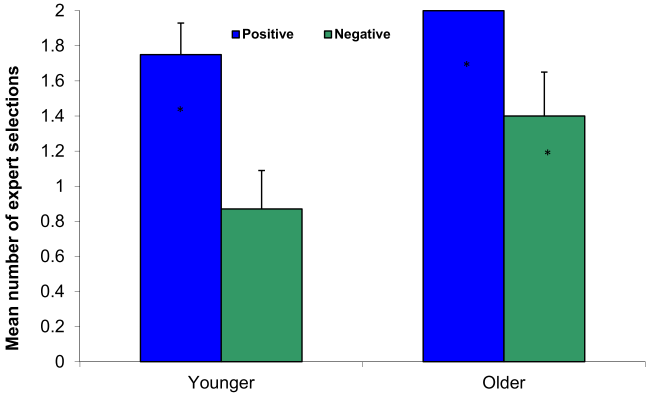


*Figure 2.* Mean Number of Expert Selections by Age and Expert Valence for Learning Preference Question in Experiment 1.
Asterisks indicate that performance differed significantly from chance ($p$s < .01, with the exception of older children in the positive conditions, for which no tests were produced due to lack of variability).

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significantly more likely to judge the product as good in the positive valence conditions ($M = 1.98$, $SD = .14$) than the negative valence conditions ($M = 1.77$, $SD = .62$). There was no significant effect of consensus, $F$ (1, 87) = .85, $p = .36$, $\eta_p^2 = .01$ and no significant age effect, $F$ (1, 87) = 3.47, $p = .07$, $\eta_p^2 = .03$, but there was a significant effect age by valence interaction, $F$ (1, 87) = 5.64, $p = .02$, $\eta_p^2 = .06$.

Follow-up analyses revealed no significant difference between younger children's evaluations ($M = 1.95$, $SD = .21$) and older children's evaluations ($M = 2.0$, $SD = 0$) in the positive valence conditions, $F$ (1, 45) = 1.04, $p = .31$, $\eta_p^2 = .02$. In contrast, older children were significantly less likely to judge the product as good ($M = 1.60$, $SD = .83$) than younger children ($M = 1.95$, $SD = .20$) in the negative valence conditions. Among younger children, there was no significant difference in judgments of the work in the positive valence condition as compared with the negative valence condition, $F$ (1, 45) = .01, $p = .98$, $\eta_p^2 = .00$. Older children made significantly greater judgments of goodness in the positive valence condition as compared with the negative valence condition, $F$ (1, 46) = 6.05, $p = .02$, $\eta_p^2 = .12$. No other interactions emerged significant (all $F$s $< 2.0$, all $p$s, $> .06$, all $\eta_p^2 < .04$).

*Discussion*

We examined whether children trusted an expert's opinion about the quality of art or music in the face of dissenting views from one layperson or a layperson consensus. We also assessed whether valence of the information impacted participants' acceptance of testimony and willingness to learn from experts vs. laypersons in the future. Overall, our findings indicate that both expertise and consensus had limited influence in this study. Younger and older children were unsystematic in their selections of correctness; they did not reliably select either informant as correct.

The finding that expertise was minimally influential to children's correctness judgments is somewhat inconsistent with accounts of sensitivity to this cue (e.g., Lutz & Keil, 2002). Although it is possible that this effect was due to the use of child rather than adult experts, this interpretation is unlikely for three reasons. First, the vast majority of participants passed the manipulation check that required recognition of informant knowledgeability. Second, we chose domains for which it is plausible that children would be highly accomplished (e.g., drawing rather than occupational roles). Third, children readily perceive other children as knowledgeable (e.g., concerning toys; VanderBorght & Jaswal, 2009). As noted previously, children prioritize a history of credibility over age when selecting informants (e.g., Boseovski, 2012; Jaswal & Neely, 2006).

Consensus information alone also did not have a meaningful impact on children's correctness judgments at any age. This contrasts with previous findings in which preschoolers in particular were susceptible to consensus influence (e.g., Corriveau et al., 2009; but see DiYanni et al., 2015; Schillaci & Kelemen, 2014). It is also somewhat surprising given that the information offered by informants might have been perceived as equivocal, which tends to increase the likelihood of consensus use (e.g., Schillaci & Kelemen, 2014). The use of verbal cues, rather than more salient indicators of agreement (e.g., gestures), may have minimized the impact of the information (see Einav, 2014).

These findings reveal that judgments about correctness were highly influenced by valence, and in particular, positive information. Although there was a statistically significant difference between the positive expert conditions, participants

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systematically endorsed the expert as correct irrespective of the number of negative dissenters. These results are consistent with Boseovski and Thurman (2014), who found that positive information from experts was especially potent in 6- to 7-year-olds' evaluations about the qualities of an unfamiliar animal. These findings also parallel the disregard for negative consensus information in the context of personality judgments (Boseovski & Lee, 2008) and extend these results to evaluations about artistic and musical competence. Negative information from experts did not have the same potency; when the expert gave a negative evaluation, participants readily disregarded it. This pattern held irrespective of consensus level, although the means were in the expected direction (i.e., fewer participants chose the expert as correct when there was a consensus of positive laypersons rather than only one layperson dissenter). Interestingly, older children exhibited unsystematic performance when having to choose between a negative expert and a single positive dissenting layperson, revealing a limit on the influence of the positivity bias.

Participants' explanations for their choices, product ratings, and trait attributions also reveal that positive information was influential. The majority of qualitative responses consisted of explicit references to positive judgments of the work (e.g., "because he said it was good"), rather than expertise or consensus, and participants rated the work favorably despite not having seen it. For trait attributions, participants tended to judge informants who evaluated the work positively as nice and those who evaluated the work negatively as mean. These effects were stronger for older children, who also judged laypersons who gave negative evaluations more harshly than did younger children. It is unclear why younger children gave more positive ratings to single laypersons as compared with a three layperson consensus; perhaps this was due to the unusual nature of the question in the latter condition (i.e., being asked about three laypersons simultaneously).

Although these findings seem to suggest that children have a limited appreciation for expertise in the context of performance judgments, results on the learning endorsement question revealed otherwise, at least for older children. These participants were more likely than expected by chance to report wanting to learn from the expert in the future, perhaps indicating that they were reluctant to accept a negative evaluation when asked explicitly which informant was correct. Indeed, for the learning endorsement question, participants only had to indicate a preference for one informant rather than make or acknowledge an evaluation. In early to middle childhood, children begin to appreciate self-presentational display rules, including those that function to treat others positively (Banerjee & Yuill, 1999) or to maintain one's reputation (see Engelmann, Over, Herrmann, & Tomasello, 2013). Moreover, children tell white lies to spare others' feelings, even if they have difficulty articulating why they lied (Talwar & Lee, 2002). This self-presentational tendency may explain the dissociation between correctness and learning preferences for the older children. As a group, younger children showed consistency in their response to the learning preference and correctness question, choosing the expert only in the positive valence conditions. Thus, there is age-related change in the use of expertise when the question is framed in non-evaluative terms.

Given that children were largely responsive to expert evaluation when it was positive rather than negative, we wanted to determine whether re-framing the expert's negative feedback in terms of effort might enhance their recognition of expertise. The concept of effort is prominent in children's implicit theories about ability (see Little & Lopez, 1997), and children are responsive to information about

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effort when making ability judgments (e.g., Heyman, Gee, & Giles, 2003). Thus, Experiment 2 examined whether statements that the product "still needs work" would result in greater acceptance of negative expert testimony in a new participant sample. Because children did not have difficulty accepting positive expert testimony in Experiment 1, we examined children's responses to negative expert feedback only; also, because there were no effects of story type, participants either heard about art or music.

## Experiment 2

### *Method*

*Participants.* There were 48 participants: 24 4- to 5.9-year-olds (48.5–68.3 months, $M = 59.4$, $SD = 5.8$, 12 girls) and 24 6- to 8-year-olds (72.3–107 months, $M = 90.5$, $SD = 12.0$, 17 girls). Concerning sample composition, 50 percent of participants were White, 25 percent were Black, 2.1 percent were Asian, 16.7 percent were "mixed" or "other," and the parents of 6.2 percent of participants chose not to self-disclose on this variable.

*Materials.* The same materials were used as in Experiment 1.

*Design and Procedure.* All participants heard negative information from the expert and positive information from the layperson(s). Age (4- to 5.9-year-olds vs. 6- to 8-year-olds), story type (art vs. music) and layperson consensus level (no consensus: lone dissenter vs. consensus: three dissenting laypersons) were between-subject variables. Half of the participants in each age group were assigned randomly to receive negative information from one expert and positive information from one layperson and the remaining participants heard from one expert and a layperson consensus. The procedure was identical to Experiment 1 except for the phrasing of the evaluations and the presentation of only one story.

*Negative Expert-Lone Layperson.* Participants were told that the expert child "looks at [Target's] picture and she thinks that it still needs work—it has some mistakes." Participants were also told about the counter-opinion of one layperson informant who "looks at [Target's] picture and she thinks that it is finished—it has no mistakes."

*Negative Expert-Layperson Consensus.* Participants were given the same expert information as above, but were told about the counter-opinion of three layperson informants who "look at [Target's] picture and think that it is finished—it has no mistakes."

Participants were asked the same questions as in Experiment 1.

### *Results*

As in Experiment 1, there were no significant differences in children's responses to questions based on story type (i.e., art vs. music).

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*Manipulation Check.* All participants responded correctly to the questions.

*Choice of Expert or Layperson(s) as Correct.* In contrast to Experiment 1, both younger children, ($t$ (23) = 4.29, $p < .0001$), and older children ($t$ (23) = 2.76, $p = .01$), were more likely than expected by chance to choose the expert as correct. Participants were assigned a score of 0 if they chose the layperson(s) and a score of 1 if they chose the expert as correct. Due to the dichotomous nature of the dependent variable, logistic regression was conducted (see Pampel, 2000) with age in months as a continuous variable, consensus level as a categorical variable, and their interaction. The overall model was not significant, $\chi^2$ (3, $N = 48$) = 3.32, $p = .34$, Nagelkerke $R^2 = .10$. There was no significant effect of age, (ß = −.82, *Wald* = 1.98, $p = .16$) or consensus, (ß = −.77, *Wald* = .79, $p = .37$). The interaction was not significant, (ß = 1.21, *Wald* = 2.25, $p = .13$).

*Justification of Choice of Expert or Layperson(s).* Responses were coded into one of five categories: no response/don't know (4.2 percent), reference to expertise or lack of expertise (50 percent), positive evaluation of informant (0 percent) or target's work (2.1 percent), negative evaluation of informant (2 percent) or target's work (12.5 percent), and other/irrelevant response (29.2 percent). Data were coded independently by two raters and Cohen's Kappa was calculated as .85. Chi-square analyses indicated that response patterns did not differ based on participant age or consensus, all $ps > .05$. Participants who chose the expert as correct made a greater number of references to expertise than those who chose the layperson, $\chi^2$ (4, $N = 48$) = 10.46, $p = .03$.

*Trait Attributions About the Expert.* Participants made trait attributions with the options of "mean," "not nice or mean," or "nice," which earned scores of 0, 1, and 2 respectively. A 2 (age: 4–5.9 years vs. 6–8 years) x 2 (layperson consensus: no consensus vs. consensus) ANOVA revealed that there was no significant effect of age, $F$ (1, 44) = 1.07 $p = .30$, $\eta_p{}^2 = .024$ or consensus, $F$ (1, 44) = .48 $p = .49$, $\eta_p{}^2 = .01$, and no significant interaction between these two variables, $F$ (1, 44) = 2.97 $p = .09$, $\eta_p{}^2 = .06$. Mean liking ratings for younger and older children respectively were 1.62 ($SD = .76$) and 1.38 ($SD = .92$).

*Trait Attributions About Layperson(s).* Scoring and analysis type were the same as above. There was a significant main effect of age, $F$ (1, 44) = 6.23, $p = .024$. Older children gave significantly higher niceness ratings ($M = 1.87$, $SD = .33$) than younger children, ($M = 1.37$, $SD = .92$). There was no significant effect of consensus, $F$ (1, 44) = 1.55 $p = .21$, $\eta_p{}^2 = .02$ and no significant interaction between these two variables, $F$ (1, 44) = .693 $p = .41$, $\eta_p{}^2 = .02$.

*Choice of Expert or Layperson(s) for Future Learning.* In contrast to Experiment 1, younger children were more likely than expected by chance to want to learn from the expert, $t$ (23) = 2.76, $p = .01$. Consistent with Experiment 1, older children were also more likely than expected by chance to do so, $t$ (23) = 4.29, $p = .01$. Participants were assigned a score of 0 if they endorsed the layperson(s) and 1 if they endorsed the expert. The overall model was not significant, $\chi^2$ (3, $N = 48$) = 2.04, $p > .56$, Nagelkerke $R^2 = .06$. There was no significant effect of age (ß = .65,

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*Wald* = 1.08, $p = .29$), consensus, (ß = −.544, *Wald* = .49, $p = .48$), and no significant interaction (ß = −.376, *Wald* = .21, $p = .65$). The means for younger and older children respectively were .75 (*SD* = .44) and .83 (*SD* = .38).

*Participants' Impressions of Target's Work.* Participants received a score of 0 if they said that the target's work "needs work—it has some mistakes" and 1 if they said that the target's work "is finished and it has no mistakes." The overall model was not significant, $\chi^2$ (3, $N = 48$) = 1.30 $p = .73$. There was no significant effect of age (ß = −.43, *Wald* = 1.10, $p = .29$), consensus, (ß = −.216, *Wald* = .13, $p = .72$), and no significant interaction between the two variables, (ß = .326, *Wald* = .53, $p = .47$). Twenty-nine children (60.4 percent) said that additional work was needed; 19 children (39.6 percent) said that it was complete.

### *Discussion*

Overall, the findings support the hypothesis that children's reluctance to acknowledge the expert as correct in Experiment 1 was due to the negative nature of the information. When the feedback referred instead to effort and completion, younger and older children selected the expert systematically. Specifically, younger children's recognition of expertise increased to greater-than-chance levels for both questions and older children now judged the expert as correct. Qualitative responses also followed this pattern of increased deference to expertise; there were more references to expertise and those who chose the expert as correct often referred to the character's knowledge in the open-ended responses. Overall, trait evaluations of the expert and laypersons were neutral to positive, which was expected given the benign feedback (Boseovski, 2010). Finally, a substantial number of children agreed with the expert's assessment that additional work was needed, in contrast to the majority assumption in Experiment 1 that it was "very good."

## *General Discussion*

These experiments shed light on children's use of expertise, consensus, and informational valence to judge the credibility of evaluations about music and art performance. Altogether, the results reveal that children are sensitive to expertise as a knowledge cue, but that they overlook it readily in favor of a positive evaluation. Consensus also had relatively little impact on children's judgments and was used selectively by children to support favorable evaluations. The findings of Experiment 2 underscore the potential importance of children's motivations in situations where they are asked to judge credibility explicitly. Both age groups acknowledged expertise readily when statements centered on the need for increased effort rather than poor quality.

As noted previously, children show self-presentational tendencies by middle childhood that increase with age (Banerjee, 2002). The awareness that one may be judged by the types of things he or she says, along with increased social competence that involves heightened empathy toward others (e.g., Eisenberg & Miller, 1987), may have motivated children to reject negative evaluations. Children become better able to tell and maintain "white lies" with age (Talwar, Murphy, & Lee, 2007), and this timing corresponds with the peak of the positivity bias in middle to late childhood.

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Participants' increased willingness to accept negative feedback in Experiment 2 may also have resulted from the perception of the expert as a helpful person (see Bryan, Master, & Walton, 2014). Children understand the association between effort and academic success (Heyman et al., 2003); thus, they may have assumed that the expert had positive intentions. In contrast, the intention behind the negative evaluation in Experiment 1 may have been unclear. A related possibility is that children's judgments reflected greater trust in people who say nice things. This is consistent with Landrum, Mills, and Johnston (2013), who reported that preschoolers who acknowledged informants' expertise in various domains later judged a benevolent non-expert as accurate when benevolence was put in competition with expertise. These authors note that children may consider niceness itself as a cue to trustworthiness (see also Mascaro & Sperber, 2009). Trait ratings of children were highly influenced by valence and it is possible that these impressions guided their informant preference. It is also possible that children engaged in inappropriate generalization of positive traits across domains (e.g., judging nice people as better at jumping hurdles; see Stipek & Daniels, 1990). These possibilities could be investigated in future research.

Concerning theoretical contributions of this work, current frameworks of selective trust (Harris & Corriveau, 2011; Mills, 2013) could be expanded beyond the inclusion of epistemic and social cues to consider how and when positivity serves as a heuristic in social learning. Based on our qualitative data, self-presentation was indeed influential to a substantial number of participants who made references to informants' positive traits to justify their selections. That said, the majority of participants who showed a positivity bias referred to the work itself as high quality (i.e., rather than talking about the importance of being nice). Thus, it is important to consider the influence of positive *content* in addition to positive *informant characteristics* on children's learning experiences. It is also important to establish to what degree the presence or salience of positive information, rather than the absence of negative information, is most influential to children's judgments.

Children's overall disregard of consensus in these experiments was somewhat striking in contrast to some studies that revealed strong effects of this cue (e.g., Corriveau et al., 2009). However, our studies were aimed at understanding the information that children prioritize when competing cues are offered rather than to determine whether they preferred a consensus over a dissenter. Thus, our findings are not incompatible with previous results, but rather add to the literature on circumstances in which consensus has limited influence (e.g., DiYanni et al., 2015; Schillaci & Kelemen, 2014). These results are also consistent with Einav (2014), who demonstrated that children value privileged knowledge over consensus information. Here, we extend the finding to expertise and to the domain of performance evaluations. Our choice to focus on art and music performance may also have encouraged children to err on the side of caution in their judgments. Specifically, children may have perceived these judgments as more subjective than object labels, which are the focus of many studies. Subjectivity may have made it easier to revert to a positivity bias.

Concerning future directions, it would be worthwhile to investigate further how children conceptualize consensus information given discrepancies across studies. As noted by Corriveau, Min, and Kurkul (2014), factors such as culture, social referencing, and mental state talk likely contribute to perceptions about the value of consensus information. A better understanding of these perceptions could inform why children prioritize or neglect consensus in the context of other social learning cues. Research is also needed to understand the relation between choosing informants as

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correct vs. wanting to learn from informants, as children may conceptualize these questions differently within and across ages. It is notable that the absence of explicitly negative information apparently enabled younger children to focus on expertise in response to *both* questions. Although this finding supports our hypothesis, it is important to consider other interpretations. For example, rather than reflecting reluctance to acknowledge a negative evaluation, systematic selection of the expert in Experiment 2 may reflect younger children's understanding of the link between poor quality work and the need for effort. Teachers tend to emphasize effort rather than quality for performance assessment in young children (Blumenfeld, Hamilton, Bossert, Wessels, & Meece, 1983). Finally, the finding that children accept expert testimony more readily when it is framed in terms of improvement has implications for education. Although additional research is needed to understand the source of these effects, these findings suggest that the phrasing of feedback is important to children's ability or willingness to capitalize on opportunities to learn from other people.

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