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Young Children Infer the Informativeness of Others' Praise

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Praise is not only rewarding but also informative. It can provide children with information about their competence, especially when they are uncertain or unable to judge for themselves. Not all praise is equally meaningful, however: someone who praises only high-quality work is more informative than someone who praises indiscriminately. Across four experiments, we find that 4- to 5-year-old U.S. children—from both in-person preschool and online samples—can infer the informativeness of others' praise based on the statistical dependence between praise and the quality of work evaluated. Participants were more likely to endorse praise from a teacher whose previous praise covaried with the quality of work over a teacher who praised indiscriminately or a teacher who praised only lower quality work (Experiment 1). Although children did not show a preference between teachers when seeking out praise for themselves (Experiment 2), they sought out praise from different teachers on behalf of another learner depending on the learner's goal (Experiments 3–4). Collectively, these findings show that even young children understand that praise is more than just positive reinforcement. Rather, they can reason about a speaker's inferred informativeness and use this to guide whose praise to seek out and endorse.

Public Significance Statement

Young children frequently receive feedback from adults, and when they do, it is often in the form of praise. Yet relatively little is known about how children interpret the meaning of praise. This study suggests that even to 4- and 5-year-old children, praise is more than just something nice to hear: they distinguish between someone who praises selectively and someone who praises indiscriminately, and consider praise from the former as a better indicator of high performance.

Keywords: social cognition, praise, statistical reasoning, selective trust


Supplemental materials: <https://doi.org/10.1037/dev0002073.supp>

Praise has many faces. On the one hand, it is rewarding and makes us feel good (Gaines et al., 2005; Webster et al., 2003): Receiving praise about something you have done ("Great job!") would likely make you feel happy and proud of yourself. On the other hand, it is also informative about the quality of your performance: receiving praise may strengthen your belief that you genuinely did a good job, offering information about your performance or abilities (Brophy, 1981). This dual function of praise also underlies its prevalence in young children's lives. In parenting and educational practices across many societies, praise is routinely intended as both positive

reinforcement (i.e., reward) and a form of feedback (i.e., information), which powerfully influences children's motivation and learning outcomes (Brummelman, Thomaes, Orobio de Castro, et al., 2014; Gunderson et al., 2013; Henderlong & Lepper, 2002; Mueller & Dweck, 1998).

Critically, however, not all praise is equally meaningful. For instance, imagine that you just finished a big presentation at work, and you feel uncertain about how it went. If you received praise from a trusted colleague with a discerning taste for quality presentations, you might take it as solid evidence that your talk was indeed good.

Larisa Heiphetz Solomon served as action editor.

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Experiments 1a, 2, 3, and 4 were preregistered and Experiments 1b and 1c were not. Preregistrations, stimuli, data, and analyses are available on the Open Science Framework at <https://osf.io/5uqk6/> (Asaba, 2025).

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supporting role in conceptualization, investigation, methodology, project administration, and writing—review and editing. Emily Hembacher played a supporting role in conceptualization, formal analysis, investigation, methodology, and visualization. Michael C. Frank played a supporting role in conceptualization, formal analysis, investigation, methodology, supervision, and writing—review and editing. Hyowon Gweon played a lead role in conceptualization, funding acquisition, methodology, resources, supervision, and writing—review and editing and a supporting role in investigation and project administration.

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However, if the praise came from a colleague who has often praised other talks that actually went quite poorly, you might still be uncertain about how yours really went. In other words, the informativeness of others' praise may depend on what you know about their prior history of providing praise.

Given the prevalence of praise in children's lives, one might wonder how young children think about its meaning: Do children always trust others' praise and take it at face value, or do they infer its informativeness based on what they know about the praiser? While parents and educators might believe that praise is rewarding and informative, its actual consequences critically depend on how children themselves interpret its meaning and use it to inform their own evaluations and decisions. Thus, investigating children's understanding of praise can extend our scientific understanding of social cognitive development, and also inform parenting and educational practices.

Past theoretical work has long recognized the informational value of praise and its dependence on the perceived sincerity of the praiser (Brophy, 1981; Delin & Baumeister, 1994). This dependence is consistent with the idea that we, as adults, have an abstract understanding of how praise is generated by other minds. Rather than simply reflecting what the speaker really believes, we understand that it also reflects the speaker's communicative goal (e.g., be nice and polite rather than tell the truth). By considering both the speaker's beliefs and communicative goals, we can go beyond the face value of praise (i.e., its literal meaning) and interpret its meaning depending on the context.

Recent computational work has explored this possibility by formalizing how speakers generate polite speech based on their communicative goals and how listeners might interpret such utterances given the speaker's communicative goals (Yoon et al., 2016, 2020). For instance, when the speaker is explicitly stated to be trying to be informative, adults consider the speaker's praise as a positive indicator of the listener's performance outcome; however, when the speaker is merely trying to be nice to the listener, adults discount the praise and do not use it to infer quality. Critically though, while Yoon et al. (2020) tested cases where the speaker's goal was explicitly available, listeners in most everyday contexts do not have direct access to speakers' communicative goals. In the case of young children receiving praise, in particular, praise is often provided by adults whose goals are ambiguous or even deliberately masked, making it particularly challenging for children to understand its underlying meaning. In the absence of explicit information about the speaker's goals, what other sources of information can young learners use to interpret the meaning of praise?

One useful source of information is the speaker's prior history of praise. In our running example, knowing that your colleague has praised low-quality talks in the past can lead you to discount the informativeness of this colleague's praise in the future. Indeed, prior theoretical work has proposed that people can evaluate the informativeness of others' praise by considering the contingency between their praise and the target of praise; more specifically, a speaker who gives praise that is contingent on successful outcomes is deemed as more informative than a speaker who provides indiscriminate praise (see Brophy, for a theoretical discussion).

To the best of our knowledge, however, these predictions have not been empirically tested in either adults or children. While our running example suggests that adults are likely capable of reasoning about the informativeness of praise, it is not clear whether young

children would show a similar understanding. As an initial step, we focus our efforts on 4- and 5-year-old children; children this age are rapidly acquiring new skills and learning about their own and others' abilities (Cimpian et al., 2017; G. D. Heyman et al., 2003; Muradoglu & Cimpian, 2020) are motivated to demonstrate their own abilities to others (Asaba & Gweon, 2022) and show curiosity about whether they received praise from an adult (Zhu et al., 2023). Thus, it is possible that children this age are already capable of using others' praise as a useful source of information. Specifically, we hypothesize that children this age can leverage the contingency between praise and higher quality outcomes to reason about the informativeness of others' praise.

Prior developmental research provides some preliminary support for our hypothesis. First, previous work has shown that a sensitivity to probability and statistical regularities emerges in infancy (Saffran et al., 1996; Xu & Garcia, 2008). This sensitivity allows even preverbal infants and young children to use covariation information, such as the contingency between actions and event outcomes, to draw powerful inferences about the latent properties of objects (Gweon et al., 2010), the strength of causal relationships (Kushnir & Gopnik, 2005), the cause of their own and others' actions (Gweon & Schulz, 2011; Seiver et al., 2013), and even others' preferences (Kushnir et al., 2010) or emotional responses (Doan et al., 2020).

Second, past work has demonstrated that praise can have positive or negative effects on children's motivation depending on its specific content (e.g., person vs. process praise, Gunderson et al., 2013; Mueller & Dweck, 1998; generic vs. nongeneric praise, Cimpian et al., 2007; inflated vs. noninflated praise, Brummelman, Thomaes, Orobio de Castro, et al., 2014), suggesting that by around 4 or 5 years of age, children already understand praise is more than just positive reinforcement. For example, when 4-year-old children heard "You are a good drawer" and then proceeded to make mistakes on their next drawing, they reported lower self-evaluations and task persistence after failing on a subsequent task, compared to when they heard "You did a good job drawing" (Cimpian et al., 2007). This work suggests that young children can use the specific content of praise to reason about their own performance outcomes (e.g., attributing failure to lack of intelligence vs. lack of effort; Mueller & Dweck, 1998) and even infer others' values and standards for evaluation (Brummelman, Thomaes, Orobio de Castro, et al., 2014). Given this work and the literature on early statistical reasoning, it is plausible that young children can track the contingency between a speaker's praise and its target (e.g., performance outcomes) to judge the informativeness of their praise.

Finally, broader support comes from the literature on how children learn from others, showing that 4- and 5-year-old children readily track the informativeness of teachers in pedagogical contexts (e.g., see Gweon, 2021; Harris et al., 2018; Sobel & Kushnir, 2013). For example, young children penalize teachers who provide insufficient information (Gweon & Asaba, 2018) or too much information (Gweon, 2019) to a learner. Furthermore, 4- and 5-year olds also consider a teacher's prior knowledge to evaluate their actions (Bass et al., 2022; Bonawitz et al., 2011) or emotional reactions (Wu & Gweon, 2021). Collectively, these findings suggest that young children readily infer the informativeness of others' behaviors and selectively endorse information from more informative agents. Thus, it is possible that 4- to 5-year-old children can also treat others' praise as information about their performance and abilities, and demonstrate similar sensitivity to its informativeness.

Building on these findings, here we investigate whether 4- and 5-year-old children can infer the informativeness of praise from the contingencies between praise and the outcomes being praised. Given that praise can signal a wide range of positive qualities that may differ in their underlying representations—such as generosity, morality, or even physical appearance—we constrained the scope of the present study to praise on the quality of work or performance. To test our hypothesis, we first use a convenience sample of educated, high socioeconomic status 4- and 5-year olds recruited from a university preschool (Experiments 1–2), and for the final studies (Experiments 3–4), we use an online research platform to recruit a relatively more heterogeneous sample. Across all of these U.S. samples, most children likely receive a substantial amount of praise in their daily lives, and thus may regularly face the problem of determining whose praise is informative. Our goal in this initial work was to test whether children who have ample experience with receiving praise are sensitive to its informativeness.

In designing our studies, we also considered two additional possibilities. First, it is possible that young children simply favor those who praise more, even if that means trusting someone who praises indiscriminately over someone who praises selectively. Prior work suggests that preschool-aged children have trouble differentiating informativeness from niceness, and sometimes trust nice informants over mean informants even when the nice informant lacks critical perceptual access or knowledge (Landrum et al., 2013; Lane et al., 2013). Thus, we included a control for the frequency of praise (Experiment 1c). Second, it is possible that young children have difficulty differentiating the informativeness of praise especially when the praise is directed at them. Given prior work suggesting that children tend to be overly optimistic about their abilities and performance (Boseovski, 2010; Thomaes et al., 2017), such tendency may lead them to indiscriminately trust any praise directed to the self that matches their own positive self-evaluation. As such, in addition to investigating children's reasoning as recipients of praise themselves (Experiments 1–2), we also looked at children's reasoning as third-party observers (Experiments 3–4).

In our task, we use an activity that young children are familiar with and motivated to improve on: tracing. We chose this task as one where children might exhibit continuous variation in skills that would be immediately and objectively visible. Further, given prior work on the effects of person-versus effort-directed praise (Mueller & Dweck, 1998), here we focus on “neutral” praise directed at the quality of the tracing (i.e., performance praise) rather than children's intrinsic qualities or their level of effort. Also, given the verbal demands of asking children directly about the informativeness of praise, we use more indirect measures: whose praise children endorse, given two teachers who each praised one of two tracings that children made (Experiment 1) and whose praise children seek out (Experiments 2–4).

Experiment 1a

Experiment 1a was our initial test of whether 4- and 5-year-old children can infer the informativeness of others' praise given minimal covariation information about the contingencies between others' praise and the quality of work being praised. Participants received praise on their tracings from two teachers who varied in

whether or not their praise covaried with the quality of a piece of work: a teacher who selectively praises higher quality tracings (selective teacher) and a teacher who indiscriminately praises all tracings regardless of quality (overpraise teacher). If children can infer the teachers' informativeness given these patterns of praise, they should be more likely to endorse praise from the selective teacher than praise from the overpraise teacher. However, it is also possible that children have a preference for the overpraise teacher because she may be perceived as “nicer,” or simply do not have a preference between the teachers.

Method

Participants

Forty 4- and 5-year olds, $M_{\text{age}}(SD) = 4.9(0.4)$, range = 4.1–5.9; 19 girls and 21 boys, were recruited from a university preschool. Based on a post hoc sensitivity analysis, given this sample size, the minimum detectable effect size at 80% power for a binomial test is approximately .44. Parents reported their child's race and ethnicity as: White ($n = 15$), Asian ($n = 5$), Middle eastern ($n = 2$), Black ($n = 1$), Hispanic/Latine ($n = 1$), other ($n = 12$), or chose not to provide ($n = 4$). An additional six children were tested but excluded due to not correctly identifying the high- and low-quality tracings during the warm-up ($n = 1$), not correctly answering the memory questions about the teacher videos ($n = 3$), or not completing the task ($n = 2$).

Stimuli

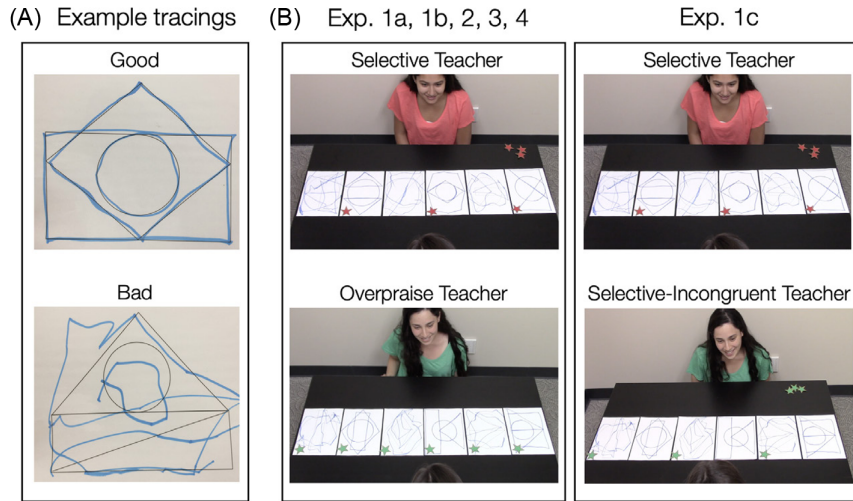
Laminated images of “good” (high-quality) and “bad” (low-quality) tracings (i.e., a marker tracing that was reasonably aligned or clearly misaligned with the template shape, see Figure 1A) were used in the warm-up phase. Additional tracings were used in two videos of teacher–child interactions (selective teacher video, overpraise teacher video; see Figure 1B) presented on a MacBook Pro laptop. In each video, six tracings were placed in a row on the table, three good and three bad tracings in alternating order (different tracings were used for each video). In both videos, the same child (“Johnny”) asked a teacher about the tracings. One video featured “Teacher Jane” who wore a green shirt, and the other featured “Teacher Susan” who wore a red shirt. Both teachers were portrayed as women, such that their gender was matched and reflected the relatively high proportion of women teachers in participants' preschool settings. Also, two 8.5" × 11" tracing templates (a circle and either an overlapping triangle or rectangle) were used for children to make their own tracings. We also used printed pictures of the teachers and Johnny, two manila envelopes, and star-shaped red and green stickers.

Procedure

Children were tested in a private room in a preschool. In the warm-up phase, the experimenter first explained what makes a tracing good: “The goal of tracing is to stay as close to the lines as possible” and demonstrated tracing a rectangle. Then, the child made two tracings, which were placed into two separate identical manila envelopes such that the child could not see which envelope contained which tracing. Then, children saw two pairs of two

Figure 1

(A) Examples of Good and Bad Tracings for the Warm-Up Questions and Teacher Videos, and (B) Final Frames of Teacher Videos for All Experiments



Note. Each teacher video showed a teacher providing praise to six tracings, made up of three good tracings and three bad tracings. Experiments 1a, 1b, 2, 3, and 4 contrasted the selective teacher who praised only the three good tracings with the overpraise teacher who praised all six tracings. Experiment 1c contrasted the selective teacher with the selective-incongruent teacher, who provided praise to the three bad tracings. Faces are used with permission. Exp. = experiment. See the online article for the color version of this figure.

tracings (one was clearly better than the other, see Figure 1A) and for each pair, were asked to indicate which one was better. Only children who correctly answered both questions were included in the analyses (preregistered criteria).

In the teacher-introduction phase, children were shown a picture of a student, Johnny. They were told that Johnny was working on his tracings earlier and wanted help figuring out which of his tracings were good, because he wanted to show them to his class later. Participants then watched two videos. In both videos, Johnny told the teacher that he made the tracings and really wanted to know which of his tracings were good. The teacher then evaluated the tracings one at a time from right to left. In the overpraise teacher video, the teacher provided positive feedback for all six tracings (e.g., “Wow, what a great tracing!”; “This is a great tracing, too!”) and placed a star sticker on each of them (see Figure 1B). In the selective teacher video, the teacher provided positive feedback on the three good tracings and placed stickers on them as described above, but gave neutral feedback (e.g., “Hm, this one’s okay!”) without placing any stickers for the three bad tracings. Note that the stickers were placed on the tracings to help participants remember which ones received praise, rather than being given directly to Johnny as a reward. Both teachers maintained a positive tone for both types of feedback.

After each video, children saw a still frame of the video (with no stars on the tracings) and were asked which tracings the teacher said were great. Children responded by pointing to the tracings. If children missed a tracing or incorrectly pointed to a tracing that was not praised by the teacher, they watched the video again and the experimenter asked the same memory check question. Those who failed the memory check even after watching the video again were excluded from analyses. Teacher name (Jane or Susan), pattern of

praise (selective or overpraise), and video order presentation were counterbalanced.

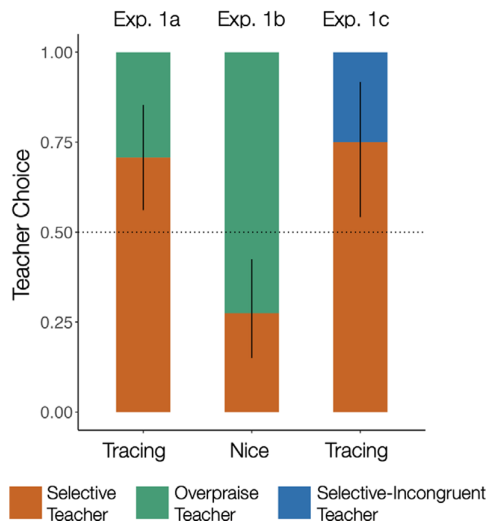
In the test-question phase, the experimenter then told the child that Teacher Jane and Teacher Susan were nearby and could give feedback on the child’s tracings from earlier. The experimenter left the room with the envelopes containing the child’s tracings, and returned after approximately 15 s with a red sticker attached to one envelope and a green sticker attached to the other. The experimenter first pointed to the envelope with a green sticker and placed a photo of Teacher Jane next to it, and said: “Teacher Jane looked at this tracing and said that this one is great.” She then pointed to the other envelope (with a red sticker and Teacher Susan’s photo) and said: “Teacher Susan looked at this tracing and said that this one is great” (teacher order and identity counterbalanced). Finally, with the tracings still in the envelopes, the experimenter asked the key test question: “Now you can bring back your best tracing to show your teacher! Which one do you think is the best?” Children responded by pointing to one of the envelopes.

Finally, as an exploratory measure, we asked children: “Which teacher was trying to be nice?” Children responded by pointing to one of the pictures of the teachers. The purpose of this question was to interrogate whether children understand the communicative goals underlying the teacher’s praise patterns.

Results and Discussion

Here, our key question was which tracing participants chose as the “best” one. As predicted, we found that children were significantly more likely to choose the tracing praised by the selective teacher than the tracing praised by the overpraise teacher (28 of 40, 70%; $p = .017$, binomial test, preregistered; see Figure 2). Next, to

Figure 2
Results From Experiments 1a, 1b, and 1c



Note. In Experiments 1a and 1b, participants were presented with the selective teacher (orange) and the overpraise teacher (green; color counterbalanced). In Experiment 1c, participants were presented with the selective teacher and the selective-incongruent teacher (blue). Participants were either told that each teacher praised each of their tracings and then asked to choose the “best” tracing (1a, 1c) or asked teacher was trying to be nice (1b). Error bars are 95% confidence intervals. Exp. = experiment. See the online article for the color version of this figure.

investigate whether children’s age predicted their choice, we fit a logistic regression model: tracing choice \sim Age. Children’s age did not predict their choice of tracing ($b = .11, p = .892$; preregistered).

Finally, for the question about which teacher was trying to be nice, children did not show a preference for either teacher (25 of 40, 62.5%, chose the selective teacher, $p = .15$; exploratory). However, it is possible that children’s responses to this question may have been influenced by their response to the previous question (tracing choice). Therefore, in the next experiment, children only answered the niceness question without choosing which tracing they think is best.

Experiment 1b

In Experiment 1b, we asked whether participants would distinguish between the selective and overpraise teachers based on the communicative goal of being nice. If participants understand that the teachers’ praise patterns are due to different communicative goals, then they should choose the overpraise teacher when asked about which teacher is trying to be nice. Unlike Experiment 1a, this experiment was not preregistered.

Method

Participants

Forty 4- and 5-year olds, $M_{\text{age}}(SD) = 4.83(0.45)$, range = 4.0–5.66; 21 girls and 19 boys, were recruited from a university preschool. Based on a sensitivity analysis, given this sample size, the minimum detectable effect size at 80% power for a binomial test is

approximately, .44 (same as in Experiment 1a). Parents reported their child’s race and ethnicity as: White ($n = 13$), Asian ($n = 9$), Hispanic/Latine ($n = 6$), Middle eastern ($n = 2$), other ($n = 7$), or chose not to provide ($n = 3$). An additional three participants were tested but excluded due to not accurately identifying the high- and low-quality tracings during the warm-up ($n = 1$), not accurately answering the memory questions about the teacher videos ($n = 2$), or experimenter error ($n = 1$).

Stimuli

Stimuli were identical to Experiment 1a.

Procedure

The procedure was identical to Experiment 1a until the test-question phase. Rather than receiving praise from each teacher and selecting which tracing they think is better, children were simply asked: “One of these teachers is trying to be nice. Who is trying to be nice?” Children responded by pointing to one of the two photos of the teachers.

Results and Discussion

Our question here was whether participants would select the overpraise teacher when asked which teacher was trying to be nice. Indeed, children were more likely to select the overpraise teacher than the selective teacher (29 of 40, 72.5%, $p = .006$, binomial test; exploratory). See Figure 2. Analysis using the same logistic regression model as in Experiment 1a (teacher choice \sim age) did not find an effect of age ($b = .73, p = .362$; exploratory).

Thus, children in Experiment 1b understood the overpraise teacher’s communicative goal and preferentially chose this teacher as the one who is trying to be nice, suggesting that children’s responses in Experiment 1a do not simply reflect a global preference for the selective teacher. Furthermore, these findings can offer insight into children’s at-chance performance to the “trying to be nice” question in Experiment 1a—given that these experiments were identical except for the test-question phase, it is possible that children’s responses in Experiment 1a were influenced by their previous response to the tracing choice test question, where the majority had chosen the tracing endorsed by the selective teacher.

So far, these results suggest that children are more likely to endorse praise from a teacher who praises selectively, while also understanding that a teacher who is trying to be nice may praise indiscriminately. Note that the critical difference between the teachers was the pattern of their feedback: it either appropriately covaried with the actual quality of the tracings (selective teacher) or was indiscriminately positive, independent of quality (overpraise teacher). However, the two teachers’ praise also differed in the frequency of praise, because the selective teacher praised only three of the six tracings while the overpraise teacher praised all six. Thus, it is possible that children were simply considering the mere frequency of their praise. We addressed this alternative explanation in Experiment 1c.

Experiment 1c

In Experiment 1c, we asked whether participants distinguish between two teachers, both of whom praised selectively but in

opposite patterns: one praised the good tracings and responded neutrally to the bad tracings (selective teacher, same as in Experiments 1a and 1b), and one praised the bad tracings and responded neutrally to the good tracings (selective-incongruent teacher). Because the frequency and the valence of their feedback was matched, the critical difference was whether their feedback was congruent or incongruent with higher quality tracings. If participants track the covariation between the content of feedback and the quality of the tracings rather than only the frequency of praise, they should endorse the selective teacher's feedback over the selective-incongruent teacher's. Given the absence of an age effect in Experiment 1a and 1b, we limited our recruitment to 4-year olds. This experiment was also not preregistered.

Method

Participants

Twenty-four 4-year olds, $M_{\text{age}}(SD) = 4.6(0.3)$, range = 4.0–4.9; 15 girls and 9 boys, were recruited from a university preschool. Based on a sensitivity analysis, given this sample size, the minimum detectable effect size at 80% power for a binomial test is approximately .57. Parents reported their child's race and ethnicity as: White ($n = 11$), Asian ($n = 4$), Hispanic/Latine ($n = 2$), Middle eastern ($n = 1$), other ($n = 3$), or chose not to provide ($n = 3$). An additional four subjects were tested but excluded due to failure on the memory check questions ($n = 2$), or not wanting to complete the game ($n = 2$).

Stimuli

Stimuli were similar to Experiment 1a, except that the overpraise teacher video was replaced with the selective-incongruent teacher video. The selective-incongruent teacher video was similar to the selective teacher's, except that she praised the three bad tracings ("This is a great tracing!") and gave a neutral response to the three good tracings ("This one is okay!").

Procedure

The procedure was identical to Experiment 1a, except that children watched the selective-incongruent teacher video instead of the overpraise teacher video. As in Experiment 1a, the critical question was: "Now you can bring back your best tracing to show your teacher! Which one do you think is the best?" Participants responded by pointing to one of the two envelopes.

Results and Discussion

Our key question was whether children would still endorse the praise from the teacher who selectively praised higher quality tracings even when the two teachers were matched in terms of the overall valence and the relative frequency of their praise. Indeed, children were more likely to choose the tracing praised by the selective teacher than the one praised by the selective-incongruent teacher (18 of 24, 75%, $p = .022$, binomial test; exploratory). See Figure 2. Unlike previous experiments, the same logistic regression model with age detected a small effect ($b = -.72$, $p = .037$; exploratory).

Collectively, these results suggest that children are not simply responding to the relative frequency of praise: Even 4-year-old children trust the teacher who provides feedback that appropriately covaries with higher quality work.

Experiment 2

So far, we have found that children can detect the informativeness of others' praise from minimal covariation information. When children receive praise from two teachers who vary in their informativeness, children are more likely to endorse praise from the more informative teacher. Yet, situations where children are given praise from different adults on the similar pieces of work are arguably rare, and preferential endorsement does not necessarily mean preferential choice for soliciting feedback: Given a chance to approach either the informative praiser or the overpraiser for feedback on their work, would children preferentially seek out feedback from the informative one?

In Experiment 2, we sought to address this question by using a study procedure very similar to Experiments 1a–1c, telling children that they can bring back their best tracing to their classroom. However, instead of asking them to choose one of two tracings endorsed by each teacher, we asked them which teacher they would rather ask for feedback on their tracings. While it is possible that children's own praise-seeking behaviors are consistent with their sensitivity to the informativeness of others' praise, as demonstrated in Experiment 1, it is also possible that children are more influenced by the desire to receive positive feedback when they have a choice between the two teachers. While even 4-year olds showed sensitivity to the informativeness of praise, we tested both 4- and 5-year olds to identify potential developmental change in children's ability to solicit praise from different sources. This experiment was preregistered, as were all subsequent experiments.

Method

Participants

Forty 4- and 5-year olds, $M_{\text{age}}(SD) = 4.9(0.5)$, range = 4.1–5.7; 21 girls and 19 boys, were recruited from the same university preschool. Based on a sensitivity analysis, given this sample size, the minimum detectable effect size at 80% power for a binomial test is approximately .44. Parents reported their child's race and ethnicity as: White ($n = 12$), Asian ($n = 10$), Black ($n = 2$), Hispanic/Latine ($n = 2$), Middle eastern ($n = 2$), other ($n = 8$), or chose not to provide ($n = 4$). An additional 9 subjects were tested but excluded due to failure on the warm-up questions ($n = 3$), failure on the memory check questions ($n = 4$), not completing the task ($n = 1$), or experimenter error ($n = 3$).

Stimuli

The same stimuli as in Experiment 1a were used.

Procedure

The procedure was similar to Experiments 1a and 1b, with the only differences being the test-question phase and an additional memory check question. First, in the previous experiments, participants were given praise on each of their tracings and asked which

tracing they think is the best in the test-question phase. In the current experiment, participants were told that they could bring back their best tracing to their classroom and were asked which of the two teachers (selective teacher vs. overpraise teacher) they want to ask: “Teacher Jane and Teacher Susan are close by. You can ask one of them for help figuring out which is your best tracing! Which teacher do you want to ask?” Participants responded by pointing to one of the teacher’s photos. The experimenter then told the participant that the teachers are actually not at the school today, but that they will ask the teacher for feedback later.

Second, the experimenter asked participants an additional memory check question at the end of the study: “Remember Johnny? So when Johnny asked the teachers whether his tracings are good, one of the teachers said all the tracings are great. Which teacher said that all of the tracings are great?” The purpose of this question was to check that participants could still, by the end of the procedure, remember which teacher provided which pattern of the praise, especially because participants were only shown the teachers’ photos during the test question, as in Experiment 1.

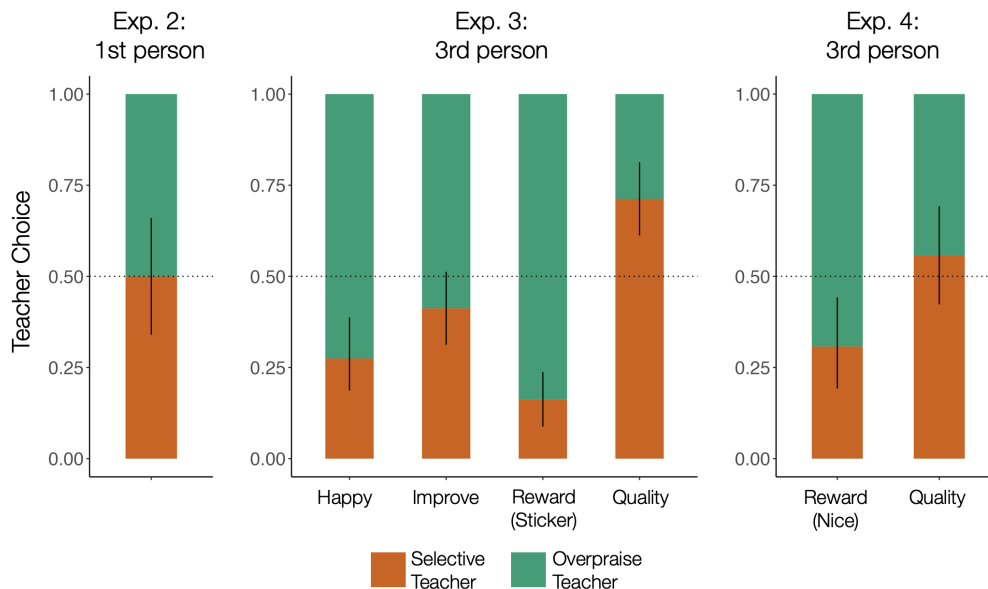
Results and Discussion

Here we hypothesized that participants would choose to approach the selective teacher, given that their goal was to determine which of their tracings was the best. However, we found that participants did not preferentially choose one teacher over the other (20 of 40, 50% chose the selective teacher, $p = 1$; preregistered binomial test). See Figure 3. We also preregistered a logistic regression with age

(continuous) predicting participants’ choice of teachers and we did not find evidence for an effect of age ($b = -.53$, $p = .436$).

What might explain participants’ choices in this experiment? Nearly all participants correctly responded to the memory check question at the end of the task (38 of 40), showing that overall, they remember which teacher provided each pattern of praise. Further, based on results from Experiments 1a–1c, it is unlikely that children failed to understand whose feedback would be more informative. One plausible explanation, then, is that children had two competing goals: receiving positive feedback (maximized by choosing the overpraise teacher) versus receiving informative feedback (maximized by choosing the selective teacher). Even though we tried to highlight an informational goal by telling children that they would have to choose the best tracing, it may have been insufficient to override their desire to receive guaranteed positive feedback via the overpraise teacher. Additionally, children’s preference for the overpraise teacher may also reflect a presentational goal (see Asaba & Gweon, 2022) to show their friends and teacher that their tracing received positive feedback. These competing goals could not have influenced participants’ choice in Experiment 1a or 1c, as they had to choose between two tracings that already received praise from each teacher. However, participants in Experiment 2, who were choosing between two teachers who offer different prospects for receiving praise, may have been influenced by these competing goals. If children’s choices were affected by their desire to receive positive feedback, reducing the desire to attain rewarding praise for themselves might reveal children’s ability to seek information from a more informative source. We explore this possibility in

Figure 3
Results From Experiments 2–4



Note. In these experiments, participants were presented with the selective teacher (orange) and the overpraise teacher (green; color counterbalanced) and asked which teacher to seek feedback from. In Experiment 2, participants sought feedback for themselves and in Experiments 3 and 4, participants sought feedback on behalf of 3rd-party students who each had a different goal (see Procedure section for exact wordings). Error bars are 95% confidence intervals. Exp. = experiment. See the online article for the color version of this figure.

Experiment 3 by placing children in a third-person perspective where they were asked to seek feedback on behalf of other children.

Experiment 3

Experiment 3 tests young children's feedback-seeking decisions in a 3rd-party context. Participants were introduced to four different students who explicitly stated their goal, and then were asked to choose whether the student should show their tracing to the selective teacher or the overpraise teacher given their goals. In addition to two simple goals—attaining a reward versus gaining information about the quality of their work—we were interested in whether participants would choose different teachers depending on more abstract goals, such as improving their tracing skill or feeling happy.

Given that young children readily take on others' goals to help, inform, and share (Bridgers et al., 2020; Powell, 2022; Tomasello, 2009), we assumed that children in our age range would consider the students' goals to select a teacher on their behalf. By using these students as the potential recipients of praise, we sought to reduce the influence of children's own desire to receive rewarding praise as compared with the scenario in Experiment 2. Rather than focusing on whether children choose the selective teacher at above-chance level, we looked at relative choice across trials (i.e., whether children's choice of teachers reliably vary depending on the student's goal), which can reveal children's understanding of praise even if children have a baseline preference for one of the teachers. Experiment 3 was preregistered.

Method

Participants

Eighty 4- and 5-year olds, $M_{\text{age}}(SD) = 5.0(.62)$, range = 4.0–5.9; 35 boys and 43 girls, 1 other, 1 preferred not to answer, were recruited via online recruitment methods (i.e., participant database, Facebook advertisements). Based on a sensitivity analysis, given this sample size, the minimum detectable effect size at 80% power (Cohen's w) is approximately .3. Parents reported their child's race and ethnicity as: White ($n = 40$), Asian ($n = 15$), Hispanic/Latine ($n = 9$), other ($n = 14$), or chose not to respond ($n = 2$). An additional 33 children were tested but excluded from analyses due to one of the following preregistered criteria: failing the warm-up questions ($n = 2$), failing the memory check questions ($n = 13$), experimenter/technical error ($n = 6$), parental interference ($n = 2$), not completing the task ($n = 6$), or undergoing the study on a phone instead of a laptop or tablet which limits the visibility of stimuli ($n = 4$).

Stimuli

Participants were shown all stimuli via a Keynote presentation that was controlled by the experimenter during a videochat session on Zoom. We used the same teacher pictures and videos as in Experiment 1a (selective teacher, overpraise teacher). For the warm-up, we used two sets of two tracings that varied in quality, similar to the ones used in Experiments 1 and 2. For the test trials, we showed photos and videos of four different children (three 7-year olds and one 9-year old; two boys, two girls) who were introduced as students. The photos and videos of the children were shown in black and white to participants in order to maximize the visual saliency of the teachers' shirt colors.

Procedure

Due to the COVID-19 pandemic, all participants were recruited online and tested virtually in a videochat session on Zoom.¹ Consistent with best practices in online testing (Chuey et al., 2021), the experimenter first went through an extensive set-up procedure with parents and children to ensure that all participants' screens looked the same (e.g., zoom was in full-screen mode, child could only see experimenter's video and not their own video).

The warm-up phase and teacher-introduction phase were the same as in Experiment 2, except for the following changes to adapt the task for online research. In the warm-up phase, participants saw two sets of tracings (instead of only one set). We introduced the tracings in each set as "Tracing A" (shown on the left side of the screen) and "Tracing B" (shown on the right side of the screen) and asked participants: "Which tracing is better?" Participants responded verbally by saying "A" or "B." In the teacher-introduction phase, the teachers were introduced as "Teacher A" and "Teacher B" (name counterbalanced), rather than "Teacher Jane" and "Teacher Susan." Participants watched both teacher videos and then were asked the following memory check questions: "Which teacher said that some tracings were great, and some were just okay?" and "Which teacher said that all of the tracings were great?" If participants responded incorrectly to one or both of these questions, they were excluded from our analyses (preregistered criteria).

In the test-question phase, participants were introduced to students who made tracings and were trying to decide to whom (i.e., which teacher) to show their tracing. In the two practice trials, participants were shown a photo of a student (Devin or Laura) and were told that the student wanted a green (or red) sticker. Then, participants were asked: "Which teacher should Devin (or Laura) show their tracing to, so that he (she) will get a green (or red) sticker?" Participants responded verbally to each trial by saying "Teacher A" or "Teacher B." This phase was to help children practice saying the verbal response options, and to help them understand that there were situations where it was better to choose one of the teachers over the other.

Then participants went through four test trials. In each test trial, participants were introduced to one of four students, for example, "This is Riley. He made a tracing today. Let's see what he says!" Then, they were shown a video of the student stating their goal. Each student had a distinctive goal (student photo and name was fixed to the goal): (a) Alex, who wanted to feel happy ("I feel really sad but I really want to feel happy"; happy trial); (b) Riley, who wanted to improve his tracing skill ("I really want to get better at tracing"; improve trial); (c) Sam, who wanted a sticker ("I really want a sticker"; reward-sticker trial); and (d) Jamie, who wanted to determine the quality of her work ("I really want to know if my tracing is good or just okay"; quality trial). Trials with abstract goals (happy and improve) were presented first (order counterbalanced), followed by trials with more concrete goals (reward-sticker and quality); order counterbalanced).

After watching each video, participants were asked a check question: for example, "So, what does Riley really want today? Can

¹ Several articles have demonstrated the validity of using online moderated data collections and shown similar results between in-person and online experiments (Ahl et al., 2023; Chuey et al., 2021, 2024; Schidelko et al., 2021).

you remind me?” Participants then repeated back the student’s goal; if they did not remember or incorrectly reported the goal, the experimenter said the goal aloud again. Then, participants were asked the test question: “So, which teacher should Riley show his tracing to, so that he will get better at tracing? Teacher A or Teacher B?” Participants responded verbally by saying “Teacher A” or “Teacher B.” The same procedure was repeated for the remaining students.

Results and Discussion

Our preregistered analysis focused on the more abstract goals, testing whether participants were more likely to choose the selective teacher when the student wants to get better at tracing (improve trial) compared to when the student wants to be happy (happy trial). Specifically, we preregistered a logistic mixed-effects model that included goal (improve, happy), order (improve first, or happy first), and the participant’s age (scaled, continuous) as fixed effects, and random intercepts for participant. Participants’ responses were in the predicted direction (choosing the selective teacher more in the improve trial than in the happy trial) but were not statistically significant ($b = .57, z = 1.67, p = .095$). See Figure 3. We did not find an effect of age ($b = .17, z = .28, p = .542$) or order ($b = .16, z = .34, p = .644$).

Next, as an exploratory analysis, we investigated whether participants chose different teachers in the two other trials, that is, when the student’s goal was to receive a sticker (reward-sticker trial) versus when the student’s goal was to know whether their tracing was good or just okay (quality trial). To do so, we ran a similar mixed-effects model as above, but with only the reward-sticker and quality trials (not including the improve and happy trials). Here, we found that participants were significantly more likely to choose the selective teacher in the quality trial than in the reward-sticker trial ($b = 2.64, z = 6.63, p < .001$); again, we did not detect an effect of age ($b = .40, z = .24, p = .216$) or order ($b = .10, z = .27, p = .788$).

Finally, we ran exploratory binomial tests within each of the four trials to test whether children were more likely to choose one teacher over the other. Although children did not show a clear preference in the improve trial (32 of 80, 40% chose selective teacher, $p = .093$). Children preferentially chose the overpraise teacher in the happy trial (58 of 80, 72.5%, $p < .001$), quality trial (58 of 80, 72.5%, $p < .001$), and the reward-sticker trial (67 of 80, 83.75%, $p < .001$). Exploratory logistic regressions within each trial with age as a predictor did not find an effect of age in any of the four trials ($p > .05$ for all).

In sum, in Experiment 3, we found somewhat mixed evidence that children recommend others to approach different teachers depending on their goals. First, contrary to our prediction, children did not clearly distinguish between the two abstract goals—getting better at tracing (improve) and feeling happy (happy)—and in particular, showed chance-level choice in the improve trial. Why might this be? Given children’s preference for the selective teacher in the quality trial, it is unlikely that a strong baseline preference for the overpraise teacher masked children’s choice in the improve trial. It is also unlikely that children this age do not understand what it means to “get better” (i.e., improve) at a task; to further explore this possibility, we added an exploratory question to the end of the current experiment for the last $n = 17$ participants (“What does it mean to get better? How do you get better?”), and observed that

14 of 17 participants provided an appropriate response (see Supplemental Materials). Instead, we believe children in our age range may not yet understand that receiving informative feedback can help one improve; we return to this point in the General Discussion section.

In contrast, children’s performance in the quality and reward-sticker and quality trials suggest that they can use the student’s goal to recommend a teacher when the goal is sufficiently clear. In particular, their choice in the quality trial is notable given that children did not selectively choose a teacher for the quality goal in the first-person context in Experiment 2. Critically however, children’s choice in the quality trial should be interpreted with caution; unlike Experiment 2 where we leveraged children’s own goal to select a higher quality tracing, children in Experiment 3 may have simply associated the word “okay” in the student’s goal statement (“I really want to know if my tracing is good or just okay”) with the selective teacher who also used the word “okay” in her feedback. Further, in the reward-sticker trial, children may have simply responded by choosing the teacher who had placed more stickers on the tracings. Thus, while these two trials serve as positive controls that ensure children understood the basic task structure and were not simply avoiding the selective teacher across the board, they fall short of providing clear evidence for children’s ability to distinguish these two goals and recommend teachers accordingly. In Experiment 4, we eliminate these direct cues (e.g., the word “okay” or mentioning the sticker) to ask whether children can differentiate between the goal of attaining information versus attaining positive reward.

Experiment 4

The goal of Experiment 4 was to verify whether children selectively choose different teachers depending on the goal when seeking out feedback. Specifically, we contrast two closely matched goals: receiving information about one’s performance and receiving a reward. Experiment 4 was preregistered.

Method

Participants

Our sample size was guided by a preregistered sequential Bayes factor (BF) analysis (Mani et al., 2021). We preregistered a plan to recruit an initial sample of $n = 24$ children, evaluate the BF after every four participants, and stop data collection when one of the following conditions were met: $BF_{10} > 5$ in favor of the hypothesis, $BF_{10} > 5$ in favor of the null hypothesis (i.e., no difference in teacher choice across conditions), or at an $n = 80$.

Per this plan, we recruited a final sample of fifty-two 4- and 5-year olds, see Results section for more details; $M_{\text{age}}(SD) = 5.04(.56)$, range = 4.14–5.99; 30 boys, 22 girls, via online recruitment methods (i.e., participant database, Facebook advertisements). Parents reported their child’s race and ethnicity as: White ($n = 32$), Asian ($n = 7$), Hispanic/Latine ($n = 4$), Black ($n = 1$), other ($n = 3$), or chose not to provide ($n = 5$). An additional 20 children were tested but excluded from analyses due to one of the following preregistered criteria: failing the warm-up questions ($n = 4$), failing video check questions ($n = 7$), failing to repeat back the student’s goal ($n = 7$), parental interference ($n = 1$), or not completing the task ($n = 1$).

Stimuli

As in Experiment 3, participants were shown all stimuli via a Keynote presentation that was controlled by the experimenter over zoom. Stimuli were similar to Experiment 3 (e.g., photos of students) but videos of the students were not used in this experiment.

Procedure

As in Experiment 3, all participants were tested on Zoom. The procedure was identical to Experiment 2, except for the following changes to the test-question phase. First, in the introduction to the test trials, participants were told that “Sometimes, children want to hear something really nice about their tracing, and sometimes, they want to hear how they really did on their tracing.” The purpose of this was to introduce children to the two goals that they would hear in the test trials. Second, we removed the two practice test trials (students who wanted a red or green sticker). Third, we only included two test trials, each with a different student with a distinctive goal.

More specifically, in the reward-nice trial, participants were told: “This is Sam. Sam made a tracing today, and wants to hear something really nice about his tracing.” Then, they were asked a check question: “So, does Sam want to hear something really nice, or does he want to know how he really did?” Participants who did not respond correctly to this question, were reminded of the goal and asked the check question up to two more times. Per our preregistered exclusion criteria, participants who still responded incorrectly were excluded from analyses. Then, participants were asked the test question: “So, which teacher should Sam show his tracing to so that he will hear something really nice about his tracing? Teacher A or teacher B?” Participants responded by saying “Teacher A” or “Teacher B.” The quality trial was similar in structure, except participants were told: “This is Jamie. She made a tracing today, and wants to know how she really did on the tracing.” Trial order and the student photo associated with each goal were counterbalanced across participants.

Results and Discussion

Our key, preregistered analysis was a logistic mixed effects model predicting teacher choice (selective or overpraise) as a function of the student’s goal (quality or reward), and age (in months), with random intercepts for participant. At $n = 52$, this analysis yielded a Bayes factor (BF_{10}) of 8.98, which exceeds our preregistered criterion for stopping additional data collection. We interpret this as moderate evidence in favor of the predicted hypothesis: participants were more likely to choose the selective teacher in the quality trial than the reward-nice trial ($b = 1.05$, $z = 2.55$, $p = .011$, $BF = 8.98$). See Figure 3. We did not detect an effect of age ($b = .40$, $z = 1.09$, $p = .277$).

Next, we ran preregistered binomial tests within each trial. We found that in the reward-nice trial, participants selectively chose the overpraise teacher (36 of 52, 69.2%, chose overpraise, $p = .008$, binomial test). However, in the quality trial, we found that participants did not selectively choose either teacher (29 of 52, 55.8% chose selective, $p = .489$, binomial test).

Collectively, these results show that 4- to 5-year olds chose different teachers for a target student to approach, depending on

whether the student wanted to hear something nice or hear how they did on the tracing.

Transparency and Openness

Experiments 1a, 2, 3, and 4 were preregistered and Experiments 1b and 1c were not. Preregistrations, stimuli, data, and analyses are available on the Open Science Framework at <https://osf.io/5uqk6/> (Asaba, 2025). See Supplemental Materials for data and analyses from adult participants in Experiments 1a and 1c.

General Discussion

Determining whose praise to trust or discount is critical for effectively learning about one’s abilities. Across four experiments, we examined whether 4- and 5-year-old children can infer the informativeness of others’ praise by considering the statistical dependence between praise and the quality of work being evaluated. Participants were presented with a teacher who previously provided praise that covaried with higher quality work (selective teacher) and a teacher who always provided praise regardless of quality (overpraise teacher). Overall, we found that participants understood that the selective teacher’s praise is more informative about the quality of a piece of work than the overpraise teacher’s praise, and that this reasoning is based on the contingency between praise and quality of work rather than the frequency of praise provided by the teachers. This inference allowed them to figure out whose praise to trust in a first-person context, and to strategically choose different teachers to approach depending on the goal at hand, at least in 3rd-party contexts (see Supplemental Materials for a table that summarizes the key manipulations and results across all experiments).

More specifically, Experiment 1 provided initial evidence that children find the praise from the selective teacher to be more informative than the overpraise teacher (1a) even though they understand that the overpraise teacher has the communicative goal of being nice (1b), and that their preference for the selective teacher cannot be explained by the fact that she simply praised fewer tracings. However, in Experiment 2, children did not have a preference for which teacher to approach trying to learn about the quality of their own work (a “quality” goal). In contrast, when children were placed in 3rd-party contexts where they made decisions of whom to approach on behalf of another student, we did find some positive results; while Experiment 3 did not yield conclusive evidence, Experiment 4, with an improved design, found that children were more likely to approach the selective teacher on behalf of another student when the goal was to hear how the student did, compared to when the goal was to hear something really nice (see Supplemental Materials for a table summarizing these results). We return to this discrepancy between Experiment 2 and Experiment 4 later in the discussion. Nonetheless, collectively, the current findings suggest that 4- and 5-year-old children are sensitive to others’ goals when making decisions about whom to approach.

These findings contribute to the literature on praise by showing that children reason about its informativeness. Past research has demonstrated how specific types of praise can either increase or reduce children’s motivation (Brummelman, Thomaes, Orobio de Castro, et al., 2014; Cimpian et al., 2007; Henderlong & Lepper, 2002; G. D. Heyman et al., 2013; Mueller & Dweck, 1998). For example, when young children are praised for their ability rather than their efforts, they become less motivated and feel worse about themselves

following subsequent failures (Mueller & Dweck, 1998). Here, the teachers in our study provided a “neutral” form of praise (i.e., praise directed at performance; “This tracing is great!”): Even though the teachers provided the exact same content of praise, children were more likely to trust praise from a speaker who previously provided praise contingent on higher quality work. Thus, our findings highlight how children’s inferences about the informativeness of praise might modulate the effects of praise on children’s motivation. For example, the negative consequences of ability-directed praise may be heightened when it comes from a teacher who only tells a few students that they are really smart. Similarly, one might predict that praise is even more rewarding (i.e., makes children feel really good) when it comes from a speaker who rarely provides praise compared to a speaker who provides praise to everything. Future work should investigate these possibilities by examining the emotional and behavioral consequences of receiving praise from others, depending on their informativeness.

This work also extends existing research on how children reason about others’ informativeness based on the information they provide (Gweon, 2021; Harris et al., 2018; Sobel & Kushnir, 2013). Past work focused on children’s sensitivity to the informativeness of others’ testimony or demonstrations about the physical world (e.g., labels of objects, causal functions of artifacts; Birch et al., 2008; Sobel & Finiasz, 2020). Here, we showed that children can also reason about the informativeness of others’ evaluative feedback on someone’s performance outcomes or the quality of work. Specifically, children’s inferences were based on the statistical dependence between the pattern of praise and the quality of work being praised (e.g., quality of tracings). Thus, children’s early-emerging sensitivity to statistical information (Gweon & Schulz, 2011; Gweon et al., 2010; Saffran et al., 1996; Seiver et al., 2013; Xu & Garcia, 2008) might also support inferences about the informativeness of others’ feedback. Just as reasoning about the informativeness of others’ teaching allows children to effectively learn about the world, reasoning about the informativeness of others’ evaluative feedback may allow children to effectively learn about themselves.

Adults’ robust preference for the selective teacher in Supplementary Experiments 1a and 1c (87% and 90%, respectively; see Supplemental Materials for details), compared to children’s performance in Experiments 1a and 1c (70% and 75%, respectively) suggests there may be some developmental change in children’s interpretation of praise that we were unable to detect in our experiments. First, although we used a simple covariation structure that is easy to identify, it is possible that children become capable of leveraging more complex patterns of past praise. Second, as children age, children might gain a more nuanced sense of others’ social goals; for instance, children might begin to understand that indiscriminate praise could result from a strategic attempt to appear nice, rather than a genuine desire to be nice. Indeed, prior research has revealed 6- to 10-year olds’ increasing ability to reason about complex social goals, such as wanting to look nice (G. Heyman et al., 2014). Additionally, as children gain more experience with evaluative feedback in formal educational settings, this may further influence how they interpret praise. Given that adolescents may infer low ability based on praise directed at effort (Amemiya & Wang, 2018), we can speculate that children, with age, might become increasingly skeptical of overpraise, or even believe that it could signal low expectations. Third, as children get older, they may develop a more sophisticated understanding of how informative feedback versus guaranteed praise can help them achieve their own goals; although

children in Experiment 3 understood what it means to “get better,” they did not seem to grasp that informative feedback (i.e., from the selective teacher) could help them improve. How these factors interact to shape children’s ability to detect and approach different sources of feedback remains an important direction for future work.

The current findings raise questions concerning children’s reasoning about the informativeness of praise in 1st- versus 3rd-person contexts. In Experiment 2, children were at chance between approaching the selective and overpraise teacher for feedback on their own work, whereas in Experiment 4, where children were making a decision on behalf of another student, they chose different teachers depending on the student’s goal. What might explain this discrepancy? It is worth noting that even though we found a condition difference in Experiment 4, children in this experiment did not show an above-chance preference for the selective teacher, suggesting a competing desire to choose the overpraise teacher. Indeed, in both Experiments 3 and 4, children showed an above-chance preference for the overpraise teacher when the student wanted a positive reward (Experiment 3 reward-sticker), feel happy (Experiment 3 happy), or hear something nice (Experiment 4 reward-nice). Such a desire to approach the “nice” overpraise teacher may have been even stronger when children had to decide, for themselves, whom to approach, as in Experiment 2. In addition to the desire to maximize the possibility of getting praised, children may also have wanted to tell other friends and teachers that they received praise (e.g., see Asaba & Gweon, 2022; Silver & Shaw, 2018).

Furthermore, deciding whom to approach for feedback for oneself may also be driven by individual differences in children’s evaluations of their competence or even their self-esteem. Indeed, past work suggested that children with lower self-esteem are more likely to seek out reassurance than children with higher self-esteem (Crocker & Park, 2004). Finally, it is worth noting that inflated praise and person-praise, in particular, can backfire for children with low self-esteem (Brummelman, Thomaes, Orobio de Castro, et al., 2014; Brummelman, Thomaes, Overbeek, Orobio de Castro, et al., 2014); in such cases, praise can signal that children need to continue to meet high standards or that failure reflects children’s lack of skill. Thus, it is possible that children with lower self-esteem would be more likely to seek out feedback from the overpraise teacher to both receive reassurance and avoid informative evaluation about their skills. The current work raises the importance of better understanding how children’s interpretation of others’ feedback may further interact with their own evaluation of themselves.

It is also important to note that across all studies, the key manipulation about the teachers’ informativeness involved watching videos of how each teacher gave feedback to a 3rd-party learner. Imagine instead that the teachers provided praise to children themselves; given past work showing children’s optimism about their performance (Hembacher & Ghetti, 2014), it is possible that children may have more difficulty inferring the informativeness of praise. For example, if they believe that all of their work is high quality (even if it is not), then, in the context of our task, they would have difficulty distinguishing the selective and overpraise teacher. Alternatively, however, it is also possible that feedback given to the self is particularly salient to children; despite their expressed optimism, insofar as they can discern the quality of their own work, children may have no trouble inferring the informativeness of others’ praise, but still biased to approach overpraisers. Further research is needed to understand which aspects of the current

findings can be generalized to children's sensitivity to praise in their own interactions with others.

Relatedly, in the present study, children observed repeated instances of praise from two teachers whose praise was clearly aligned or misaligned with the quality of someone else's tracings. In order to ensure well-controlled presentation of two teachers who varied only in their pattern of praise, children watched videos of teachers instead of seeing real teachers praise their own work. In everyday life, however, children experience praise first-hand, which means they are learning about others' informativeness while also navigating multiple competing goals as they try to interpret the meaning of the praise as recipients; to further complicate the problem, adults who provide praise might also have different communicative goals depending on context. For example, a teacher may not always be a "selective praiser" or an "overpraiser"—they may provide praise depending on what they think would be most helpful or effective for a particular student. At the same time, a student may sometimes want "real" feedback but sometimes just want to feel good about themselves. However, because people rarely explicitly say what their goals are (either as learners or speakers), conflicts or misguided inferences about one's abilities or performance can arise when a learner and speaker's goals do not align (e.g., wanting genuine critique from a speaker but receiving polite feedback or vice versa).

Another aspect of social feedback not captured in the current work is that we only focused on positive feedback (praise), leaving open questions about the cognitive mechanisms underlying children's interpretation of negative feedback, or criticism. While we have no a priori reason to believe that children's sensitivity to the informativeness of criticism differs from that of praise, it is still possible that children's behavioral responses are modulated by the valence of feedback. Imagine a teacher who selectively criticizes versus one who selectively praises: Although children may infer that both teachers provide informative feedback, they may nonetheless prefer the one who provides positive feedback. Broadly, these possibilities suggest that different praise styles may place different cognitive demands on learners, and future work should examine the specific cognitive mechanisms underlying how children draw inferences that a speaker is informative versus indiscriminate. Finally, in everyday life, children may receive feedback on activities in which quality or performance is more subjective than tracings (e.g., how good a cookie tastes), and speakers themselves may have idiosyncratic preferences (e.g., preferring crispy over chewy cookies). Thus, even though our results suggest an early emerging sensitivity to the informativeness of praise, further work is needed to better understand how such sensitivity manifests in everyday contexts.

There are important limitations concerning the generalizability of our results. Here, our participants were from the United States, where praise is prevalent at home and in the classroom (Brummelman, 2020), and children may understand that praise is sometimes intended to be nice to the recipient. Depending on the cultural context, however, children may vary in their prior expectations for whether praise is meant to be informative versus nice. For example, in contexts where praise is rare, they might be more likely to expect praise to be informative, and therefore more likely to trust it, too. While there is no a priori reason to believe that children's sensitivity to the statistics in their environment—the contingency between outcomes and feedback, for instance—varies by culture, children's performance in this experimental paradigm may be limited to the specific cultural context of our participants because children's expectation about praise

may vary across cultures. Relatedly, even within western contexts, it is possible that children have different expectations for praise depending on the speaker's demographics, such as their gender (e.g., expecting emotional support in the form of "nice" feedback from female teachers; see El-Alayli et al., 2018). Further, Experiment 2 results suggest that there may be substantial individual differences in children's own preferences for receiving rewarding versus informative feedback. Future research should investigate the extent to which these findings generalize across contexts, and furthermore, how children's environments might shape their expectations for social feedback from others.

Constructive feedback provides insights into learners' strengths and weaknesses, and guides their future learning to maximize opportunities for growth. Our findings show that the capacity to reason about the meaning of others' feedback starts early in life. Even young children understand that praise is more than just something nice to hear—it can contain useful information about the self. Rather than accepting all and any praise at face value, young children can determine when praise is meaningful and when it is not, allowing them to effectively learn about themselves.

References

- Ahl, R. E., Hannan, K., Amir, D., Baker, A., Sheskin, M., & McAuliffe, K. (2023). Tokens of virtue: Replicating incentivized measures of children's prosocial behavior with online methods and virtual resources. *Cognitive Development*, 66, Article 101313. <https://doi.org/10.1016/j.cogdev.2023.101313>
- Amemiya, J., & Wang, M.-T. (2018). Why effort praise can backfire in adolescence. *Child Development Perspectives*, 12(3), 199–203. <https://doi.org/10.1111/cdep.12284>
- Asaba, M. (2025, May). *Young children infer the informativeness of others' praise*. <https://osf.io/5uqk6/>
- Asaba, M., & Gweon, H. (2022). Young children infer and manage what others think about them. *Proceedings of the National Academy of Sciences of the United States of America*, 119(32), Article e2105642119. <https://doi.org/10.1073/pnas.2105642119>
- Bass, I., Bonawitz, E., Hawthorne-Madell, D., Vong, W. K., Goodman, N. D., & Gweon, H. (2022). The effects of information utility and teachers' knowledge on evaluations of under-informative pedagogy across development. *Cognition*, 222, Article 104999. <https://doi.org/10.1016/j.cognition.2021.104999>
- Birch, S. A., Vauthier, S. A., & Bloom, P. (2008). Three- and four-year-olds spontaneously use others' past performance to guide their learning. *Cognition*, 107(3), 1018–1034. <https://doi.org/10.1016/j.cognition.2007.12.008>
- Bonawitz, E., Shafto, P., Gweon, H., Goodman, N. D., Spelke, E., & Schulz, L. (2011). The double-edged sword of pedagogy: Instruction limits spontaneous exploration and discovery. *Cognition*, 120(3), 322–330. <https://doi.org/10.1016/j.cognition.2010.10.001>
- Boseovski, J. J. (2010). Evidence for "rose-colored glasses": An examination of the positivity bias in young children's personality judgments. *Child Development Perspectives*, 4(3), 212–218. <https://doi.org/10.1111/j.1750-8606.2010.00149.x>
- Bridgers, S., Jara-Ettinger, J., & Gweon, H. (2020). Young children consider the expected utility of others' learning to decide what to teach. *Nature Human Behaviour*, 4(2), 144–152. <https://doi.org/10.1038/s41562-019-0748-6>
- Brophy, J. (1981). Teacher praise: A functional analysis. *Review of Educational Research*, 51(1), 5–32. <https://doi.org/10.3102/00346543051001005>

- Brummelman, E. (2020). *Psychological perspectives on praise*. Routledge. <https://doi.org/10.4324/9780429327667>
- Brummelman, E., Thomaes, S., Orobio de Castro, B., Overbeek, G., & Bushman, B. J. (2014). "That's not just beautiful—That's incredibly beautiful!": The adverse impact of inflated praise on children with low self-esteem. *Psychological Science*, 25(3), 728–735. <https://doi.org/10.1177/0956797613514251>
- Brummelman, E., Thomaes, S., Overbeek, G., Orobio de Castro, B., van den Hout, M. A., & Bushman, B. J. (2014). On feeding those hungry for praise: Person praise backfires in children with low self-esteem. *Journal of Experimental Psychology: General*, 143(1), 9–14. <https://doi.org/10.1037/a0031917>
- Chuey, A., Asaba, M., Bridgers, S., Carrillo, B., Dietz, G., Garcia, T., Leonard, J. A., Liu, S., Merrick, M., Radwan, S., Stegall, J., Velez, N., Woo, B., Wu, Y., Zhou, X. J., Frank, M. C., & Gweon, H. (2021). Moderated online data-collection for developmental research: Methods and replications. *Frontiers in Psychology*, 12, Article 734398. <https://doi.org/10.3389/fpsyg.2021.734398>
- Chuey, A., Boyce, V., Cao, A., & Frank, M. C. (2024). Conducting developmental research online vs. in-person: A meta-analysis. *Open Mind: Discoveries in Cognitive Science*, 8, 795–808. https://doi.org/10.1162/opmi_a_00147
- Cimpian, A., Arce, H.-M. C., Markman, E. M., & Dweck, C. S. (2007). Subtle linguistic cues affect children's motivation. *Psychological Science*, 18(4), 314–316. <https://doi.org/10.1111/j.1467-9280.2007.01896.x>
- Cimpian, A., Hammond, M. D., Mazza, G., & Corry, G. (2017). Young children's self-concepts include representations of abstract traits and the global self. *Child Development*, 88(6), 1786–1798. <https://doi.org/10.1111/cdev.12925>
- Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, 130(3), 392–414. <https://doi.org/10.1037/0033-2909.130.3.392>
- Delin, C. R., & Baumeister, R. F. (1994). Praise: More than just social reinforcement. *Journal for the Theory of Social Behaviour*, 24(3), 219–241. <https://doi.org/10.1111/j.1468-5914.1994.tb00254.x>
- Doan, T., Friedman, O., & Denison, S. (2020). Young children use probability to infer happiness and the quality of outcomes. *Psychological Science*, 31(2), 149–159. <https://doi.org/10.1177/0956797619895282>
- El-Alayli, A., Hansen-Brown, A. A., & Ceynar, M. (2018). Dancing backwards in high heels: Female professors experience more work demands and special favor requests, particularly from academically entitled students. *Sex Roles*, 79(3–4), 136–150. <https://doi.org/10.1007/s11199-017-0872-6>
- Gaines, L. M., Duvall, J., Webster, J. M., & Smith, R. H. (2005). Feeling good after praise for a successful performance: The importance of social comparison information. *Self and Identity*, 4(4), 373–389. <https://doi.org/10.1080/15298860500280223>
- Gunderson, E. A., Gripshover, S. J., Romero, C., Dweck, C. S., Goldin-Meadow, S., & Levine, S. C. (2013). Parent praise to 1- to 3-year-olds predicts children's motivational frameworks 5 years later. *Child Development*, 84(5), 1526–1541. <https://doi.org/10.1111/cdev.12064>
- Gweon, H. (2019). Understanding others to learn and help others learn. In S. Grimm (Ed.), *Varieties of understanding: New perspectives from philosophy, psychology, and theology* (pp. 167–190). Oxford University Press.
- Gweon, H. (2021). Inferential social learning: Cognitive foundations of human social learning and teaching. *Trends in Cognitive Sciences*, 25(10), 896–910. <https://doi.org/10.1016/j.tics.2021.07.008>
- Gweon, H., & Asaba, M. (2018). Order matters: Children's evaluation of underinformative teachers depends on context. *Child Development*, 89(3), e278–e292. <https://doi.org/10.1111/cdev.12825>
- Gweon, H., & Schulz, L. (2011). 16-month-olds rationally infer causes of failed actions. *Science*, 332(6037), Article 1524. <https://doi.org/10.1126/science.1204493>
- Gweon, H., Tenenbaum, J. B., & Schulz, L. E. (2010). Infants consider both the sample and the sampling process in inductive generalization. *Proceedings of the National Academy of Sciences of the United States of America*, 107(20), 9066–9071. <https://doi.org/10.1073/pnas.1003095107>
- Harris, P. L., Koenig, M. A., Corriveau, K. H., & Jaswal, V. K. (2018). Cognitive foundations of learning from testimony. *Annual Review of Psychology*, 69(1), 251–273. <https://doi.org/10.1146/annurev-psych-122216-011710>
- Hembacher, E., & Ghetti, S. (2014). Don't look at my answer: Subjective uncertainty underlies preschoolers' exclusion of their least accurate memories. *Psychological Science*, 25(9), 1768–1776. <https://doi.org/10.1177/0956797614542273>
- Henderlong, J., & Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin*, 128(5), 774–795. <https://doi.org/10.1037/0033-2909.128.5.774>
- Heyman, G. D., Fu, G., & Lee, K. (2013). Selective skepticism: American and Chinese children's reasoning about evaluative academic feedback. *Developmental Psychology*, 49(3), 543–553. <https://doi.org/10.1037/a0031282>
- Heyman, G. D., Gee, C. L., & Giles, J. W. (2003). Preschool children's reasoning about ability. *Child Development*, 74(2), 516–534. <https://doi.org/10.1111/1467-8624.7402013>
- Heyman, G., Barner, D., Heumann, J., & Schenck, L. (2014). Children's sensitivity to ulterior motives when evaluating prosocial behavior. *Cognitive Science*, 38(4), 683–700. <https://doi.org/10.1111/cogs.12089>
- Kushnir, T., & Gopnik, A. (2005). Young children infer causal strength from probabilities and interventions. *Psychological Science*, 16(9), 678–683. <https://doi.org/10.1111/j.1467-9280.2005.01595.x>
- Kushnir, T., Xu, F., & Wellman, H. M. (2010). Young children use statistical sampling to infer the preferences of other people. *Psychological Science*, 21(8), 1134–1140. <https://doi.org/10.1177/0956797610376652>
- Landrum, A. R., Mills, C. M., & Johnston, A. M. (2013). When do children trust the expert? Benevolence information influences children's trust more than expertise. *Developmental Science*, 16(4), 622–638. <https://doi.org/10.1111/desc.12059>
- Lane, J. D., Wellman, H. M., & Gelman, S. A. (2013). Informants' traits weigh heavily in young children's trust in testimony and in their epistemic inferences. *Child Development*, 84(4), 1253–1268. <https://doi.org/10.1111/cdev.12029>
- Mani, N., Schreiner, M. S., Brase, J., Köhler, K., Strassen, K., Postin, D., & Schultze, T. (2021). Sequential Bayes Factor designs in developmental research: Studies on early word learning. *Developmental Science*, 24(4), Article e13097. <https://doi.org/10.1111/desc.13097>
- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology*, 75(1), 33–52. <https://doi.org/10.1037/0022-3514.75.1.33>
- Muradoglu, M., & Cimpian, A. (2020). Children's intuitive theories of academic performance. *Child Development*, 91(4), e902–e918. <https://doi.org/10.1111/cdev.13325>
- Powell, L. J. (2022). Adopted utility calculus: Origins of a concept of social affiliation. *Perspectives on Psychological Science*, 17(5), 1215–1233. <https://doi.org/10.1177/17456916211048487>
- Saffran, J. R., Aslin, R. N., & Newport, E. L. (1996). Statistical learning by 8-month-old infants. *Science*, 274(5294), 1926–1928. <https://doi.org/10.1126/science.274.5294.1926>
- Schidlo, L. P., Schünemann, B., Rakoczy, H., & Proft, M. (2021). Online testing yields the same results as lab testing: A validation study with the false belief task. *Frontiers in Psychology*, 12, Article 703238. <https://doi.org/10.3389/fpsyg.2021.703238>
- Seiver, E., Gopnik, A., & Goodman, N. D. (2013). Did she jump because she was the big sister or because the trampoline was safe? Causal inference and the development of social attribution. *Child Development*, 84(2), 443–454. <https://doi.org/10.1111/j.1467-8624.2012.01865.x>

- Silver, I. M., & Shaw, A. (2018). Pint-sized public relations: The development of reputation management. *Trends in Cognitive Sciences*, 22(4), 277–279. <https://doi.org/10.1016/j.tics.2018.01.006>
- Sobel, D. M., & Finiasz, Z. (2020). How children learn from others: An analysis of selective word learning. *Child Development*, 91(6), e1134–e1161. <https://doi.org/10.1111/cdev.13415>
- Sobel, D. M., & Kushnir, T. (2013). Knowledge matters: How children evaluate the reliability of testimony as a process of rational inference. *Psychological Review*, 120(4), 779–797. <https://doi.org/10.1037/a0034191>
- Thomaes, S., Brummelman, E., & Sedikides, C. (2017). Why most children think well of themselves. *Child Development*, 88(6), 1873–1884. <https://doi.org/10.1111/cdev.12937>
- Tomasello, M. (2009). Born (and bred) to help. *Why we cooperate* (pp. 1–25). MIT Press. <https://mitpress.mit.edu/9780262013598/why-we-cooperate/>
- Webster, J. M., Duvall, J., Gaines, L. M., & Smith, R. H. (2003). The roles of praise and social comparison information in the experience of pride. *The Journal of Social Psychology*, 143(2), 209–232. <https://doi.org/10.1080/00224540309598441>
- Wu, Y., & Gweon, H. (2021). Preschool-aged children jointly consider others' emotional expressions and prior knowledge to decide when to explore. *Child Development*, 92(3), 862–870. <https://doi.org/10.1111/cdev.13585>
- Xu, F., & Garcia, V. (2008). Intuitive statistics by 8-month-old infants. *Proceedings of the National Academy of Sciences of the United States of America*, 105(13), 5012–5015. <https://doi.org/10.1073/pnas.0704450105>
- Yoon, E. J., Tessler, M. H., Goodman, N. D., & Frank, M. C. (2016). Talking with tact: Polite language as a balance between kindness and informativity. *Proceedings of the 38th annual conference of the cognitive science society* (pp. 2771–2776). <https://escholarship.org/uc/item/6dm139m8>
- Yoon, E. J., Tessler, M. H., Goodman, N. D., & Frank, M. C. (2020). Polite speech emerges from competing social goals. *Open Mind: Discoveries in Cognitive Science*, 4, 71–87. https://doi.org/10.1162/opmi_a_00035
- Zhu, P., Dweck, C., & Gweon, H. (2023). Young children's curiosity about what others think about the self. In M. Goldwater, F. K. Anggoro, B. K. Hayes, & D. C. Ong (Eds.), *Proceedings of the annual meeting of the cognitive science society* (Vol. 45, pp. 835–842). Cognitive Science Society. <https://escholarship.org/uc/item/06j3n7c9>

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