"Wow! You drew it!": How overly positive emotional reactions influence children's motivation in learning contexts

Grace Wujiamei Sun (wujiamei.sun@mail.utoronto.ca) & Yang Wu (yangm.wu@utoronto.ca)
Department of Psychology, University of Toronto Scarborough
1265 Military Trail, Scarborough, ON M1C 1A4 Canada

Abstract

Adults often exhibit various emotional responses to children's performance. How do these responses shape children's learning and motivation? This study investigated how overly positive emotional reactions influence children's task engagement and their willingness to take on challenges. Children aged 5 to 7 ($N = 81$) completed some simple tasks and received either overly positive or mildly positive emotional responses from an adult. Girls were more likely to continue engaging in the task and take on challenges after receiving a mildly positive emotional response compared to an overly positive one. In contrast, boys exhibited the opposite pattern, engaging in the task for longer and taking on more challenges after receiving an overly positive response than a mildly positive one. These findings suggest that girls and boys may interpret varying levels of positive emotional reactions differently, highlighting the complex, gender-specific ways in which emotional cues influence children's motivation and learning.

Keywords: social learning; emotional expression; motivation; children; cognitive development

Introduction

Children's motivation and learning are shaped by the social information they receive (Hattie & Timperley, 2007; Narciss, 2004; Vallerand & Reid, 1988). Among these influences, emotional expressions, such as a big smile, raised eyebrows, or an enthusiastic tone of voice, convey powerful information about how others think about a child's abilities. For instance, imagine you consistently earn a B+ on exams. Every time you share your grade, your parents and teachers react with over-the-top excitement. How might you respond? Would you feel motivated to strive for a higher grade on the next exam, or would you believe that your performance is already good enough? Your specific response highlights the influence of emotional cues on your intrinsic motivation. Here, we explore how emotional reactions to a child's performance shape their motivation and learning.

Past research has extensively studied one important form of social information – verbal feedback – and its role in children's learning (Cimpian, Arce, Markman, & Dweck, 2007; Henderlong & Lepper, 2002; Lucca, Horton, & Sommerville, 2019; Kamins & Dweck, 1999). Although many assume that positive verbal feedback (i.e., praise) enhances motivation and negative verbal feedback (i.e., criticism) diminishes it, research shows that these effects are much more nuanced. Both positive and negative verbal feedback can enhance, undermine, or have no effect on motivation, depending on how they are delivered (see Fong et al., 2018; Henderlong & Lepper, 2002 for reviews). For example, when praise is given for performing exceptionally easy tasks, it can lead children to infer low ability (Wulf-Uwe et al., 1979), and negatively affect their motivation in that domain (Graham, 1990; Weiner, 1985). Similarly, when children receive ability-focused praise, such as "You must be smart," they tend to attribute subsequent failures to a lack of ability, which diminishes their persistence in the face of setbacks. In contrast, effort-focused praise, such as "You must have worked hard," encourages attributing failure to insufficient effort, fostering resilience and persistence (Mueller & Dweck, 1998; Kamins & Dweck, 1999; Zentall & Morris, 2010).

Beyond verbal feedback, adults also express nonverbal emotional signals through facial expressions, tone of voice, and gestures. As illustrated by the earlier example of receiving excited responses over a B+ grade, these cues can shape how someone interprets their abilities, affecting their motivation to learn. Do even young children pick up on these nonverbal emotional signals, and how do they use them to guide their inferences and learning?

Research suggests that young children can use emotional cues as information to learn about both the physical world and others' internal mental states (see Wu, Schulz, Frank, & Gweon, 2021 for review). Even in infancy, children can use emotional cues (e.g., an excited exclamation or laughter) to infer their likely causes in the physical world (i.e., something cool or amusing; e.g., Clément & Dukes, 2017; Moll, Carpenter, & Tomasello, 2007; Moll, Koring, Carpenter, & Tomasello, 2006; Walle, Reschke, & Knothe, 2017; Wu, Muentener, & Schulz, 2017; Wu et al., 2021). With age, they are also increasingly adept at using emotional expressions to infer internal mental states (e.g., Repacholi & Gopnik, 1997; Wu, Haque, & Schulz, 2018). For instance, by age five, children recognize that a character's changing emotional reactions to an event, such as a shift from happiness to sadness, reveal the character's false belief about the event (Wu & Schulz, 2018).

A more relevant line of work examined how children use emotional cues to infer the abilities of other people. From age 5, children perceive students who receive positive nonverbal feedback from teachers as smarter than those who receive negative nonverbal feedback (Brey & Shutts, 2018). By age 6, children can also infer a student's ability based on a teacher's surprise. They infer that a student whose success surprises the teacher is less competent than one whose success does not (Asaba, Wu, Carrillo, & Gweon, 2020). Other

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research has focused on how children interpret different negative emotions. For instance, by age 9, children can differentiate whether a student's failure results from a lack of ability or effort based on whether the teacher expresses pity or anger (Weiner, Graham, Stern, & Lawson, 1982).

Yet, limited research has examined how emotional cues affect children's own motivation to learn, and most existing work has primarily used methods such as questionnaires, interviews, and self-reports to identify correlations between the two. For example, 5- to 7-year-old children of depressed mothers, who tend to express more negative affect than non-depressed mothers, often exhibit less persistence, reduced enthusiasm, and greater frustration in problem-solving contexts, compared to those of non-depressed mothers (Nolen-Hoeksema, Wolfson, Mumme, & Guskin, 1995). Similarly, mothers' reported negative affect when assisting children's homework is associated with poor motivational and emotional functioning in 8- to 12-year-old children (Pomerantz, Wang, & Ng, 2005). In classroom contexts, students aged 10 to 16 who perceive their teachers as more enthusiastic report greater enjoyment and lower anxiety and boredom, and these perceptions are also associated with higher mathematics achievement (Frenzel, Pekrun, & Goetz, 2007).

While the above research provides suggestive evidence, it has several limitations. First, measures such as questionnaires, interviews, and self-reports are susceptible to biases such as social desirability and memory recall errors. Second, because these studies are largely correlational, they lack experimental control, making it difficult to determine the direction of causality (e.g., whether mothers' negative affect causes children's low motivation or vice versa) or if a causal relation exists at all (e.g., both mothers' affect and children's motivation may be influenced by mothers' overall health). Third, these studies did not separate emotional expressions from verbal content, making it difficult to determine whether children primarily perceive affect through verbal information (e.g., praise, criticism) or nonverbal cues (e.g., facial expressions). Finally, these studies have examined valence of feedback across the spectrum from positive to negative, leaving open the question of whether children can differentially respond to variations within a narrower, within-valence range.

The present study addresses these limitations by investigating how an overly positive emotional response, compared to a mildly positive one, influences children's motivation. We focus on finer distinctions within the positive domain because positive emotions are frequently expressed to young children yet receive much less attention than positive verbal feedback such as praise. To establish causality, we use an experimental approach, randomly assigning children to one of two emotion conditions. This approach allows us to determine if emotional cues play a causal role in children's motivation. We operationalize motivation by measuring children's task engagement (Mueller & Dweck, 1998) and their willingness to take on challenges (Magid & Schulz, 2015) after they receive different nonverbal emotional responses. We focus on children aged 5 to 7 years, as prior research suggests that this is the youngest age range at which emotional cues can influence children's inference about others' abilities (e.g., Brey & Shutts, 2018) and relate to their own learning (e.g., Nolen-Hoeksema et al., 1995).

We propose two hypotheses on how overly positive (vs. mildly positive) emotional reactions might influence children's motivation. As prior research suggests that positive verbal feedback can either enhance or undermine children's motivation (Henderlong & Lepper, 2002), we propose that the same may hold for positive emotional reactions. On one hand, overly positive emotional cues may signal success and competence, boosting children's confidence and reinforcing their motivation. As a result, children may be more motivated to engage in a task and pursue challenges following an overly positive emotional response, compared to a mildly positive one. On the other hand, overly positive emotional reactions may reduce children's motivation if children interpret them as signaling low prior expectations or even insincerity. In this case, they may disengage more quickly or prefer easier tasks after receiving an overly positive response rather than a mildly positive one. This exploratory study differentiates between these two possibilities.

Method

Participants

We recruited 81 children aged 5 to 7 years (range: 5.07–7.82; 40 girls, 41 boys; mean age of girls = 6.44 years, mean age of boys = 6.39 years) through an online recruitment platform, *Children Helping Science* (formerly called *Lookit*; Scott & Schulz, 2017). Parents reported their family's race/ethnicity as such: White (n = 45); Asian (n = 20); Hispanic, Latino, or Spanish origin (n = 1); Black or African American (n = 1); Middle Eastern or North African (n = 1), multiple race/ethnicity (n = 11), or did not report (n = 2). For each child, at least one parent reported their highest educational attainment as follows: professional degree (n = 48), bachelor's degree (n = 18), graduate school attendance (n = 5), college degree (n = 3), associate degree (n = 3), high school diploma (n = 1), or did not report (n = 3). An additional 28 children were tested but excluded due to: failure to complete the study ($n = 2$), improper Zoom setup based on our standards (e.g., parent using a phone instead of a computer to participate; $n = 9$), low score ($\leq$2 out of 4) in the calibration (i.e., training) phase ($n = 3$), parental/sibling interference ($n = 8$), prior exposure to a sibling's testing session ($n = 1$), or experimenter error ($n = 5$).

Design and procedure

Participants were tested virtually via a Zoom video call (Chuey et al., 2021). All children viewed the experiment on a computer or laptop. To ensure consistency across participants, the experimenter first conducted a thorough Zoom screen setup with parents, including setting Zoom to full-screen mode, hiding the child's self-view, and arranging the

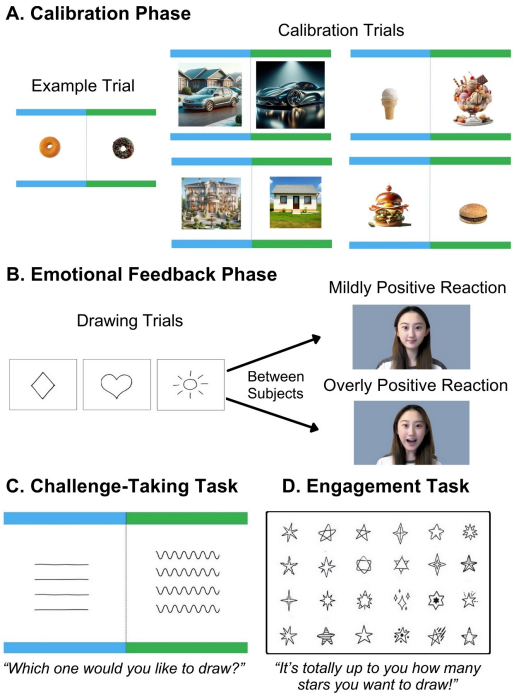

Figure 1: Experimental Procedure

slides and the experimenter's video side by side with a 2:1 size ratio. The experiment consisted of four phases: 1) a calibration phase, 2) an emotional feedback phase, 3) a challenge-taking task, and 4) an engagement task. See Figure 1.

Calibration Phase. Given individual differences in emotional expressivity, participants were first familiarized with varying intensities of the experimenter's positive emotional expressions through a guessing game.

Participants first saw an example trial to learn how to play this game (see Figure 1A). The experimenter presented a plain donut in a blue box and responded with a mildly positive expression, saying, "[1s of gentle smile] Look at the donut. [1s of gentle smile] I want to bring it to a picnic. [1s of gentle smile]" Key emotional cues included slightly raised cheeks, upturned lip corners, and a warm, calm tone of voice. She then presented a more desirable chocolate donut with colorful sprinkles in a green box and demonstrated a highly positive expression, exclaiming, "[1s of exaggerated excitement] Look at the donut! [1s of exaggerated excitement] I want to bring it to a picnic! [1s of exaggerated excitement]" Key emotional cues included wide-open eyes, raised eyebrows, a vocal burst ("Wow"), gasping, and a high-pitched, enthusiastic tone of voice. The experimenter then explained that in this game, she would present pairs of images and respond to one of them. The child's task was to guess which image she was looking at based on her emotional response.

Next, the experimenter reacted to pairs of images—one more desirable than the other (e.g., a normal car vs. a fancy race car, a plain ice cream cone vs. a sundae bowl; see Figure 1A)—using either a mildly or highly positive expression. After each reaction, participants were asked, "Can you guess which one I was looking at? The one in the blue box or the one in the green box?" If they answered incorrectly, the experimenter repeated the expression and allowed a second guess. This game ensured that participants became familiar with the experimenter's mildly and highly positive emotional responses and could effectively follow experimental instructions in the study. Participants received 1 point for a correct first response and 0.5 point for an incorrect first response followed by a corrected second response. There were four calibration trials in total. Most children performed well ($M = 3.83$ out of 4), except for two who scored 2 and were excluded (see participant exclusions).

Emotional Feedback Phase. Next, participants were asked to complete three simple drawings: a diamond, heart, and sun (see Figure 1B). After each drawing appeared on the screen, the experimenter turned off her camera and instructed the child to notify her upon completion by verbally stating they were done and holding the drawing beside their face. Once participants signaled they had finished, the experimenter turned the camera back on and provided feedback. While the verbal content remained identical for all participants, the intensity of the positive emotional reaction varied depending on the participant's assigned condition: either Mildly Positive or Overly (Highly) Positive. For example, upon seeing a participant's drawing of a diamond, the experimenter in the Mildly Positive condition responded warmly and calmly, "[1s of gentle smile] Look at the diamond. [1s of gentle smile] You drew it. [1s of gentle smile]" In contrast, the experimenter in the Overly Positive condition reacted with exaggerated enthusiasm, "[1s of exaggerated excitement] Look at the diamond! [1s of exaggerated excitement] You drew it! [1s of exaggerated excitement]" The key emotional cues in each condition were identical to those in the Calibration Phase.

Challenge-Taking Task. To examine how differences in emotional responses influence participants' tendency to take on challenges, the experimenter showed participants two new drawings side by side on a screen: one easier drawing with four straight lines and one more challenging drawing with four curvy lines (see Figure 1C). One drawing was placed in a blue box and the other in a green box (counterbalanced across participants). Participants were asked, "Which one would you like to draw? The one in the blue box or the one in the green box?" After making their choice, participants were asked a check question, "Which one is easier to draw?" or "Which one is harder to draw?" (counterbalanced across participants). Once participants responded, instead of drawing immediately, they were informed that they could complete the drawing after the testing session. This was designed to eliminate the possibility that the effort required to draw an easier vs. harder drawing differentially influence children's perfor-

mance on subsequent tasks. Only participants who passed the check question were included (69 out of 81) for further analysis.

Engagement Task. To assess how different emotional responses affect participants' interest in drawing, all participants were presented with 24 different stars (see Figure 1D). The experimenter instructed them, "It's totally up to you how many stars you want to draw. Whenever you are done drawing, just let me know, and I will come back." The experimenter then turned off her camera while participants drew. This task was intentionally designed without a time limit, allowing participants to independently decide how long they wanted to engage with the activity. The task ended when participants either verbally said they were done or physically raised their drawing to show the experimenter, whichever occurred first. Afterward, parents were instructed to take a photo of the drawings and email them to the experimenter. The engagement task always followed the challenge-taking task, rather than the other way around, because children's varying levels of engagement could influence their subsequent performance, and placing the engagement task last ensured that this variability did not affect other tasks.

A primary coder coded both children's total engagement time and the number of stars drawn. Engagement time was defined as the period from when the participant began drawing to when they said "done" or raised their drawing to show the experimenter. Any moments during which participants stopped drawing, looked away, or engaged in unrelated activities (e.g., a conversation with parent/sibling) were excluded from the measure. A second coder independently coded both children's total engagement time and the number of stars drawn. Any discrepancy in coded engagement time larger than 8 seconds or any disagreement on the number of stars drawn were resolved by a third coder.

Results

Challenge-Taking Task

We first analyzed whether different emotional expressions influenced children's challenge-taking behaviors. The proportion of children who chose challenges did not differ significantly between the mildly positive (60%) and the overly positive (58%) conditions ($\chi^2(1) = 0.00$, $p = 1.00$). See Figure 2A.

However, exploratory analysis suggests that gender played a role in children's challenge-taking choices. We conducted a logistic regression to examine the effects of gender (girls vs. boys) and emotion condition (Mildly vs. Overly Positive), and their interaction on children's challenge-taking choices. There were main effects of both emotion condition ($b = -2.37, SE = 0.92, z = -2.56, p = .010$) and gender ($b = -2.76, SE = 0.88, z = -3.05, p = .002$). More importantly, there was a significant interaction between emotion and gender ($b = 3.86, SE = 1.17, z = 3.31, p = .001$), indicating that girls and boys differed in their challenge-taking behaviors depending on the emotion condition they received.

Follow-up analysis examined the effect of emotion condition in girls and boys separately. Girls were more likely to take on challenges after receiving a mildly positive emotional response (89%), compared to an overly positive one (43%; $\chi^2(1) = 5.77, p = .016$). Boys showed a marginally significant effect in the opposite direction: only 35% of boys took challenges after receiving a mildly positive emotional response but 71% of them took challenges after receiving an overly positive one ($\chi^2(1) = 3.34$, $p = .067$). These findings reveal a gender-specific pattern in how children respond to positive emotional responses: while girls were more motivated to take on challenges after mildly positive emotional feedback than after overly positive one, boys showed the opposite trend. See Figure 2A.

Engagement Task—Time Spent Drawing

We also analyzed the effect of emotional cues on the length of time children engaged in the drawing task. Overall, the time children spent drawing following feedback did not differ significantly between the mildly positive ($M = 214.81$) and overly positive ($M = 198.08$) conditions ($t(79) = -0.41$, $p = .682$, 95% CI[-97.82, 64.35]). See Figure 2B.

As in the challenging-taking task, exploratory analysis suggests that gender played a role in the engagement task as well. A linear regression examined the effects of gender, emotion condition, and their interaction on the length of time children spent drawing. There was a main effect of emotion condition ($b = 129.63, SE = 53.57, t(77) = 2.42, p = .018$), aligned with our previous analysis. There was no main effect of gender ($b = 19.86, SE = 54.20, t(77) = 0.37, p = .715$) but a significant interaction between gender and emotion condition ($b = -225.28, SE = 75.26, t(77) = -2.99, p = .004$), suggesting that girls and boys differed in their drawing time depending on the emotion condition they received.

Follow-up analysis examined the effect of emotion on the length of time girls and boys spent drawing separately. Girls spent longer time drawing stars in the mildly positive condition ($M = 317.52$) than in the overly positive condition ($M = 187.89$; $t(38) = -2.07$, $p = .045$, 95%CI[-256.433, -2.83]). Boys showed the opposite pattern, spending longer time drawing stars in the overly positive condition ($M = 207.75$) than in the mildly positive condition ($M = 115.10$; $t(39) = 2.26$, $p = .030$, 95%CI[9.95, 181.36]). These findings, again, reveal a gender-specific pattern: while girls were more motivated to engaged in the task after receiving a mildly positive response compared to an overly positive one, boys showed the reverse pattern. See Figure 2B.

Engagement Task—Number of Stars Drawn

To see if the results on the engagement task converged across different measures, we also analyzed the effect of emotion on the number of stars children drew. Overall, the number of stars children drew did not differ significantly between the mildly positive ($M = 7.48$) and overly positive ($M = 7.26$) conditions ($t(79) = -0.14$, $p = .889$, 95% CI[-3.33, 2.89]). See Figure 2C.

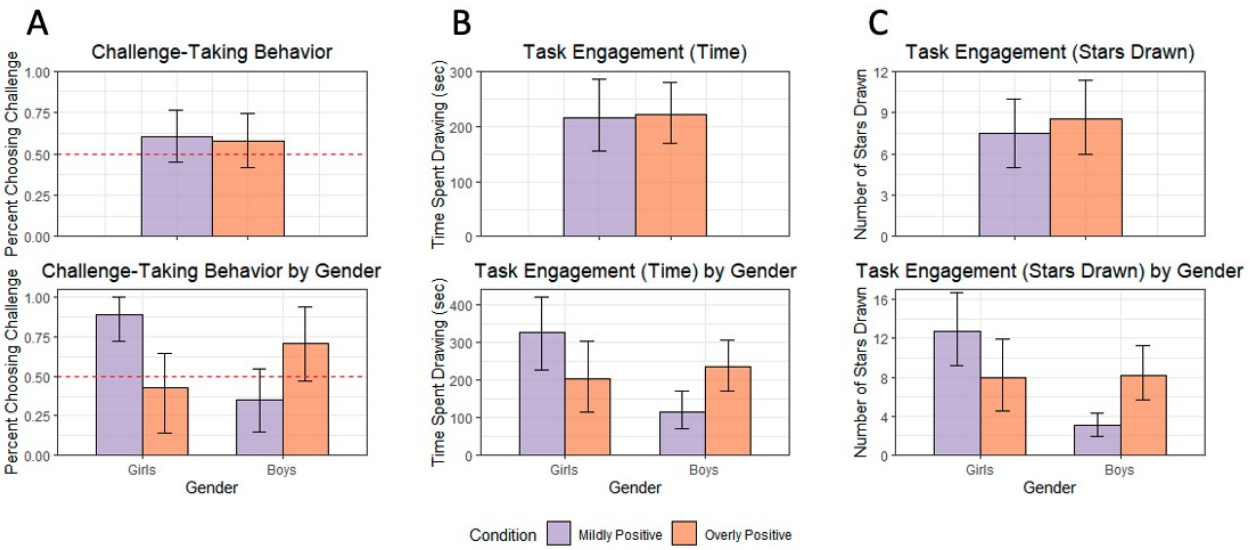

Figure 2: Results. Error bars indicate 95% confidence intervals.

Again, gender played a role in children's behaviors. A linear regression examined the effects of gender, emotion condition, and their interaction on the number of stars children drew. There was a main effect of emotion condition ($b = 5.05, SE = 1.99, t(77) = 2.54, p = .013$), aligned with our previous analyses. There was no main effect of gender ($b = 0.60, SE = 2.01, t(77) = 0.30, p = .765$), but a significant interaction between gender and emotion condition ($b = -9.65, SE = 2.79, t(77) = -3.45, p = .001$), suggesting the number of stars girls and boys drew differed depending on the emotion condition they received.

A follow-up analysis examined the effect of emotion on the number of stars girls and boys drew separately. Girls drew more stars in the mildly positive condition ($M = 12.00$) than in the overly positive condition ($M = 6.95$; $t(38) = -2.05$, $p = .047$, 95%CI[-10.03, -0.07]). Boys showed the opposite pattern, drawing more stars in the overly positive condition ($M = 7.55$) than the mildly positive condition ($M = 2.95$; $t(39) = 3.37$, $p = .002$, 95%CI[1.84, 7.36]). These results provide converging evidence that girls were more inclined to engage in the task following a mildly positive response than following an overly positive one whereas this pattern was reversed for boys. See Figure 2C.

Discussion

The present study investigated whether the intensity of a positive emotional reaction influenced children's motivation. We found that emotional intensity did not have a uniform effect across gender groups. Instead, there was a significant interaction between emotional intensity and gender. Girls were more motivated by mildly positive feedback, as evidenced by their increased likelihood of choosing challenging tasks, spending more time engaged in the activity, and drawing more stars compared to the overly positive condition. Conversely, boys exhibited the opposite direction of effects: they were more likely to take challenges, spent more time on the activity, and drew more stars in the overly positive condition than in the mildly positive condition. These results highlight how gender may shape children's interpretation of and response to emotional expressions.

Our findings advance prior work in several ways. First, our results align with previous research showing that social information influences children's motivation to learn (Hattie & Timperley, 2007; Narciss, 2004; Vallerand & Reid, 1988). However, we extend this literature by focusing specifically on emotional expressions rather than verbal content (Henderlong & Lepper, 2002; Mueller & Dweck, 1998), highlighting that variations in emotional displays can lead to different motivational outcomes. Second, while past research has shown that children use emotional cues as information to reason about the physical world (e.g., Clément & Dukes, 2017; Moll et al., 2007; Wu et al., 2017), others' mental states (e.g., Repacholi & Gopnik, 1997; Wu et al., 2018; Wu & Schulz, 2018), and even others' abilities (e.g., Asaba et al., 2020; Brey & Shutts, 2018; Weiner et al., 1982), our study goes beyond this work by demonstrating that emotional signals are also a source of information that guides children's motivational behaviors in learning contexts. This advances past work that only shows correlational links between adults' affect and children's motivation (e.g., Frenzel et al., 2007; Pomerantz et al., 2005), providing experimental evidence of a causal relationship. Finally, rather than measuring the influence of broad valence domains (i.e., positive vs. negative; e.g., Brey & Shutts, 2018; Pomerantz et al., 2005, or surprise vs. no surprise; Asaba et al., 2020), our study is the first to examine if nuanced differences within the positive emotion domain differentially affect children's motivation. The findings underscore both the powerful influence of subtle emotional cues and the remarkable ability of children to discriminate, interpret and respond to those cues.

How do we account for the observed gender effects? We propose three possible explanations. First, these patterns may stem from gendered socialization processes. Boys are often encouraged to be ambitious and competitive (Eriksson & Strimling, 2023; Leaper & Friedman, 2007). They may perceive others' overly positive reactions as an affirmation of their abilities, reinforcing their motivation to engage in the task and pursue challenges. In contrast, girls are often socialized to be modest and to downplay their achievements (Gralewski, 2019; Jones* & Myhill, 2004). When they receive overly positive emotional responses that contradict societal expectations for modesty, they may feel socially uncomfortable, leading them to withdraw from further showcasing their abilities or taking on challenges. Future work can test this possibility by providing children with a more private setting after they receive overly positive responses to determine if eliminating social concerns enhances girls' engagement and willingness to take on challenges.

Another explanation involves differences in boys' and girls' emotion understanding. Research suggests that girls tend to develop a more sophisticated understanding of emotion earlier than boys (Leppänen & Hietanen, 2001; McClure, 2000). As a result, they may be more likely to perceive overly positive emotional reactions as insincere, which could undermine their motivation. In contrast, boys may be less likely to interpret overly positive emotional reactions as insincere and more likely to take it at face value. Future work could investigate this possibility by having children rate how genuine they perceive an experimenter's emotional responses to be and examining whether girls rate the experimenter's overly positive emotional expression as less genuine than boys do.

A third explanation considers potential differences in baseline skills and their influence on children's expectations of others' responses. Research suggests that girls typically develop stronger fine motor skills in early childhood, making them more proficient at drawing than boys (Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010). As a result, girls who receive an overly positive response for a simple drawing may perceive a mismatch between the response and their performance, leading them to interpret the response as unnecessary or as a sign of others' low expectations for their ability, which may reduce their motivation. Conversely, boys, whose fine motor skills are generally not as strong as those of girls, may interpret the overly positive response as a deserved acknowledgment of their effort and success, reinforcing their motivation. To test this possibility, future research could introduce a task where boys and girls perform similarly (e.g., jigsaw puzzles, visual search) or where boys typically perform better (e.g., counting). If the same gender effects persist, it would suggest that these effects are not solely due to skill disparities in drawing but reflect broader patterns in how boys and girls interpret and respond to positive emotional cues.

Our study also raises new questions for future work. While our study focused on task engagement and challenge-taking behaviors, future research could present children with an impossible task to examine how different intensities of positive emotions influence their persistence in the face of failure. One possibility is that the gender differences observed in this study may persist. However, another possibility is that both boys and girls may experience a decrease in motivation after receiving an overly positive emotional response, as its high emotional intensity creates a stark discrepancy with their subsequent failure.

Another interesting question is how verbal feedback interacts with nonverbal emotional reactions. In our study, the verbal content simply described what the child had done (e.g., "Look at the diamond! You drew it!") in both the mildly and overly positive conditions. Future research could test whether the same pattern of results holds with different verbal cues, such as those focusing on a child's progress (e.g., "You're getting closer!") or effort (e.g., "You're trying really hard!"). It would be interesting to see whether these comments benefit more from overly positive expressions, as they emphasize the child's improvement or effort.

The study opens broader avenues for future work and has important real-world implications. First, although the current study focuses on positive emotions, future work could examine gender differences in response to other emotional expressions, such as negative emotions (e.g., a frown) and surprise. Second, future research should investigate the generalizability of these findings across cultures. Our findings were observed in a North American cultural context, where enthusiasm and over-the-top excitement are common in social interactions. However, in many Eastern cultures, where emotional moderation is emphasized (Tsai, Knutson, & Fung, 2006), highly positive emotional expressions might feel excessive or even uncomfortable for both boys and girls, potentially leading to different behavioral responses. Finally, this line of work offers insights for shaping pedagogical practices both in the classroom and at home. It highlights the importance of accounting for gender when using emotional cues to effectively motivate children in learning environments.

To conclude, while adults commonly display positive emotional reactions in response to children's performance, their effects depend on how children interpret them. Our results reveal that boys and girls respond differently to emotional expressions, with overly positive emotional expressions motivating boys but undermining girls' motivation. These findings highlight the need to carefully consider the kinds of nonverbal emotional reactions adults display in learning contexts to effectively support children's sustained engagement and willingness to take on challenges.

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