Praise Affects the “Praiser”: Effects of Ability-Focused vs. Effort-Focused Praise on Motivation

Kyosuke Kakinuma, Mai Nakai, Yuki Hada, Mari Kizawa, and Ayumi Tanaka

Doshisha University, Kyoto, Japan; Japan Society for the Promotion of Science, Kyoto, Japan

ABSTRACT
Considerable research has shown that receiving effort-focused praise affects motivation positively, while ability-focused praise affects motivation negatively. However, these studies have investigated only the effects on the one receiving praise (the praisee). Therefore, we examined the effects of praise on the one offering praise (the praiser), focusing on the student-to-student context. With consideration to previous studies addressing effects of communication on the communicator, we predicted that praise would have the same effects on the praiser as on the praisee. Study 1, a correlational study in a realistic hypothetical scenario situation, revealed that frequency of offering ability-focused praise was negatively related to endorsement of the growth mindset. Study 2, a scenario-based experiment, revealed that participants who had offered ability-focused praise reported less task enjoyment than participants who had offered objective feedback, although there was no significant difference in growth mindset. Study 3, an interpersonal experiment in a laboratory, replicated the negative relational pattern between ability-focused praise and the praiser's task enjoyment while also revealing the same pattern in the praiser's positive outcome emotions: pride and hope. These findings on the negative effect of ability-focused praise on the praiser have critical implications for education, wherein praise is often used.

KEYWORDS
Effort-ability; enjoyment; mindset; motivation; praise

IN EDUCATIONAL CONTEXT, praise is a popular tool. For example, a teacher may praise a student for his or her test score in the classroom, or students may praise their friend when he or she shows good performance in group work. A chief reason for this is that people believe that praise positively affects motivation (Henderlong & Lepper, 2002). Many motivational studies have examined the effect of praise on the person who receives the praise (see Henderlong & Lepper, 2002 for a review). They have found that the effect of praise depends on the type of praise, and that, surprisingly, some types of praise negatively affect the motivation of the person receiving praise (the praisee).

Although many researchers have examined effects on the praisee, to our knowledge, no existing study has investigated the effects on the person who offers the praise (the praiser). It thus remains unclear whether praise has an effect on the praiser as well. Considering how some studies have shown that some social behaviors affect providers themselves (e.g., Cheon et al., 2014; Dör et al., 2017; Legate et al., 2013; Weinstein & Ryan, 2010), praise will likely affect the praiser. Elucidating this relationship may offer the praiser new insights into the potentially beneficial or
harmful effects of praise on himself or herself and may make praise work more adaptively in daily life. In the current study, we tested whether giving praise can also affect the praiser. Moreover, the present study focused on praise between peers, considering the prevalence of peer feedback and praise in schools.

Effects of Receiving Praise

Many studies have found that receiving effort-focused praise positively affected motivation, while receiving ability-focused praise negatively affected motivation (e.g., Brummelman et al., 2014; Mueller & Dweck, 1998). In a landmark study by Mueller and Dweck (1998), fifth-grade children were asked to work on a set of tasks; then, they were praised for their ability (e.g., “You must be smart”), were praised for their effort (e.g., “You must have worked hard”), or received no additional feedback (i.e., the control group). Subsequently, children were given a more difficult set of problems and failed. Compared to children in the control group, children in the effort praise group reported more task enjoyment and performed higher on the subsequent task, while children in the ability praise group reported less task enjoyment and performed lower on the task.

These respective effects of ability- and effort-focused praise are related to mindset about intelligence (e.g., Gunderson et al., 2013; Pomerantz & Kempner, 2013). Mindsets are the views or beliefs people adopt for themselves (Dweck, 2006), and include two theories about the nature of intelligence: the growth mindset (i.e., the view of intelligence as malleable) and the fixed mindset (i.e., the view of intelligence as a fixed trait). These distinct mindsets lead people to respond differently to a setback (Dweck, 2000). People who endorse the growth mindset tend to have mastery-directed responses to setbacks; therefore, their enjoyment and performance on a subsequent task are high. However, those endorsing the fixed mindset tend to respond helplessly to setbacks, and therefore, their enjoyment and performance on a subsequent task are low (e.g., Blackwell et al., 2007; Cury et al., 2008).

In a study by Mueller and Dweck (1998), children who had received effort-focused praise tended to endorse the growth mindset, and their enjoyment and subsequent task performance were high following failure; in contrast, those who had received ability-focused praise tended to endorse the fixed mindset, and their enjoyment and subsequent task performance were low following failure. Mueller and Dweck (1998) suggested that effort-focused praise emphasizes the fundamental role of effort, whereas ability-focused praise implies that individuals’ intelligence is an internal and perhaps stable trait.

The Prediction of Effects on the Praiser

Despite extensive research on ability- vs. effort-focused praise, previous studies have examined only the effect of praise on the person receiving the praise, to our knowledge. However, is it possible that praise also affects the person offering praise? Some researchers have found that social and educational behaviors affect the providers as well as the recipients (e.g., Cheon et al., 2014; Doré et al., 2017); for example, Doré et al. (2017) showed that helping others regulate their emotions predicted increased regulation of one’s own emotions and decreased symptoms of depression. They suggested that in helping others manage their emotional reactions to stressful situations, people could practice and hone their emotional regulation skills, which they could then apply to improve their own emotional wellbeing. This indicates that people will apply something they offer to others for themselves.

Research on communication has found that communicating affects the communicator—what is called the “saying is believing” effect (e.g., Adaval & Wyer, 2004; Higgins & Rholes, 1978; Todorov, 2002). For example, in Higgins and Rholes (1978), undergraduate students were asked to describe a target person to a listener who supposedly either liked or disliked the target person.
As a result, communicators’ recall of the target person’s behavior became consistent with the listener’s attitude. Importantly, these results were not merely because of the listener’s attitude but were also due to the fact of their communicating the message, because this modification effect on memory did not occur when students knew the listener’s attitude but did not communicate the message. Higgins and Rholes (1978) explained that a communicator would assign a label to a target person through communicating the message, and the label would become part of the available information associated with the target.

In addition, research on persuasive communication has found that actively expressing an opinion affects that opinion (e.g., Elliot & Devine, 1994; Janis & King, 1954). For example, in Janis and King (1954), undergraduate students in an active group were asked to express an opinion in support of an outline prepared by the experimenter, while those in the passive control group only listened to that talk. Before and after the talk, students’ opinions on the topic were measured; students in the active group exhibited more opinion change than those in the passive group toward alignment with the persuasive communication.

Festinger (1957) suggested that such phenomena could be interpreted using the dissonance theory: students in the active group would experience the dissonance between the initial opinion and the expressing behavior and would change their opinion to reduce the dissonance. The dissonance theory assumes that there is a drive toward cognitive consistency, meaning that two inconsistent cognitions will produce discomfort, which will in turn motivate the person to remove the inconsistency and bring the cognitions into harmony. Festinger presented some ways to remove inconsistency: changing the attitude or belief and adding new, consonant information. If there is little consonant information available, people tend to change their attitude to reduce the dissonance. The effects of dissonance on the speaker’s attitude have been confirmed in later studies (e.g., Baumeister & Tice, 1984; Elliot & Devine, 1994).

Considering these studies that have addressed the effects on the provider or communicator, we predicted that praise would have the same effects on the praiser as on the praisee, in other words, that the effect would depend on the type of praise. For example, ability-focused praise is considered to communicate a message of evaluating others’ performance on ability (Henderlong & Lepper, 2002; Kanouse et al., 1981). The ability-focused praiser would assign an ability-focused label to the performance. It would lead the praiser to evaluate his or her own performance on ability through connecting the representation of performance to the evaluation of ability. This in turn affects the praiser’s belief (mindset) and task motivation (e.g., enjoyment), which, further, affects task performance. In addition, considering the dissonance effect between belief and behavior (e.g., Festinger, 1957), the praiser’s mindset would change largely when the praiser offers a distinct type of praise from that emerging from their initial mindset (e.g., if a person who endorses the growth mindset offers ability-focused praise). Based on these predictions, we examined the effects on the praiser.

**Praise between Peers**

The present study focused on praise in equal-status relationship, considering the extensive social interaction between students in schools and the fact that students are encouraged to praise each other in some schools (e.g., Fukuoka-ken Board of Education, 2015). Although previous studies on receiving praise have often focused on praise by authority figures (e.g., parents, teachers), research should also pay more attention on effort- versus ability-focused praise provided by friends. Investigating the effects is important from the practical standpoint of garnering implications for educational policy in classrooms or schools.

There are some studies on peer praise (e.g., Beets et al., 2007; Berndt, 1999; Morrison & Jones, 2007), although these studies did not examine the different effect of type of praise. For example, the intervention known as positive peer reporting, during which all children in a classroom have
the opportunity to receive or offer peer praise, was found to reduce the frequency of maladaptive critical social behaviors observed by teachers in the classroom (Morrison & Jones, 2007). Berndt (1999) indicated that friends’ simple expressions of praise of a person’s success could boost their self-esteem, and Beets et al. (2007) found that peer support such as praise was associated with higher self-efficacy for overcoming barriers to physical activity and resisting competing activities. These studies suggest that praise between peers also impacts the praisee’s motivation and behavior.

Moreover, educational research on peer-to-peer context supports the assumption about the effect on the praiser. Peer feedback studies have found that feedback affects not only the receiver but also the giver (e.g., Cho & Cho, 2011; Deiglmayr, 2018). For example, Topping (1998) argued that peer assessment promoted the assessee’s thinking about and discussing a topic from a different perspective while it promoted the assessor’s development of the skills of summarizing and contrasting. van Popta et al. (2017), a literature review focusing on the provider, showed that “providing peer feedback can be beneficial for the provider” (p. 29); giving feedback led to critical thinking and develops the giver’s skill at making evaluative judgements. Considering these findings, we may suspect that student-to-student praise affects the praiser’s beliefs or motivation.

**The Present Study**

The objective of the present study was to examine the effect of praise on the praiser, focusing on praise between students. Based on literature on praisees, we investigated the effect on mindset, motivation following failure, and performance on a subsequent task. To test our predictions, we conducted three studies. Study 1 examined the relationships between offering ability- or effort-focused praise behavior and mindset in a realistic hypothetical scenario situation. Study 2 was a scenario-based experiment exploring the effect of praise on the praiser’s mindset, task motivation, and task performance. In Study 3, we employed an interpersonal experiment, in which participants actually offered praise to another person, to verify the effects. Participants in the three studies were completely distinct. In each study, we calculated the necessary sample size using G*Power (Faul et al., 2007). All the present studies were approved by the local ethics committee.

**Study 1**

In Study 1, we examined the relationships between praise behavior and mindset about intelligence; we focused on praise between friends. As an index of praise behavior, we measured frequency of offering ability-focused and effort-focused praise based on previous studies (Hellmich & Hoya, 2017; Pomerantz & Kempner, 2013). Frequency of praise is often used in field studies on receiving praise, and research showed that the more frequently children received ability-focused praise from parents in daily life, the less they endorsed the growth mindset (Pomerantz & Kempner, 2013). In addition, we measured and controlled for the relationships between the praiser and the praisee considering that the quality of this relationship may be related to the effect of praise. Henderlong and Lepper (2002) suggest that praise may be more effective in the context of a close relationship: the closer relationship a person has, the greater an impact the praise type may have on mindset. We predicted that the frequency of offering ability-focused praise would be negatively related to the praisee’s endorsement of the growth mindset, while the frequency of offering effort-focused praise would be positively related to it.
Method

Participants and Procedure
One-hundred eighty-eight Japanese undergraduates (\(M_{\text{age}} = 19.31\) years; 121 women) from a psychology statistics class participated. Estimating a medium effect size (\(R^2\)) of .08 and setting power at .80, a sample size of 117 with two predictors would be sufficient to obtain a significant effect at \(\alpha = .05\). The class was conducted using a lecture format, and evaluation was based on a normative grading structure. In the 14th week of the semester, participants completed a questionnaire about the frequency offering different types of praise. A week later, participants’ mindset was assessed. One-hundred and forty-two participants completed the measures at both the first and the second assessment.

Measures
Frequency of Offering Each Type of Praise. Participants were asked to think of a friend (target). Then, they were asked to imagine that they were taking a psychology statistics class with the target, during which the present study was being conducted and that the target had received a good evaluation on an exam. Subsequently, they were asked to answer how often they would offer ability-focused praise (“You are smart,” “You are talented,” and “You are a genius”) and effort-focused praise (“You worked hard,” “You made an effort,” and “You tried hard”) to the target. The questionnaire comprised three items for each praise type, which were developed based on the study by Mueller and Dweck (1998). We did not specify when praise would be offered or the way of offering praise. Participants responded on a scale ranging from 1 (never) to 10 (very often). The scores were averaged for each kind of praise to generate a praise-offering index (ability-focused praise, Cronbach’s \(\alpha = .66\); effort-focused praise, Cronbach’s \(\alpha = .89\)). Results of confirmatory factor analysis are shown in the supplementary material.

Mindset about Intelligence (Growth Mindset). Dweck’s (2000) eight-item measure of mindset was used to assess the extent to which participants endorsed the growth mindset (e.g., “You can always substantially change how intelligent you are”) or the fixed mindset (e.g., “Your intelligence is something about you that you cannot change very much”). Each mindset was assessed with four items, and participants responded on a scale of 1 (strongly disagree) to 6 (strongly agree). Following previous research (e.g., Blackwell et al., 2007), the fixed mindset items were reverse scored and a mean mindset score was calculated using the eight items (Cronbach’s \(\alpha = .90\)). Higher scores indicated a higher tendency to endorse the growth mindset.

Relatedness with the Friend. Four items from the Intrinsic Motivation Inventory (Ryan, 1982) were used to measure the quality of the relationship with the target in offering praise scenarios (e.g., “I feel close to this person”; Cronbach’s \(\alpha = .89\)). Participants responded on a scale from 1 (strongly disagree) to 7 (strongly agree).

Results and Discussion
Descriptive Statistics
The means and standard deviations of variables were as follows; frequency of ability-focused praise (\(M = 5.52\), \(SD = 2.02\)), frequency of effort-focused praise (\(M = 6.27\), \(SD = 2.34\)), and growth mindset (\(M = 3.88\), \(SD = 0.81\)). Correlation coefficients of the variables are shown in the appendix (Supplementary material Table a-1).
Main Analysis

We conducted a hierarchical multiple regression analysis. Relatedness with the target was included in the model as a control variable; gender was also controlled, because the growth mindset in males tends to be higher than that in females (Dweck, 2000). Gender (male = 0, female = 1) was represented by dummy coding (Cohen et al., 2003). In the basic models, gender and relatedness with the target were entered in Step 1, and frequency of offering ability- and effort-focused praise were entered in Step 2.

The results are shown in Table 1. They indicate that ability-focused praise was significantly negatively related to growth mindset (\( p = .047 \)), while effort-focused praise was not significantly related to growth mindset (\( p = .051 \)). This partly supports the hypothesis. Nevertheless, the result should be interpreted with caution, because the coefficients of the relationship between effort-focused praise and growth mindset (\( \beta = .168 \)) are essentially the same in magnitude as the relationship between ability-focused praise and growth mindset (\( \beta = -.170 \)). The results of effort-focused praise will be discussed after all studies are presented below.

This study found a relationship between praise behavior and mindset about intelligence in a friendship situation. This suggests that the more frequently people offer ability-focused praise, the lower their growth mindset. That is in line with previous studies on receiving praise (e.g., Hellmich & Hoya, 2017; Pomerantz & Kempner, 2013). However, there are some limitations to Study 1. First, Study 1 was a cross-sectional study. As we did not manipulate the offering of praise, Study 1 cannot suggest a relational direction between ability-focused praise and the growth mindset; therefore, it is impossible to infer whether low growth mindset led to ability-focused praise or whether ability-focused praise led to low growth mindset. Second, the frequency of offering praise was based on participants’ estimations and is not the actual frequency of praise. It is plausible that participants overestimated or underestimated it. Third, the effect size was small. The reason for this may be that our procedure would cause large individual differences; thus, we should control the character or reaction of the praisee. Fourth, the internal reliability was low in the scale of the ability to praise. Two items (“You are talented,” and “You are a genius”) were more exaggerated than one item (“You are smart”) and could be also used with different meaning (e.g., that the speaker is joking) rather than ability-focused praise. It is necessary to revise the items of ability-focused praise. Finally, frequency is a limited measurement for praise type. Frequency did not reflect the quality or content of praise. There was also a gap between the measurement of frequency of praise and a single hypothetical scenario. Other measures of praise types may be more suitable to use for the purpose of the study. Considering these limitations, we conducted two experimental studies to address these limitations.

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**Table 1.** Hierarchical multiple regression analyses for relationships between the frequency of offering each type of praise and growth mindset.

| Controlled variable                  | Step 1        | Step 2        |
|-------------------------------------|---------------|---------------|
| Gender                             | -.121         | -.138         |
| Relatedness with the target         | .104          | .108          |
| Frequency of offering praise        |               |               |
| Ability-focused praise              |               | -.170*        |
| Effort-focused praise               | .168          | .067          |
| \( R^2 \)                           | .021          | .045*         |
| \( \Delta R^2 \)                    |               |               |

*Note: Values are standard partial regression coefficients. Growth mindset score was calculated by adding reverse scored fixed mindset items to the growth mindset score. Gender was represented by dummy coding (male = 0, female = 1).

\( ^* p < .05. \)
Study 2

In Study 2, we employed an experimental design to examine the relationship between offering praise and mindset, task motivation, and task performance focusing on students’ relationship. Based on many praise studies in which participants were praised in various scenarios (e.g., Kamins & Dweck, 1999; Morris & Zentall, 2014; Skipper & Douglas, 2012) and some communication studies in which participants communicated a message through writing an essay (e.g., Elliot & Devine, 1994; Higgins & Rholes, 1978), we asked participants to offer praise in scenarios. In the scenarios, the target to be praised was established as a junior student in the same club as the participants. The reason for this is that in Japanese culture, people often praise a junior student who belongs to the same community; thus, this setting may make it easier for participants to imagine the situation and offer praise naturally. Participants read scenarios about the success of the student and constructed sentences about ability-focused praise, effort-focused praise, or objective feedback (the control group) for the student. After that, we measured both task enjoyment, on a self-reported scale, and task performance, on a behavioral scale, as well as mindset (Cury et al., 2008; Mueller & Dweck, 1998). We predicted effects on the praiser as follows. First, compared with participants in the control group, those offering ability-focused praise would endorse lower growth mindset, while those offering effort-focused praise would endorse higher growth mindset. Second, participants in the ability praise group would report lower enjoyment and answer fewer problems correctly than participants in the control condition, while participants in the effort-praise group would show higher levels of these two outcomes, in comparison with the control condition. Third, these associations of praise with task enjoyment and task performance would be mediated by the post-growth mindset.

We set the following procedure and measures based on the dissonance theory. When manipulating offering praise, we applied a high-choice procedure to cause a larger effect on the praiser (e.g., Baumeister & Tice, 1984; Elliot & Devine, 1994; Zanna & Cooper, 1974). Some studies showed that giving participants a final decision on behavior (high-choice) enlarged the effect on the speakers’ opinion compared to forcing them to do the behavior (low-choice). These studies argued that if participants were forced to engage in counter-attitudinal behavior, they could attribute the behavior to an external reason (e.g., the experimenter) rather than an internal reason (e.g., their own belief). Therefore, we provided participants with the final decision over the type of feedback in order to enlarge the effect on the praiser, after we asked them to select a particular type of feedback depending on their assigned group. Moreover, we measured pre-mindset (before the experiment) and examined the interaction effect between pre-mindset and praise type on post-mindset (after the experiment). According to the dissonance theory, the inconsistency between belief and behavior will produce discomfort, which will in turn motivate the person to change their beliefs. Praise research has found that ability- (effort-)focused praise behavior is negatively related to growth (fixed) mindset (e.g., Pomerantz & Kempner, 2013). Therefore, we predicted that ability- (effort-)focused praise would have more impact on the post-growth mindset for participants with higher (lower) pre-growth mindset.

Method

Participants

One-hundred sixty Japanese undergraduates ($M_{age} = 19.91$ years, $SD = 1.39$; 98 women) participated. Participants were randomly assigned to three groups (control group, $n = 51$; ability praise group, $n = 54$; effort praise group, $n = 55$). Estimating a medium effect size ($f$) of .25 and setting power at .80, a sample size of 159 with three groups was sufficient to get a significant effect at $\alpha = .05$. The experiment was ostensibly explained as “an experiment about feedback to others and task performance.”
Table 2. The procedure in study 2 and 3.

| Measurement of pre-mindset about intelligence | Reading a scenario (Study 2) or observing the partner doing a task (Study 3) |
| Manipulation of praise: offering ability praise, effort praise, or objective feedback | |
| Measurement of mindset about intelligence (Study 2) or about task ability (Study 3) | |
| Failure experience: working on 10 difficult matrices | |
| Measurement of task enjoyment (Studies 2 and 3) and positive outcome emotion (Study 3) | |
| Practicing matrices | |
| Test: taking a final test of 10 matrices | |

Procedure

An overview of the procedure is shown in Table 2. About a week before the experiment, participants were asked to complete pre-questionnaires concerning their mindset about intelligence. The experiment was conducted online using Qualtrics survey software. First, we manipulated participants’ offering of praise; we asked them to read scenarios and construct sentences about ability-focused praise (e.g., “You are smart”) or effort-focused praise (e.g., “You worked hard”) or objective feedback (e.g., “You will get a grade of A”; the control group). Second, we measured participants’ mindset about intelligence. Third, we had participants experience failure by working on a difficult task, and their enjoyment on the task was measured. Fourth, they were told that they would take a final test and they could work on practice problems in preparation for the test. Finally, they were asked to work on ten matrix problems as the test. Instructions are shown in the supplementary materials.

Manipulation of Praise. We manipulated participants’ offering of praise in feedback-based sentence construction. Participants were provided with three scenarios in which junior students succeeded (Table 3), and were asked to construct feedback sentences for the student in each scenario. When constructing the sentences, participants were provided words and sentence as examples of objective feedback, ability praise, or effort praise (supplementary materials). Before reading the scenarios, we gave participants the final decision on selecting a type of praise to enlarge effects on the praiser, similar to the high-choice procedure noted above (e.g., Elliot & Devine, 1994). We asked participants to select a particular type of feedback (e.g., participants in the ability praise group were asked to select ability-focused praise feedback) with the ostensible reason that the experiment focused on that feedback; but they could also select another type of feedback. This ostensible reason was meant to prevent participants from suspecting the actual hypothesis of this experiment. Participants constructed only the type of feedback sentences which they had selected.

Task Materials. A difficult task was set based on Mueller and Dweck (1998). Participants were asked to work on sets of ten progressive matrices (Raven, 1976) with a four-minute time limitation. The latter five problems were difficult to promote failure. After they worked on matrices, all participants were given feedback indicating low performance regardless of their real score. The practice and test procedures were taken from Cury et al. (2008). In the practice, participants were given an opportunity to work on matrices with the purpose of preparation for a test; they could decide whether or not to work on the problems, and there was no time limit. As a test, participants were asked to work on sets of ten progressive matrices with a four-minute time limitation.
Measures
The items on mindset about intelligence were the same as those in Study 1 (Cronbach’s \( \alpha = .86 \)). As a measure of task enjoyment, three items from the Intrinsic Motivation Inventory (Ryan, 1982) were used as a self-report measure of task enjoyment (e.g., “I enjoyed doing this task”; Cronbach’s \( \alpha = .84 \)). Participants responded on a scale from 1 (strongly disagree) to 7 (strongly agree). As a measure of test performance, scores on the test of matrices were used.

Results

Preliminary Analyses
First, the pre-growth mindset did not significantly differ among groups, \( p = .870 \), which indicates successful random assignment. Second, no effect of gender was found for any variables (\( ps > .13 \)). Therefore, gender was not included in the final analysis as a control variable, considering that participants had been randomly assigned in Study 2. Third, concerning the feedback sentence, all participants in the ability praise group included ability-related words (e.g., “smart”), and all participants in the effort praise group included effort-related words (e.g., “hard work”) into their praise sentences. This indicates that the manipulation of praise type was successful. Although two participants in the ability praise group and one participant in the effort praise group simply mimicked an example, all other participants generated praise sentences in their own words. In addition, the number of words and time to construct feedback sentences did not significantly differ among groups (\( ps > .73 \)), which suggests that they did not confound the effect of praise. Fourth, concerning the difficult task score in failure experience, 139 participants got 6 points or less out of 10, while 3 participants got 7 points or more. Although almost all participants obtained a low score, there were variations; therefore, the difficult task score in failure experience was entered as a control variable into a basic model of task enjoyment and test performance.

Descriptive Statistics
Table 4 presents the means, standard deviations, and 95% confidence intervals (CIs) of scores on the variables across the distinct study groups. Correlation coefficients of the variables are shown in the appendix (Supplementry material Table a-2).

Main Effects of Praise
We conducted a hierarchical multiple regression analysis. The experimental design was represented by dummy coding (Cohen et al., 2003). The control group was chosen as the reference group, and two dummy codes were made: ability praise code (control group = 0, ability praise group = 1, and effort praise group = 0) and effort praise code (control group = 0, ability praise group = 0, and effort praise group = 1). Ability praise code contrasts the ability praise group and the control group, and effort praise code contrasts the effort praise group and the control group.

Mindset about Intelligence (Growth Mindset). As a basic model, the pre-growth mindset was entered in Step 1 as a control variable; ability and effort praise codes were entered in Step 2; and
the pre-growth mindset \( \times \) each praise code interactions, which were created from the mean-centered main effect, were entered in Step 3. The results were shown in Table 5. In Step 2, neither ability praise code nor effort praise code were significant predictors, which did not support Hypothesis 1. In Step 3, the pre-growth mindset \( \times \) ability praise code was a significant positive predictor \((p = .027)\), while the pre-growth mindset \( \times \) effort praise code interactions did not \((p = .067)\). Simple slope analysis showed that participants with lower pre-growth mindset reported lower post-growth mindset in the ability praise group than in the control group \((\beta = .129, p = .038)\), while participants with higher pre-growth mindset did not \((\beta = .016, p = .794)\), as shown in Figure 1. These results suggest that ability-focused praise negatively affected the post-growth mindset for participants with lower pre-growth mindset. This was opposed to our hypothesis that ability-focused praise would have more impact on the post-growth mindset for participants with higher pre-growth mindset.

**Task Enjoyment.** As a basic model, the difficult task score for failure experience was entered in Step 1 as a control variable, and ability and effort praise code were entered in Step 2. The results are presented in Table 6. The regression of task enjoyment on the basic model revealed that ability praise code was a significant negative predictor \((p = .007)\), while effort praise code was not \((p = .236)\). This showed that task enjoyment in the ability praise group was lower than in the control group, meaning that the hypothesis was supported. Nevertheless, this negative association of ability-focused praise with task enjoyment was not mediated by mindset, because ability-focused praise did not have a main effect on growth mindset. This did not support the hypothesis.

| Table 4. Means, standard deviations, and 95% confidence intervals of the dependent measures. |
|---------------------------------------------|---------------------|---------------------|---------------------|
|                                            | \( M \)            | \( SD \)            | \( 95\% \ CI \)     |
| Post-growth mindset                        |                    |                    | Possible range      |
| Control                                    | 3.78               | 1.08               | [3.44,4.12]         |
| Ability praise                             | 3.53               | 1.06               | [3.22,3.84]         |
| Effort praise                              | 3.64               | 1.01               | [3.37,3.92]         |
| Task enjoyment                             |                    |                    |                     |
| Control                                    | 5.02               | 1.48               | [4.56,5.48]         |
| Ability praise                             | 4.04               | 1.47               | [3.60,4.47]         |
| Effort praise                              | 4.57               | 1.69               | [4.11,5.04]         |
| Test performance                           |                    |                    |                     |
| Control                                    | 6.10               | 1.92               | [5.50,6.69]         |
| Ability praise                             | 6.11               | 1.54               | [5.66,6.56]         |
| Effort praise                              | 6.28               | 1.73               | [5.81,6.76]         |

*Note: \( M = \) mean; \( SD = \) standard deviation; CI = confidence interval. Growth mindset score was calculated by adding reverse scored fixed mindset items to the growth mindset score.

| Table 5. Hierarchical multiple regression analyses for the effects of each praise on growth mindset. |
|---------------------------------------------------------------|-------------------|-------------------|-------------------|
|                                                              |                    |                    |                    |
| Post-growth mindset                                         | Step 1            | Step 2            | Step 3            |
|                                                              |                    |                    |                    |
| Controlled variable                                         |                    |                    |                    |
| Pre-growth mindset                                          | .863**             | .861**             | .886**             |
| Praise code                                                 |                    |                    |                    |
| Ability praise code                                         |                    |                    |                    |
| Effort praise code                                          |                    |                    |                    |
| Interactions                                                |                    |                    |                    |
| Ability \( \times \) Pre-growth mindset                    | .105**             | .071               | .025               |
| Effort \( \times \) Pre-growth mindset                     | .086               | .073               | .028               |
| \( R^2 \)                                                   | .745**             | .749**             | .760**             |
| \( \Delta R^2 \)                                            | .004               | .011               |

*Note: Values are standard partial regression coefficients. Growth mindset score was calculated by adding reverse scored fixed mindset items to the growth mindset score.

\( *p < .05 \)

\( **p < .01 \)
Test Performance. The basic model was similar to the regression of task enjoyment. Additionally, task enjoyment was entered in Step 3 to examine the relationships between task enjoyment and test performance. As shown in Table 6, the regression of test performance on the basic model revealed that both ability and effort praise code were not significant predictors in Step 2 ($p = .379$, $p = .166$, respectively).

Additional Analysis

Ability-focused praise negatively affected task enjoyment, and task enjoyment was positively related to test performance ($p < .001$). Therefore, ability-focused praise would have an indirect effect on test performance through the effect on task enjoyment. To test this possibility exploratorily, we conducted a mediation analysis based on Hayes (2017). In the present analysis, ability praise code and effort praise code were entered as independent variables, task enjoyment was entered as a mediational variable, test performance was entered as a dependent variable, and difficult task score in failure experience was entered as a control variable. Results showed that the indirect effect of ability praise code on test performance was $-0.315$ (95% CI [-0.580, $-0.098$]). These results suggest that ability-focused praise has an indirect negative effect on test performance, which partially supports the hypothesis and suggests that ability-focused praise negatively affects task enjoyment, which, in turn, is a negative predictor of test performance.6
**Discussion**

Study 2 found that ability-focused praise between students was negatively related to a post-growth mindset among participants with lower pre-growth mindset. More importantly, ability-focused praise was negatively related to task enjoyment. By using a scenario-based study, Study 2 controlled for a response or impression of the target to be praised. Therefore, these relationships of ability-focused praise are related to the effect of praise itself, which is independent from effects of the praiser’s response or impression.

In Study 2, we investigated relationships between praise type and task enjoyment, especially after failure. This procedure was based on previous literature (Dweck, 2000; Mueller & Dweck, 1998, Skipper & Douglas, 2012). The attribution theorists suggest that ability-based attribution is detrimental in responses to failure and is not in responses to success (e.g., Weiner, 2010); however, Dweck and colleagues have surprisingly shown that receiving praise for success affects attributional style not only in the success but also in subsequent failure experience (e.g., Gunderson et al., 2013; Dweck, 2000; Mueller & Dweck, 1998). The present study found a similar relationship between ability-focused praise and task enjoyment on the praiser with previous studies: a person who had offered ability-focused praise would feel less enjoyment when facing a setback even though this relationship was not mediated by mindset.

However, there were some limitations to Study 2. First, the methodology was based only on hypothetical scenarios, which would not differ from simply generating sentences containing ability- or effort-related words. It is hard to say to what extent the study captures real-life interpersonal praise. The second limitation was related to the results on the interaction effect between praise and initial mindset. Although we hypothesized that ability-focused praise would have more impact on post-growth mindset for participants with higher pre-growth mindset, based on the dissonance theory, the result was in the opposite direction. Before we come to a conclusion on the moderation effect, an additional study should be conducted to verify that the effect is robust and can be replicated. Therefore, we conducted an interpersonal experiment to address these limitations.

**Study 3**

The purpose of Study 3 was to verify the effect on the praiser in an interpersonal setting between students. We conducted a lab experiment, in which participants actually offered praise to another person. We aimed to replicate the pattern of results from Study 2. In Study 3, we changed the scale of post-mindset, that is, we measured post-mindset specified to task ability instead of general intelligence. Considering that some studies found an experimental manipulation effect on mindset specified to task ability (e.g., Curry et al., 2008), there may also be a main effect on it of offering praise. Moreover, we measured pride and hope, which are referred to as positive outcome emotions in control-value theory (Pekrun, 2006), in addition to task enjoyment, which is referred to as activity-related emotion. Some motivational studies found that ability-focused evaluative tendencies with low controllability of achievement were negatively related to hope and pride (e.g., Pekrun et al., 2009). In addition, research on praise found that participants who had received ability-focused praise perceived their outcome more negatively in failure experience (e.g., Kamins & Dweck, 1999; Skipper & Douglas, 2012). Therefore, offering ability-focused praise would have a detrimental effect on the positive outcome emotion as well as on the activity-related emotion.

**Method**

**Participants**

One-hundred and sixty-eight Japanese undergraduates ($M_{age} = 19.69$ years, SD = 1.24; 137 women) participated. They were randomly assigned to three groups (control group, $n = 56$; ability praise group, $n = 57$; and effort praise group, $n = 55$).
Procedure
An overview of the procedure is shown in Table 2. About a week before the experiment, participants were asked to complete pre-questionnaires concerning mindset about intelligence. Participants attended a lab session in pairs, each randomly assigned to one of three groups. First, dyads introduced each other and interacted as an icebreaker. Second, one of the dyad members was asked to move to the next room with a second experimenter. Then, each was ostensibly told that they were given the role of offering feedback to their partner and were shown a video clip, ostensibly a live broadcast of the partner, in which the partner worked on numerical calculation and finding a pattern of character strings task. We applied this procedure to control the praiser’s reaction to the praisee. Third, we manipulated offering of praise. Participants were provided with an answer sheet and were asked to check the partner’s answers. They were asked to write sentences about ability-focused praise, effort-focused praise, or objective feedback (e.g., “You got 80% correct”) for the partner. When writing the sentences, participants were provided words and sentence as examples of objective feedback, ability praise, or effort praise (supplementary materials). The experimenters pretended to deliver the paper to the partner. The observation and feedback procedure was conducted twice to strengthen the manipulation. Before the manipulation, participants were given the final decision on selecting type of praise as the procedure in Study 2. Fourth, the remaining procedure was similar to the one in Study 2. We had participants experience failure by working on a difficult task. Their mindset about task ability was measured before the task, and their task enjoyment and positive outcome emotions were measured after the task. Finally, they were asked to take a test of matrices after participants were given an opportunity to practice the matrices. Instructions are shown in the supplementary materials.

Measures
We used the same index as in Study 2 to measure pre-growth mindset about intelligence (Cronbach’s $\alpha = .93$), task enjoyment (Cronbach’s $\alpha = .77$), and test performance.

Mindset about Task Ability (Growth Mindset). The items were similar to measures of mindset about intelligence (Dweck, 2000). We made a few changes in the content to specify ability on the matrices task instead of intelligence (e.g., “You can always substantially change how much ability on the matrices task you have”). Cronbach’s $\alpha$ was .94.

Positive Outcome Emotion. Pride and hope were measured as positive outcome emotions based on Pekrun et al. (2009) using one item each (“I am proud of myself”; “I am full of hope”). Participants responded on a scale from 1 (strongly disagree) to 4 (strongly agree). The values of pride and hope are averaged to yield overall positive outcome emotion (Cronbach’s $\alpha = .65$).

Results
Preliminary Analyses
The pre-growth mindset did not significantly differ among groups, $p = .593$, which indicates successful random assignment. No effect of gender was found for any variables ($ps > .08$) other than post-growth mindset, which was higher in males than females ($p = .009$). Therefore, we controlled gender when analyzing the effect of praise on the post-growth mindset. Concerning the feedback sentences, all participants in each praise group included each praise-related word into their praise sentences. This is similar to Study 2, which indicated that the manipulation of praise type was successful. Although four participants in the ability praise group and four participants in the effort praise group simply mimicked an example, all other participants generated praise sentences in their own words. However, the number of words to construct feedback sentences
significantly differed among groups ($p < .01$), being higher in ability and effort praise groups than in the control group ($p < .01$). Therefore, the number of words in feedback sentences was included in the main analysis as a control variable. Concerning the difficult task score in failure experience, 156 participants got 6 points or less out of 10, and 9 participants got 7 points or more. Although almost all participants obtained a low score, there were variations; therefore, the difficult task score for failure experience was entered as a control variable into a basic model for task enjoyment and test performance.

**Descriptive Statistics**

Table 7 presents the means, standard deviations, and 95% confidence intervals (CI) of scores on the variables across the distinct study groups. Correlation coefficients of the variables are shown in the appendix (Supplementary material Table a-3).

**Main Effects of Praise**

We conducted a hierarchical multiple regression analysis in a similar way to Study 2.

**Mindset about Task Ability (Growth Mindset).** As a basic model, pre-growth mindset, number of feedback words, and gender were entered in Step 1 as control variables; ability and effort praise codes were entered in Step 2; and the pre-growth mindset $\times$ each praise code interaction was entered in Step 3. The results are shown in Table 8. In Step 2, neither ability praise code nor effort praise code nor interactions were significant predictors ($p = .703$, $p = .286$, respectively). There were no main effects on mindset specified to task ability. In Step 3, pre-growth mindset $\times$ ability and effort praise code interactions were not significant predictors ($p = .910$, $p = .682$, respectively). We could not replicate the interaction effect between ability-focused praise and the growth mindset in Study 2.

**Task Enjoyment and Positive Outcome Emotion.** As a basic model, the difficult task score in failure experience and number of words in feedback sentences were entered in Step 1 as control variables, and ability and effort praise codes were entered in Step 2. The results are shown in Table 9. The regression of task enjoyment on the basic model revealed that ability praise code was a significant negative predictor ($p = .038$), while effort praise code was not ($p = .071$). This showed that task enjoyment in the ability praise group was lower than that in the control group.

### Table 7. Means, standard deviations, and 95% confidence intervals of the dependent measures.

|                          | $M$   | SD  | 95% CI    | Possible range |
|--------------------------|-------|-----|-----------|----------------|
| **Post-growth mindset**  |       |     |           |                |
| Control                  | 3.29  | 0.98| [3.03,3.56]| 1–6           |
| Ability praise           | 3.31  | 1.01| [3.04,3.58]|               |
| Effort praise            | 3.31  | 1.06| [3.02,3.60]|               |
| **Task enjoyment**       |       |     |           |                |
| Control                  | 4.78  | 1.15| [4.47,5.09]| 1–7           |
| Ability praise           | 4.51  | 1.25| [4.17,4.84]|               |
| Effort praise            | 4.53  | 1.29| [4.18,4.88]|               |
| **Positive outcome emotion** |       |     |           |                |
| Control                  | 1.54  | 0.62| [1.37,1.71]| 1–4           |
| Ability praise           | 1.30  | 0.45| [1.18,1.43]|               |
| Effort praise            | 1.38  | 0.49| [1.25,1.51]|               |
| **Test performance**     |       |     |           | 0–10           |
| Control                  | 6.56  | 1.62| [6.13,7.00]|               |
| Ability praise           | 6.63  | 1.71| [6.17,7.08]|               |
| Effort praise            | 6.46  | 1.53| [6.05,6.88]|               |

*Note: M = mean; SD = standard deviation; CI = confidence interval. Growth mindset score was calculated by adding reverse scored fixed mindset items to the growth mindset score.*
Moreover, the regression of positive outcome emotion on the basic model revealed that ability praise code was a significant negative predictor ($p = .010$), while effort praise code was not ($p = .071$). This showed that positive outcome emotion in the ability praise group was lower than that in the control group.

**Test Performance.** The basic model was similar to the regression of task enjoyment. Additionally, task enjoyment was entered in Step 3. As shown in Table 9, the regression of test performance on the basic model revealed that neither ability nor effort praise codes were significant predictors in Step 2 ($p = .701$, $p = .364$, respectively).

**Additional Analysis**

We exploratorily examined whether ability-focused praise would have an indirect effect on test performance through its effect on task enjoyment as in Study 2. The results showed that the indirect effect of ability praise code on test performance was $-0.155$ (95% CI [-0.380, $-0.003$]), suggesting that ability-focused praise negatively affects task enjoyment, which, in turn, is a negative predictor of test performance. Thus, we replicated the indirect effect of ability-focused praise.
Discussion

In Study 3, we conducted a lab experiment, in which participants actually offered praise to another person. We replicated the effect of ability-focused praise on task enjoyment and verified the effect in the interpersonal setting. We found that ability-focused praise negatively affected positive outcome emotion as well as activity emotion and expanded the effect on the praiser, although the relatively low internal reliability of the positive outcome emotion scale was a limitation upon this study. However, we did not replicate the interaction found in Study 2, which was that the ability-focused praise was negatively related to the post-growth mindset for participants with lower pre-growth mindset. Thus, this interaction effect can be seen as quite small and unstable and should be interpreted with caution. More research is needed to conclusively determine the interaction between initial mindset and praise type.

General Discussion

The present study is the first to examine the effect of praise on the praiser. Based on previous research on communicators, we predicted that praise would affect the praiser’s mindset, task enjoyment following failure, and subsequent task performance. It was hypothesized that people who offered ability-focused praise to others would endorse lower growth mindset, exhibit less task enjoyment, and have lower performance, while people who offered effort-focused praise to others would endorse greater growth mindset, exhibit greater task enjoyment, and have higher performance. Given the prevalence of peer praise, the present study focused on praise in equal-status relationships. Three studies were conducted.

Most notably, ability-focused praise was negatively associated with the praiser’s task enjoyment in Study 2. Moreover, Study 3 replicated the result in an interpersonal setting and also found the negative effect on positive outcome emotions. This is in line with studies about praisees, which have consistently shown that ability-focused praise negatively affects praisees’ task motivation (e.g., Mueller & Dweck, 1998; Skipper & Douglas, 2012). The present results suggest that if a student praises his or her colleagues for their ability, it may backfire for the praiser (as well as the praisee) afterward; in other words, his or her motivation for the task will decrease. This is the first study, to our knowledge, to reveal the effect of praise on the praiser’s motivation, and provides new insight into previous praise research.

The negative effect of ability-focused praise could be accounted for by the “saying is believing” effect rather than by cognitive dissonance considering that the predicted interaction between initial mindset and praising behavior did not occur. As mentioned in the introduction section, the ability-focused praiser would assign an ability-focused label to the performance, which would lead the praiser to evaluate his or her own performance on ability by connecting the representation of performance to the evaluation of ability. Such a mechanism would be similar to the priming mechanism (e.g., Neumann, 2000).10 That is, the act of ability-focused praising in two experiments may serve to prime ability-related concepts and would activate both less enjoyment and less positive outcome emotion. In addition, this priming mechanism may be related to why there was no mediational effect of mindset although there would be other reasons that will be discussed below. Research on priming effect showed that a primed goal encouraged goal-oriented behavior in the absence of conscious awareness of the pursuit (e.g., Bar-Anan et al., 2010; Bargh et al., 2001). In the present experiments, offering ability-focused praise might encourage the praiser’s fixed mindset, but he or she might not be aware of it.

As for effort-focused praise, frequency of offering it was not significantly related to growth mindset in Study 1, and there was no effect of effort-focused praise on any variables in Studies 2 and 3. Rather, although it was not significant, there were a pattern of negative relationship of effort-focused praise with task enjoyment and positive outcome emotion in Studies 2 and 3. It
did not support our prediction. Some studies on receiving praise suggest a negative effect of effort-focused praise depending on praise content (Reavis et al., 2018), individual difference (Henderlong & Lepper, 2002; Lam et al., 2008), developmental stage (Amemiya & Wang, 2018; Nicholls, 1978) and cultural difference (Henderlong & Lepper, 2002; Salili & Hau, 1994). For example, effort-focused praise could be interpreted as person-focused (e.g., “You are a hard worker!”) and would negatively affect motivation in contrast to process-focused effort praise (Reavis et al., 2018). It indicates that person-focused effort praise can encourage people evaluate their performance based on non-controllable and stable traits in a way similar to ability-focused praise. Moreover, the motivational effects of effort praise depend on individual beliefs in the effort–ability relationship, i.e., effort and ability are related positively (the positive rule) versus related negatively (the inverse rule). Effort-focused praise negatively affects a person who has the inverse rule because high effort implies a lack of ability (Henderlong & Lepper, 2002; Lam et al., 2008). This negative effect of evaluation on effort would be particularly great for adolescents (Amemiya & Wang, 2018) as older children could consider effort and ability to be inversely related (Nicholls, 1978). There is also cultural difference that Asian children, unlike Western children, tend to believe that ability and effort were positively correlated (Salili & Hau, 1994). Therefore, the implication of effort is quite complicated. We should take these moderators into account to address effort-focused praise.

The present study sheds new light on the effect of praise from the view of the praiser. Recently, researchers have found that various interpersonal behaviors affect the provider (e.g., Cheon et al., 2014; Doré et al., 2017; Legate et al., 2013; Weinstein & Ryan, 2010). They found that autonomously helping others yielded well-being benefits for the helper (Weinstein & Ryan, 2010), compliance with ostracizing others carried negative emotion with the ostracizer (Legate et al., 2013), and autonomy-supportive teaching provided the teachers themselves with teaching well-being (Cheon et al., 2014). The studies suggest that the effects on the providers are mediated by psychological need satisfaction (Ryan & Deci, 2000). However, the present study revealed effects of praise between peers on the praiser using distinct rationales from these studies; therefore, it contributes to the development of theories of effects on the provider.

In contrast to the strength of controlling for some cofounders, Studies 2 and 3 had ecological validity issues. There are differences between praise in an experimental context and praise in daily interactions. The differences may lead to the non-significant relation between ability-focused praise and growth mindset on the one hand and the negative relationship between effort-focused praise and motivational outcomes on the other in Studies 2 and 3. The differences may also be related to the small effect sizes for significant relations in Studies 2 and 3. First, participants had a limited way of expressing their praise as they only offered written praise. They could not communicate with speech inflections or non-verbal gestures, and may have found it difficult to express everything they want to communicate through their sentence. Second, a recipient was a stranger and less close to participants, and participants had a little knowledge of the recipient; they offered ability- or effort-focused praise to a person whose abilities and daily effort they did not know in detail. Thus, they could not truly include detailed information or comments about the recipient in their praise sentences. They may have thought that the recipient was not worthy enough to be praised. These differential situations from the real world may cause difficulty in offering praise and low engagement for generating praise. Such low engagement may reduce the effect of praise type and lead to a non-significant effect on participants’ mindsets in Studies 2 and 3. Moreover, these differential circumstances in offering praise might make the participants in both praise groups feel negative. It may lead to lower task enjoyment and lower positive outcome emotions in both the ability and the effort praise group.

However, we tried to imitate the real world in our experiments to some extent in terms of the praising behavior. First, participants were provided with flexibility to offer praise: they could select feedback type and generate praise sentences in their own words. The flexibility would
encourage participants to engage in offering praise. Indeed, most participants made their original praise sentences, and the number of words in each praise group was significantly higher than that in control group in Study 3, indicating that participants were willing to offer each type of praise. Second, participants interacted with the recipient for a short time as an icebreaker before the manipulation of praise, and they observed the recipient working on a task before offering praise, which means that they had some information about the recipients’ behavior and performance. Participants could generate praise sentences based on information about the recipient to some extent. This experimental context could be as close to a real-life situation as previous laboratory and scenario experiments (e.g., Kamins & Dweck, 1999; Mueller & Dweck, 1998; Skipper & Douglas, 2012). Considering these aspects, the ecological concerns would not interfere with the experiments as strongly as we alternately interpret the present results.

There are some limitations in the present study that may have implications for future research. The first limitation is the difference between the experimental contexts and daily interaction, and the next important step in research will be increasing ecological validity. In addition to the issues mentioned above, the present study could not treat a response or impression from a praisee. Considering praise is often a complex social communication (Henderlong & Lepper, 2002), a praisee’s response or behavior may modify the effect on the praiser. The response may also have a unique positive or negative effect on the praiser, which is independent of the praise type, although the present findings could suggest how ability-focused praise itself will affect the giver without impact from other external factors. Second, the procedure of giving participants the final decision over the type of feedback has a problem. Although in Study 3, almost all participants gave the type of feedback that matched their assigned group, and ability-focused praise still had a negative effect on the praiser, the procedure weakens the experimental-causal logic of the study. Future studies should verify the effect on the praiser without the final decision of selecting the type of feedback. Third, the equal-status relationship between praiser and praisee in our studies differs from the ability-focused vs. effort-focused praise literature, which focuses on praise by authority figures (e.g., teachers or parents). There are some differences between these types of praise: praise by authority figures would include more evaluative aspects, while praise by peers would include more communicative aspects although it will also include evaluative aspects in some cases (e.g., peer feedback or assessment activity). It would thus be difficult to generalize the present findings to the broader praise literature, and it will be worthwhile to examine whether a similar effect emerges with praisers who are authority figures.

In schools, students praising each other is expected to encourage students to acknowledge each other and increase their motivation in the classroom. Whereas the peer feedback literature has shown the beneficial effect of peer feedback on the giver, the current study found that a specific type of feedback (i.e. ability-focused praise) could be harmful for the giver. This finding has critical implications for education and could help increase students’ motivation.

Notes
1. Some researchers and theorists distinguish between praise and encouragement: praise is referred to as a verbal reward to reinforce the behavior, while encouragement is referred to as unconditional support such as a specific feedback or information focusing on improvement and efforts (e.g., Dreikurs et al., 1982; Hitz & Driscoll, 1989; Kohn, 2001; Saeverot, 2008). In the praise literature, however, praise more broadly refers to positive evaluations on another person and not only serve just as a verbal reinforcement but also contains information of another’s performance, products, or process (Henderlong & Lepper, 2002; Kanouse et al., 1981), while encouragement is often used as a response to negative performance outcomes more narrowly, e.g., “You can do it!” (Henderlong & Lepper, 2002). Based on the praise literature, we refer to effort-focused (or ability-focused) positive feedback as praise, which contains effort-based (ability-based) attributional information of another’s performance.
2. Relatedness was not significantly associated with growth mindset (p = .206). In addition, there were not significant interactions between each praise and relatedness (p > .07). These results indicate that
relatedness is not an important moderator of the association between praise type and mindset. Thus, we did not include relatedness in Studies 2 and 3.

3. One hundred forty-two participants (control group, n = 42; ability praise group, n = 47; and effort praise group, n = 53) were subjected to analysis. Based on the procedure used in previous dissonance studies (e.g., Elliot & Devine, 1994), we excluded 18 participants who had selected a different type of feedback from the one that was asked for (e.g., participants who selected ability-focused praise although they were in the control group and were asked to select objective feedback); a similar approach was taken in Elliot and Devine (1994) which excluded 17 of the total 57 participants.

4. The mediation analysis was conducted using the SPSS macro formulated by Preacher and Hayes (2008), which is based on a multicategorical approach formulated by Hayes and Preacher (2014). The SPSS macro calculates bootstrapped point estimates for the total and indirect effects, together with their 95% CIs. A bootstrapping analysis is considered to show a significant effect if the CI does not contain zero. For the present analysis, 5000 bootstrap samples with replacements were conducted.

5. Both the ability praise code and the effort praise code were included in the regression equation of the mediation analysis because the comparison between ability praise group and control group cannot be represented if the effort praise code is omitted (Cohen et al., 2003).

6. Additionally, we examined relationships between praise and practice. We used the number of problems participants correctly answered during the practice phase as a behavioral measure of the amount of earnest practice. The basic model was the same as the regression of subsequent task performance. The regression of practice revealed that both ability and effort praise code were not significant predictors ($\beta = -.019, p = .852; \beta = .031, p = .758$, respectively). However, like the association with subsequent task performance, ability-focused praise had indirect negative effect on practice through task enjoyment (indirect effect was -0.448, 95% CI [-0.983, -0.052]).

7. Participants were asked to offer this feedback only if the partner got eight points or more on the task, in order to make the situation real and natural. As the partner in the video clip was set to get 8 points, all participants offered this feedback.

8. One hundred sixty-five participants (control group, n = 55; ability praise group, n = 56; and effort praise group n = 54) were subjected to analysis. As in Study 2, we excluded only 3 participants who had selected a different type of feedback from the one that was asked for.

9. Additionally, we examined the effect of praise on practice. The regression of practice revealed that both ability and effort praise code were not significant predictors ($\beta = -.018, p = .848; \beta = -.090, p = .333$, respectively). However, ability-focused praise had an indirect negative effect on practice through task enjoyment (the indirect effect was -0.322, 95% CI [-0.753, -0.001]).

10. We thank a thoughtful anonymous reviewer for providing this idea.

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ORCID

Kyosuke Kakinuma http://orcid.org/0000-0002-9709-2612

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