Expecting Immediate Grades: Impacts on Motivation, Effort, and Performance

Qin Zhao¹ and Jenni Redifer¹

Abstract
Two experiments were conducted to investigate the effects of expecting immediate grades on numerical and verbal reasoning performance and the moderating role of achievement goals. Anticipated grade proximity (immediate vs. 1 week later) and goal orientation (approach vs. avoidance) were manipulated with instructions. Experiment 1 showed that expecting immediate grades yielded lower numerical performance than expecting delayed feedback, regardless of participants’ goal orientation. Neither grade proximity nor goal orientation impacted verbal performance. In Experiment 2, we used a stronger goal manipulation and included measures of motivation. Expecting immediate grades increased task anxiety, lowered task involvement, and lowered task effort among participants with avoidance goals, compared with expecting delayed grades. The effects on performance were not replicated in Experiment 2, however. The findings demonstrate that expecting immediate grades may have negative consequences under certain conditions, including demotivation and performance impairment.

Keywords
expecting immediate grades, achievement goal, approach, avoidance, performance

Introduction
Does expecting an immediate grade enhance performance? The answer to this question has significant practical implications for teachers, coaches, employers, and anyone else responsible for evaluating others’ performance. Surprisingly, there are only a few studies in this area. An early study by Nisan (1976) showed that expecting immediate grades resulted in poorer performance than expecting grades 1 week later. However, two recent studies demonstrated that expecting immediate grades enhances task performance (Fajfar, Campitelli, & Labollita, 2012; Kettle & Häubl, 2010). Zhao, Zhang, and Vance (2013) reported that individual differences in beliefs about ability moderate the performance outcome of expecting immediate grades. Specifically, individuals with incremental beliefs about ability (i.e., those who viewed ability as malleable) performed better in anticipation of immediate grades, whereas individuals with entity beliefs (i.e., those who viewed ability as innate or fixed) performed worse. Much more research is needed before the findings can be applied to academic or workplace settings, given the scarcity of available evidence. The main purpose of the study is thus to further examine the effect of expecting immediate grades and possible moderators of this effect.

Anticipated Feedback Proximity
The earliest evidence of the effect of expecting immediate grades on performance was reported by Nisan (1976), as previously mentioned. Nisan hypothesized that expecting a task grade immediately after performance, as opposed to expecting the grade 1 week later, would lead to greater perceived value of the grade, and thus greater arousal, which would enhance the performance of low-anxiety students and lower the performance of high-anxiety students. However, Nisan’s results indicated that expecting immediate grades impaired the task performance of all participants, not just that of high-anxiety participants. Nisan proposed that expecting immediate grades was probably a rare situation for the participants and thus increased arousal beyond the optimal level for task performance.

Since Nisan (1976), there have been no published studies on the topic of anticipated grade proximity, until recently. Interestingly, recent studies reported opposite findings: Expecting immediate or more proximate grades improved task performance, relative to expecting more delayed grades (Fajfar et al., 2012; Kettle & Häubl, 2010). In a field experiment conducted in university classes, Kettle and Häubl found that expecting more proximate feedback (i.e., grades) resulted in better performance on an oral presentation, but lower self-predictions of performance. The finding concerning predictions was consistent with prior work that demonstrates a
tendency for people to “sober up” or lower their expectations as feedback draws near (see Sweeney & Krizan, 2013, for a review). However, the actual performance results conflicted with earlier evidence on the topic (Nisan, 1976). Fajfar et al. later replicated the positive effect of expecting immediate grades in a lab experiment: Participants who expected grades immediately after the test performed better on a verbal aptitude test, compared with those who expected to receive their grades 1 week after the test.

The recently observed effects of anticipated grade proximity were dubbed “motivation by anticipation” and attributed to the more salient threat of disappointment when the anticipated grade is more proximate (Kettle & Häubl, 2010; van Dijk, Zeelenberg, & van der Pligt, 2003). The desire to avoid disappointment may have motivated people to work hard to perform well, but lower their expectations of performance. The effects of anticipated grade proximity may relate to the emotional nature of psychological distance (e.g., Davis, Gross, & Ochsner, 2011; Thomas & Tsai, 2012; Williams & Bargh, 2008). According to the principle of “distance equals safety” (Williams & Bargh, 2008), the greater the perceived distance between an individual and a particular event, the less negative one’s feelings are toward the event. Psychological distance has been shown to reduce negative feelings and influence affective judgments (Williams & Bargh, 2008). When expecting more proximate grades, the evaluative threat or the threat of disappointment is more salient. Sense of insecurity or desire to avoid disappointment could become a motivating force propelling people to work hard to perform well.

Why would expecting immediate grades elicit too much arousal in some people, as explained by Nisan (1976), yet trigger positive motivation in others (Fajfar et al., 2012; Kettle & Häubl, 2010)? Zhao et al. (2013) examined whether the performance outcome of expecting immediate grades depends on beliefs about intelligence/ability. For students who believed that ability is malleable, expecting grades on the day of the test yielded better test performance than expecting grades 3 days later. In contrast, for those who believed that ability is fixed, expecting immediate grades resulted in poorer performance than expecting grades in 3 days. Thus, for some individuals, the threat of disappointment may be motivating; for others, the threat may be paralyzing.

The purposes of the present study are to further investigate the effect of expecting immediate grades on performance and to extend the literature by investigating other moderators of this effect. We seek to extend this line of work by investigating a construct related to beliefs about ability: goal orientation.

**Achievement Goal Orientation**

Achievement goal research has been an important focus area in the achievement motivation literature. An achievement goal can be defined as the purpose for engaging in achievement behavior (Maehr, 1989). In the 3 × 2 model of goal orientation (Elliot, Murayama, & Pekrun, 2011), there are task-based, self-based, and other-based achievement goals. Each of these goals can be oriented toward approaching success or avoiding failure, resulting in a total of six different possible goals (Elliot et al., 2011). Task-based goals resemble mastery goals and focus on knowing the right answers to questions (task-approach) or avoiding getting incorrect answers (task-avoidance). Self-based goals are performance goals that focus on performing better than one typically does in a particular situation (self-approach) or avoiding poor performance relative to one’s typical level of performance (self-avoidance). Other-based goals are also performance goals but focus on outperforming others (other-approach) or avoiding poor performance in comparison with others (other-avoidance).

In the present study, consistent with the guidelines set forth by Elliot et al. (2011) regarding the appropriateness of studying a subset of goals in the 3 × 2 model, we focused on other-approach and other-avoidance goals because we were especially interested in studying the valence aspect of goals (approaching success or avoiding failure). Manipulating these two types of goals allowed us to examine how approach versus avoidance orientation moderates responses to anticipated immediate feedback. In addition, other-based goals focus on outperforming others or avoiding poorer performance than others. Feedback in terms of grades (as opposed to written comments) is more relevant to other-based goals than to task-based goals, which focus on knowing the right answers to questions or avoiding getting incorrect answers.

Approach goals focus on success. The focus on this positive possibility promotes task engagement and evokes more positive emotions such as excitement (see Elliot, 1999, for a review). Avoidance goals, in contrast, focus on failure. The focus on this negative possibility tends to interfere with task engagement and evokes more negative emotions such as threat and anxiety (Elliot, 1999). In addition, the other-avoidance goal has a particularly strong relationship with the entity view of ability (i.e., the view that ability is fixed; VandeWall, 1997). Those with other-avoidance goals perceive feedback as a potential threat to the ability component of their self-concept (Elliot, 1999).

The distinction between approach and avoidance goal orientation relates to individual differences in activation of the behavioral approach system (BAS) and behavioral inhibition system (BIS; Carver & White, 1994). According to Gray’s (1987) Reinforcement Sensitivity Theory, individuals differ in the sensitivity of these two neurobiological systems to specific stimuli. The BAS responds to stimuli associated with reinforcement, controls appetitive motivation, and stimulates approach goal and success-seeking behavior. The BIS is also associated with positive emotions such as hope and excitement (Carver & White, 1994). In contrast, the BIS responds to stimuli associated with
punishment, controls aversive motivation, and stimulates avoidance goal and failure-avoiding behavior. The BIS is associated with negative emotions such as anxiety and frustration (Carver & White, 1994). Empirical research based on Carver and White’s (1994) conceptualization has shown that individual differences in BAS and BIS activation relate to student functioning and study outcomes. For example, van Beek, Kranenburg, Taris, and Schaufeli (2013) reported that BAS activation was positively associated with study engagement (i.e., high energy and involvement) and academic performance; whereas, BIS activation was positively associated with over-commitment to studying (i.e., workaholism) and exhaustion.

Based on the above-reviewed theory and evidence, we hypothesized that success seekers (i.e., approach-goal holders) and failure avoiders (i.e., avoidance-goal holders) should respond differently to being told to expect immediate feedback on their performance. When expecting immediate grades, the threat of disappointment is more salient (van Dijk et al., 2003). For success seekers, the threat of disappointment may trigger greater excitement and motivate greater task engagement and performance, whereas for failure avoiders, the threat of disappointment may elicit greater anxiety and impair task engagement and performance.

Overview of the Studies

Two laboratory experiments were conducted to test our aforementioned hypotheses. The independent (manipulated) variables in these studies were anticipated grade proximity (immediate vs. 1 week delayed) and goal orientation (other-approach vs. other-avoidance). The main dependent variable was performance on reasoning tasks. Researchers studying anticipated grade proximity have used classroom tasks, such as an oral presentation (Kettle & Häubl, 2010) and a unit test (Zhao et al., 2013), and laboratory tasks, such as a verbal aptitude test (e.g., Fajfar et al., 2012). We chose two verbal and numerical reasoning tasks that have been tested in previous studies in our labs and shown to be moderately challenging for college students. Lab tasks are not as high stakes as classroom tasks, so we expected smaller effects of expecting immediate grades, compared with Kettle and Häubl (2010) and Zhao et al. (2013). However, using lab tasks allows more experimental control and eliminates the concern of impacting students’ classroom performance.

In addition to task performance, we examined task anxiety and engagement in Experiment 2. To date, research on anticipated grade proximity has focused on its effects on actual performance, but has not directly examined its effects on task-related emotion or motivation. Assessing task anxiety and engagement could offer further insight into the underlying mechanism of the effects of expecting immediate grades. We hypothesized that compared with expecting delayed grades, expecting immediate grades elicits greater task engagement in individuals with other-approach goals, but reduces task engagement and heightens task anxiety in those with other-avoidance goals.

Experiment 1 Method

Participants and Design

We recruited 103 undergraduate participants from introductory psychology classes at a university in the United States through an online research participation system. All participants were compensated with course credit. Participants’ ages ranged from 18 to 27 years (M = 19.05 years, SD = 1.5 years) and 38 of the participants were male. Participants were randomly assigned to one of the four conditions resulting from a 2 (anticipated grades proximity: immediate vs. in 1 week) × 2 (goal: other-approach vs. other-avoidance) between-subjects design. The main dependent variable was performance on the reasoning tasks. Participants’ predictions of performance were also assessed to replicate previous finding that people tend to “sober up” or lower expectations as feedback draws near (for a review, see Sweeney & Krizan, 2013).

Procedures

All tasks in the study were administered via Media Lab software. After providing informed consent, participants sat at a computer station and read the instructions for the upcoming reasoning tasks. The instructions consisted of manipulations of both feedback proximity and achievement goals.

Participants were then shown an example of the reasoning tasks that they would complete in the study (see the appendix). Next, participants answered the following question: “According to the instructions you read earlier, when will you receive feedback on the upcoming tasks? (You may go back to reread the instructions).” Then, participants responded to six items from the 18-item Achievement Goal Questionnaire (AGQ; Elliot et al., 2011). The feedback question and the goal questionnaire were used as manipulation checks.

After the goal questionnaire, participants predicted their task performance by estimating how many questions they expected to answer correctly for each task (verbal and numerical). Next, they completed the verbal and numerical reasoning tasks, which were presented in random order. Then, participants completed a demographic information questionnaire that included gender, age, major, ethnicity, and ACT (American College Testing) scores and were debriefed.

Materials

Manipulations/instructions. The instructions pertaining to achievement goals were modified based on the goal manipulations used by Elliot and Harackiewicz (1996). Specifically, participants read one of the following sets of instructions, depending on their assigned condition:
Other-approach (other-avoidance) goal and anticipation of immediate feedback:

- The purpose of this project is to compare college students with one another in their reasoning performance and to identify students of high (low) ability who may be very good (poor) at reasoning tasks. Reasoning ability is crucial to one’s success in career and in life. Verbal and/or numerical reasoning tasks are frequently used to select candidates across a wide range of careers such as legal careers, engineering, consulting, and the civil service.
- In our previous work, we have found that most students in your university are fairly comparable in their reasoning ability, but some students stand out because they do quite well (poorly) on reasoning tasks. This session will give you the opportunity to demonstrate that you have good (do not have poor) reasoning ability.
- Immediately after you have completed the tasks, you will be provided with grade information regarding how you did during today’s high-ability (low-ability) identification task, compared with other students in your university.

Other-approach (other-avoidance) goal and anticipation of delayed feedback:

The goal manipulations (the first two paragraphs of the instructions above) for these conditions were the same as above. However, the third paragraph was replaced with “After the study is completed next week, you will be provided with grade information regarding how you did during today’s high-ability (low-ability) identification task, compared with other students in your university.”

AGQ scales. The AGQ scales have been found to be psychometrically sound, reliable, and replicable measures of achievement goal constructs (Elliot et al., 2011). The selected items included three other-approach items (e.g., “My main goal is to do well compared with other students”) and three other-avoidance items (e.g., “My main goal is to avoid doing worse than other students”). Participants indicated how true each statement was of them on a 7-point scale (1 = not true of me to 7 = extremely true of me).

Reasoning tasks. The verbal reasoning task consisted of identifying analogies within sets of words and choosing the missing words that best fit the analogies. The numerical reasoning task consisted of identifying the rule underlying a series of numbers and entering the missing number at the end of or within the series according to the rule (see the appendix for examples).

Experiment 1 Results

Manipulation Checks

The effectiveness of the feedback manipulation was assessed by inspecting participants’ responses to the recall question about feedback time. Accurate feedback responses should be either “immediately after task completion” or “a week later,” depending on their assigned condition. Five participants gave incorrect or unclear responses (e.g., “yes,” instead of indicating when they would receive feedback), so they were excluded from data analysis.

Next, we tested the effectiveness of the goal manipulation by conducting a repeated-measures ANOVA with goal instruction (approach vs. avoidance instruction) as the between-subjects variable and the item type on the AGQ (approach vs. avoidance items) as the within-subjects variable. The approach and avoidance instructions were expected to yield higher approach and avoidance scores on the AGQ, respectively. However, the results showed no interaction between goal instruction and goal item type. $F(1, 101) = 2.48, p = .12$. There was no main effect of goal instruction either, $F(1, 101) = 0.22, p = .64$. Goal item type had a main effect on goal scores, $F(1, 101) = 5.06, p = .03, \eta^2_p = .05$, with participants reporting weaker approach goals ($M = 14.01, SE = 0.37$) than avoidance goals ($M = 14.93, SE = 0.46$). The lack of an expected effect of goal manipulation may indicate that the goal instructions were insufficient in strength.

Because the goal instructions appeared to be ineffective, we used participants’ self-reported approach and avoidance scores on the AGQ (as opposed to the assigned experimental conditions) in subsequent data analyses. Therefore, multiple regression was used instead of an ANOVA to test the impacts of grade proximity and goal on each of these outcome variables: verbal performance, numerical performance, verbal performance prediction, and numerical performance prediction. Each regression included the same predictors: dummy-coded grade proximity (immediate vs. 1 week later), standardized approach and avoidance scores, Grade proximity × Goal interaction terms (i.e., Grade proximity × Approach and Grade proximity × Avoidance), and standardized ACT scores.\(^1\) Table 1 presents a list of our predictor and outcome variables and the descriptive statistics for each variable.

Task Performance

Using the regression models described above, we analyzed performance on the verbal and numerical reasoning tasks. The $F$ statistic was significant for the model on verbal performance, $F(6, 88) = 5.31, p < .001$. The $F$ statistic was also significant for the model on numerical performance, $F(6, 88) = 6.38, p < .001$. The adjusted $R^2$s were .216 and .256 for verbal and numerical performance, respectively.
On verbal performance, there was a significant effect of ACT, $B = .058$ ($SE = 0.01$), $p < .001$. No other effect was significant, $ps > .05$. On numerical performance, there was also a significant effect of ACT, $B = .089$ ($SE = 0.02$), $p < .001$. In addition, there was a significant effect of approach goal, $B = .091$ ($SE = 0.035$), $p = .01$, and of expected grade proximity, $B = .118$ ($SE = 0.04$), $p = .005$. We further analyzed the impact of expected grade proximity with an independent samples $t$ test. Expecting immediate grades yielded lower numerical performance ($M = 66\%$, $SE = 0.03$), compared with expecting grades 1 week later ($M = 77\%$, $SE = 0.03$), $t(96) = -2.71$, $p = .008$. No other effects were significant, $ps > .05$.

Thus, the results provided no support for the hypothesis that goal orientation moderates the performance outcome of expecting immediate grades. We found overall effects of grade proximity and approach goal on numerical performance, after controlling for ACT scores. Expecting immediate grades lowered numerical performance relative to expecting grades 1 week later. Also, greater approach orientation was associated with higher numerical performance. On verbal performance, no effect of expecting immediate grades or goal orientation was observed, after controlling for ACT scores.

### Performance Prediction

The same regression analyses were conducted to analyze the effects of grade proximity and goal orientation on participants’ predictions of their reasoning task performance. The $F$ statistic was significant for the model of prediction of verbal performance, $F(6, 88) = 2.49$, $p = .01$, as well as for the model of numerical prediction, $F(6, 88) = 3.61$, $p < .001$. The adjusted $R^2$’s were .103 and .169 for verbal and numerical performance prediction, respectively.

On verbal performance prediction, there was an effect of approach goal, $B = .053$ ($SE = 0.025$), $p = .038$. On numerical performance prediction, there was an effect of grade proximity, $B = .074$ ($SE = 0.031$), $p = .02$ and an effect of approach goal, $B = .098$ ($SE = 0.027$), $p < .001$. No other effects were significant for either verbal or numerical performance, $ps > .05$. We further analyzed the impact of grade proximity on numerical predictions. Expecting immediate grades led to lower prediction of performance ($M = 75\%$, $SE = 0.03$) than expecting grades in a week ($M = 82\%$, $SE = 0.02$).

Thus, mirroring the results for actual performance, the prediction of performance results was not moderated by the influence of goal orientation on the effect of expecting immediate grades. Expecting immediate grades lowered numerical performance prediction, compared with expecting grades 1 week later. In addition, there was an overall effect of approach goals on performance predictions for both verbal and numerical tasks: Greater approach orientation was associated with higher performance prediction.

### Experiment 1 Discussion

Expecting immediate grades was expected to enhance the performance of individuals with other-approach goals but impair performance of individuals with other-avoidance goals. Experiment 1 showed that neither approach nor avoidance goal orientation moderated the effects of grade proximity. Expecting immediate grades lowered prediction, consistent with past evidence that people tend to lower their expectations as feedback draws near (Sweeney & Krizan, 2013). Performance results replicated Nisan’s (1976) finding that immediate feedback impairs performance, contradicting recent studies that suggest positive performance outcomes of expecting immediate grades (Fajfar et al., 2012; Kettle & Häubl, 2010). Higher approach scores were associated with higher performance prediction and numerical performance, which is in line with evidence of the positive effect of approach goals on motivation (Elliot, 1999).

To further examine the effects of expecting immediate grades and goal orientation on performance, we conducted a second experiment. Experiment 2 consisted of a stronger goal manipulation given that the goal instructions used in Experiment 1 appeared to be ineffective. We also added measures of task anxiety and engagement to explore the underlying mechanism of the effects of expecting immediate grades. As discussed previously, past research has focused on the performance outcome of expecting immediate grades but has not directly examined the effect of expecting immediate grades on task-related affect or motivation. We hypothesized that expecting immediate (vs. delayed) grades raises task engagement in individuals with
Experiment 2 Method

Participants and Design

The second experiment involved 162 undergraduate participants from introductory psychology classes at a university in the United States. The participants were again recruited through the university’s online research participation system. Participants’ ages ranged from 18 to 28 years (M = 18.77 years, SD = 1.2 years) and 49 of them were male. The same reasoning tasks and the same 2 (expecting immediate grades vs. in a week) × 2 (approach vs. avoidance goal) between-subjects design were used. Participants were randomly assigned to one of the four conditions. In addition to task performance and performance prediction, the dependent variables included a pre-performance measure of task anxiety and post-performance measures of task engagement.

Procedures and Materials

The experimental procedures were similar to those of Experiment 1 except that participants were asked to recall not only the feedback proximity but also the goal instructions, after receiving the study instructions. Participants were asked to go back to the previous computer screen to reread the instructions if they were not sure how to respond. Specifically, the first recall question was, “According to the instructions you read earlier, when will you receive feedback on the upcoming tasks?” (Go back to reread the instructions, if you are not sure). The correct responses should be “immediately after the tasks are completed” or “in a week.” The second recall question was, “According to the instructions you read earlier, the purpose of the study is to identify students of _______. This session will give you the opportunity to demonstrate that _______.” (Go back to reread the instructions, if you are not sure). The correct responses should be “high (or low) reasoning abilities” and “I have good (do not have poor) reasoning ability,” respectively. Based on the known impact of retrieval practice on recall accuracy (i.e., the testing effect, see Roediger & Karpicke, 2006, for a review), we expected that asking participants to recall the goal instructions would strengthen their memory of the instructions. That is, we used recall questions not only as manipulation checks but also to strengthen the manipulations. AGQ was no longer used as manipulation check in Experiment 2, because, based on Experiment 1 results, we were concerned that responding to AGQ, which contains both approach and avoidance items, might actually weaken the previously received goal instructions (approach vs. avoidance).

Participants also reported their level of task anxiety prior to completing the reasoning tasks. We used a 20-item task anxiety questionnaire adapted from the Test Anxiety Inventory (TAI; Spielberger, 2010). Two example items are, “I feel very panicky about the upcoming tasks” and “I am presently worrying over possible failure on the tasks.” Participants rated the extent to which they agreed with each statement on a 4-point scale (1 = not at all to 4 = very much). Once the tasks were finished, participants were given a task engagement measure (Elliot & Harackiewicz, 1996) that was slightly modified to fit the nature of the tasks in the study. This measure consists of three sub-components: task involvement (six items), effort (two items), and enjoyment (three items). Participants indicated their level of agreement with each statement on a 7-point scale from 1 = disagree very much to 7 = agree very much.

Experiment 2 Results

Manipulation Checks

The effectiveness of the feedback and goal manipulation was assessed by checking participants’ responses to the relevant recall questions. Eight participants gave incorrect (e.g., “it didn’t say”) or unclear responses (e.g., “we will get feedback”) to the feedback question. An additional 32 participants gave incomplete or vague responses to the goal question, which was, “According to the instructions you read earlier, the purpose of the study is to identify students of _______. This session will give you the opportunity to demonstrate that _______.” Consequently, a total of 40 participants were excluded from data analyses.

Task Anxiety, Involvement, Effort, and Enjoyment

We conducted an ANCOVA to examine the effects of grade proximity and goal manipulation on each of these dependent variables: task anxiety (pre-performance) and task involvement, effort, and enjoyment (post-performance), after controlling for ACT. Table 2 presents a list of variables in Experiment 2 and the descriptive statistics of each variable.

Results showed a main effect of grade proximity on task anxiety, F(1, 117) = 4.01, p = .047, ηp² = .03: Expecting immediate grades resulted in higher task anxiety (M = 38.8, SE = 1.02) than expecting delayed grades (M = 35.8, SE = 1.05). The ACT covariate was significantly associated with task anxiety, F(1, 117) = 8.08, p = .005, ηp² = .06. Specifically, higher ACT scores were associated with lower task anxiety, r = −.258, p < .01. No other effect on task anxiety was significant, ps > .05.

On task involvement, there was a main effect of grade proximity, F(1, 117) = 3.75, p = .05, ηp² = .03: Expecting immediate grades led to lower task involvement (M = 23.2, SE = 0.35) than expecting delayed feedback (M = 24.2, SE = 0.37). No other effect on task involvement was significant, ps > .05.

On task effort, there was a 2-way Grade proximity × Goal interaction effect (see Figure 1), F(1, 117) = 5.75, p = .02, ηp² = .05. For the approach group, expecting immediate grades (M = 10.21, SE = 0.30) did not significantly impact task effort compared with expecting delayed grades (M = 9.73, SE = 0.32), t(57) = 1.08, p = .28. However, for the avoidance group, expecting immediate grades reduced task effort (M = 9.74, SE = 0.28)
compared with expecting delayed grades ($M = 10.62, SE = 0.30$), $t(61) = −2.19, p = .03, \eta^2_p = .07$. In addition, the ACT covariate was significantly associated with task effort, $F(1, 117) = 15.74, p < .001, \eta^2_p = .12$. Specifically, higher ACT scores were associated with higher task effort, $r = .338, p < .01$.

Last, in terms of task enjoyment, only the ACT covariate showed significant association with this outcome variable, $F(1, 117) = 23.13, p < .001, \eta^2_p = .17$. Higher ACT scores were associated with higher task enjoyment, $r = .405, p < .01$. No other effect on task enjoyment was significant, $ps > .05$.

### Task Performance and Performance Prediction

To test the impact of anticipated grade proximity and goal orientation on task performance, we converted the verbal and numerical scores to percentage scores and conducted repeated-measures ANCOVAs, again with ACT as a covariate. The results showed main effects of task type, $F(1, 117) = 32.24, p < .001, \eta^2_p = .22$, and ACT, $F(1, 117) = 106.82, p < .001, \eta^2_p = .44$. Verbal reasoning performance ($M$ percentage = 81%, $SE = 1.1\%$) was significantly higher than numerical reasoning performance ($M$ percentage = 68%, $SE = 1.9\%$). However, no other effect was significant, $ps > .05$. Repeated-measures ANCOVAs were also conducted to examine how goal manipulation and grade proximity affected predictions of performance on the two reasoning tasks. There was only an effect of ACT, $F(1, 117) = 13.11, p < .001, \eta^2_p = .10$. No other effect was significant, $ps > .05$. Thus, we were not able to replicate Experiment 1’s findings regarding task performance and performance prediction.

Experiment 2 provided interesting results regarding the impact of expecting immediate grades on task anxiety, involvement, and effort. Expecting immediate grades made participants more anxious and less involved in the tasks, compared with expecting delayed grades. Moreover, expecting immediate grades lowered the task effort of individuals with an avoidance-goal orientation. Experiment 2 did not produce the expected effects concerning task performance and performance prediction. The overall pattern of the findings and the discrepancy between the two experiments’ findings are further discussed in the next section.

### General Discussion

The results of the present study highlight the effects of expecting immediate (vs. delayed) feedback on performance and motivation, as well as the interaction of these effects with students’ goal orientations. In Experiment 1, we found that expecting immediate grades yielded lower numerical performance than expecting delayed grades, regardless of goal orientation. Experiment 2 showed that expecting immediate grades negatively impacted task anxiety and involvement, regardless of goal orientation. Goal orientation moderated the impact of feedback proximity on task effort. Individuals with avoidance goals reported lower task effort when expecting immediate (relative to delayed) grades, whereas for those with approach goals, task effort was not affected by grade proximity.

The findings across the two experiments show that, under some conditions, expecting immediate grades may be harmful: Expecting immediate grades reduced students’ numerical reasoning performance (Experiment 1) and their task motivation...
(Experiment 2). In Experiment 1, verbal performance was not impacted by either anticipated grade proximity or goal orientation, after controlling for ACT scores. One plausible explanation is that performance on our verbal task depended more on verbal ability than on task motivation (e.g., effort). If performance on a particular task is heavily determined by ability, expecting immediate or delayed feedback may have inconsequential effect on performance. In both experiments, ACT scores contributed significantly to task performance. The verbal task used in the study requires vocabulary knowledge and reasoning skills. To students with better vocabulary knowledge, the verbal problems are fairly straightforward and easy, whereas to those with poorer vocabulary knowledge, greater task effort or involvement may not help performance much (e.g., “I want to do well but I do not know what the words mean”). To students with solid arithmetic skills, the numerical problems are easy, but getting the correct answers still requires effort and careful calculation. For students with poorer arithmetic skills, again, greater task engagement may not help very much (e.g., “I want to do well but I cannot figure out the rule underlying the number series”). Between these two tasks, there seems more room for motivation to affect numerical performance. This may explain why anticipated feedback proximity affected numerical performance, but not verbal performance in Experiment 1. We also noticed that although verbal performance was similar across the two experiments (Mean percentages = 80% and 81%), numerical performance was much poorer in Experiment 2 (Mean percentage = 66%) than in Experiment 1 (Mean percentage = 72%). This may be an indication that the Experiment 2 group, as a whole, had lower math abilities or efficacy than the Experiment 1 group. This ability constraint may have rendered the motivation impact inconsequential in Experiment 2.

The inconsistency in performance outcomes when expecting immediate feedback also mirrors the current literature. The state of the field is that there are only four published studies and they come to conflicting conclusions about the effect of feedback proximity on performance (Fajfar et al., 2012; Kettle & Haubl, 2010; Nisan, 1976). Zhao et al. (2013) demonstrated that expecting immediate feedback could have positive or negative effects on task performance, depending on individuals’ beliefs about ability. The present findings are more in line with Nisan’s (1976) original finding that expecting immediate feedback can have a negative influence on performance. One possible reason for the discrepancies among these studies of feedback proximity may be the contexts in which they were conducted: Nisan’s (1976) study and the present study were not conducted in a field setting, unlike Zhao et al. (2013) and Kettle and Haubl’s (2010) work. Perhaps unsurprisingly, the way the researchers manipulated participants’ motivation to complete the tasks may have affected the results. In the present study, the relationship between task ability and life success was emphasized, but in other studies of feedback proximity (e.g., Kettle & Haubl, 2010; Zhao et al., 2013), the importance of task performance was more limited to the current setting. In addition, the definition of “immediate” used among the studies varies. In our study, we described “immediate” as receiving feedback as soon as the task is over, which may have a different contextual effect than expecting feedback the same day, as in Zhao et al. and Kettle and Haubl’s studies. In all, these findings suggest that the relationship between feedback proximity and performance is complicated, and may be affected by context variables that should be investigated more thoroughly. Conducting task analyses and manipulating the task variable in future investigations will likely shed light on this inconsistency in the current literature.

It is also important to continue examining individual-difference factors as moderators of the feedback proximity effect. The current study focused on performance approach and avoidance goals. Students with avoidance goals reported less effort in anticipation of immediate grades, whereas those with approach goals were not affected by this anticipation. In terms of task anxiety and involvement, participants reported greater anxiety and lower involvement when expecting immediate (vs. delayed) grades, regardless of goal orientation. These findings show the demotivating effects of expecting immediate grades, especially for students with the avoidance-goal orientation. The findings are inconsistent with previous findings that BAS activation (behavioral approach) positively correlates with task involvement, whereas BIS activation (behavioral inhibition) positively correlates with workaholism (e.g., van Beek et al., 2013). More investigation is required to resolve these inconsistencies. Given the challenge with goal manipulations as shown in our research, researchers may wish to examine the topic with a different approach, for instance, by using Carver and White’s (1994) BIS/BAS scales to measure individual differences in BAS and BIS activation instead of manipulating approach versus avoidance orientation. Using more comprehensive individual-difference measures may yield stronger results in future studies.

In all, the present research meaningfully contributes to the emerging literature on the effects of expecting immediate feedback, and highlights the challenge of effectively manipulating avoidance and approach goals. This line of research has important educational implications, as the expectations regarding goals and feedback that teachers provide to students prior to task completion may impact their motivation and performance on these tasks. Although students often request rapid feedback, we found that expecting rapid feedback may actually harm motivation. Therefore, instructors who delay feedback may end up positively influencing students’ motivation toward academic tasks, particularly among students with avoidance goals. It is our hope that our research will inspire more studies on this under-examined, yet important topic.

Appendix

Example Reasoning Task

1. The task involves solving a set of 15 verbal reasoning problems. Each verbal reasoning problem involves analogies and you must choose the one alternative that best completes the statement or answers the question.
Here is an example problem.

10, 20, 16, 32, 28, 56, ? ______52______

**Acknowledgments**

The authors wish to thank Xingya Xu, Will Corley, and Stephen King for their assistance with data collection for this study.

**Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Funding**

The author(s) received no financial support for the research and/or authorship of this article.

**Notes**

1. The regression model on verbal performance variable: verbal performance = β0 + β1 grade proximity + β2 approach scores + β3 avoidance scores + β4 grade proximity × approach + β5 grade proximity × avoidance + ACT scores. The models are the same for the other three outcome variables: numerical performance, verbal prediction, and numerical prediction.

2. Because a substantial number of participants (32) were excluded due to incomplete responses to the goal question, we reran the analyses with these participants included to see whether the results would change. The same pattern of findings was observed for all dependent variables except task anxiety. The effect of grade proximity on task anxiety was no longer observed, \( p = .11 \). The effects concerning task involvement, effort, and performance were the same.

**References**

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *Journal of Personality and Social Psychology*, 67, 319-333.

Davis, J. I., Gross, J. J., & Ochsner, K. N. (2011). Psychological distance and emotional experience: What you see is what you get. *Emotion*, 11, 438-444. doi:10.1037/a0021783

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34, 169-189. doi:10.1207/s15326985ep3403_3

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, 70, 461-475. doi:10.1037/0022-3514.70.3.461

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 × 2 achievement goal model. *Journal of Educational Psychology*, 103, 632-648. doi:10.1037/a0023952

Fajfar, P., Campitielli, G., & Labolitta, M. (2012). Effects of immediacy of feedback on estimations and performance. *Australian Journal of Psychology*, 64, 169-177. doi:10.1111/j.0004-9530.2011.00048.x

Gray, J. A. (1987). Perspectives on anxiety and impulsivity: A commentary. *Journal of Research in Personality*, 21, 493-509.

Kettle, K., & Häubl, G. (2010). Motivation by anticipation: Expecting rapid feedback enhances performance. *Psychological Science*, 21, 545-547. doi:10.1177/0956797610363541

Maehr, M. L. (1989). Thoughts about motivation. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 299-315). New York, NY: Academic Press.

Nisan, M. (1976). Motivational effects of expected temporal distance to a grade. *Applied Psychology*, 25, 85-89. doi:10.1111/j.1464-0597.1976.tb00859.x

Roediger, H. L., & Karpicke, J. D. (2006). The power of testing memory: Basic research and implications for educational practice. *Perspectives on Psychological Science*, 1, 181-210. doi:10.1111/j.1745-6916.2006.00012.x

Spielberger, C. D. (2010). *Test Anxiety Inventory*. New York, NY: John Wiley.

Sweeny, K., & Krizan, Z. (2013). Sobering up: A quantitative review of temporal declines in expectations. *Psychological Bulletin*, 139, 702-724. doi:10.1037/a0029951

Thomas, M., & Tsai, C. I. (2012). Psychological distance and subjective experience: How distancing reduces the feeling of difficulty. *Journal of Consumer Research*, 39, 324-340. doi:10.1086/663772

van Beek, I., Kranenburg, I. C., Taris, T. W., & Schaufeli, W. B. (2013). BIS- and BAS-activation and study outcomes: A mediation study. *Personality and Individual Differences*, 55, 474-479. doi:10.1016/j.paid.2013.04.013

VandeWalle, D. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement*, 57, 995-1015.

van Dijk, W. W., Zeelenberg, M., & van der Pligt, J. (2003). Blessed are those who expect nothing: Lowering expectations as a way of avoiding disappointment. *Journal of Economic Psychology*, 24, 505-516. doi:10.1016/S0167-4870(02)00211-8

Williams, L. E., & Bargh, J. A. (2008). Keeping one’s distance: The influence of spatial cues on affect and evaluation. *Psychological Science*, 19, 302-308. doi:10.1111/j.1467-9280.2008.02084.x

Zhao, Q., Zhang, J., & Vance, K. (2013). Motivated or paralyzed? Individuals’ beliefs about intelligence influence performance outcome of expecting rapid feedback. *Learning and Individual Differences*, 23, 168-171. doi:10.1016/j.lindif.2012.07.019

**Author Biographies**

Qin Zhao is an associate professor in the Department of Psychology at Western Kentucky University. Her areas of research include metacognition, beliefs and self-perceptions, and motivation.

Jenni Redifer is an assistant professor in the Department of Psychology at Western Kentucky University. Her research is in the area of cognition applied to education, including the impacts of working memory capacity and strategy use on problem-solving and retrieval processes.