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Unrealistic Optimism in the Pursuit of Academic Success

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Abstract
Although the ability to evaluate one's own knowledge and performance is critical to learning, the correlation between students’ self-evaluation and actual performance measures is modest at best. In this study we examine the effect of offering extra credit for students’ accurate prediction (self-accuracy) of their performance on four exams in two semester-long classes on Personality. The courses emphasized the role of self-awareness. Despite these motivational interventions and performance feedback, there was minimal change in accuracy over the semester; a large proportion of students remained unrealistically optimistic about their performance in the face of evidence to the contrary. Moreover, inaccurately inflated confidence was related to poorer academic performance. A small minority of students improved in accuracy and exam performance over the each of the courses, offering a potentially useful source of comparison for addressing unrealistic optimism. We discuss the findings as reflecting the powerful influence of protecting self-esteem and suggest the need for realistic self-appraisal as a factor in academic success.

Keywords
self-awareness, unrealistic optimism, extra credit, self-esteem

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Cover Page Footnote
We would like to thank Andrew Lewine for suggesting the use of extra credit for successful prediction of exam performance.
Unrealistic Optimism in the Pursuit of Academic Success

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Although the ability to evaluate one’s own knowledge and performance is critical to learning, the correlation between students’ self-evaluation and actual performance measures is modest at best. In this study we examine the effect of offering extra credit for students’ accurate prediction (self-accuracy) of their performance on four exams in two semester-long classes on Personality. The courses emphasized the role of self-awareness. Despite these motivational interventions and performance feedback, there was minimal change in accuracy over the semester; a large proportion of students remained unrealistically optimistic about their performance in the face of evidence to the contrary. Moreover, inaccurately inflated confidence was related to poorer academic performance. A small minority of students improved in accuracy and exam performance over each of the courses, offering a potentially useful source of comparison for addressing unrealistic optimism. We discuss the findings as reflecting the powerful influence of protecting self-esteem and suggest the need for realistic self-appraisal as a factor in academic success.

INTRODUCTION

Students often express surprise at their failure to meet academic goals. This sometimes leads to “perseverating to failure” as reflected in taking and failing the same class multiple times, complaints about instructors who do not reward effort alone, demoralization, and increased likelihood of attrition. Viewed by Miller and Wrosch (2007) as the cost of an excessively applied cultural imperative (“quitters never win and winners never quit”), a cognitive perspective suggests that there is something about information processing, specifically in the ability to evaluate one’s own performance, that interferes with student success (Robertson, Lewine and Sommers, 2014).

Some argue that today’s college students, in contrast to those of past decades, have turned from the “self-examined life” to a consumer- and career-oriented approach to education that has undermined self-awareness in favor of pursuing practical knowledge (Delbanco, 2012). Dubbed “flawed self-assessment” by Dunning and colleagues (Dunning, Heath and Suls, 2004), there appear to be multiple obstacles to correctly reflecting on and evaluating one’s skills, behavior, and character. All of us are subject to confirmation bias, above average effects (the Lake Wobegon phenomenon—“...where all the women are strong, all the men are good looking, and all the children are above average...”), A Prairie Home Companion, (2016), excessive optimism, and other cognitive distortions that have practical consequences across a broad spectrum of life experiences, including education. As educators, we are naturally concerned with how such flawed self-assessment will affect student engagement and learning. It appears, as we briefly summarize below, that academic performance and accurate self-assessment are related.

Since at least 1975 (Sinkavich), studies have suggested that students who do well academically are significantly more accurate in predicting and evaluating their academic performance than those who do poorly. In contrast, poor academic performance seems to be associated with an overly optimistic self-evaluation (Cochran & Spears, 1980; Hacker; Bol, Horgan and Rakow, 2000; Shaughnessy, 1979). While consistently identified as an obstacle to learning, this unrealistic optimism among college students is not well understood, particularly regarding the role of motivation and affect.

We propose in this study to examine the role of motivation in unrealistic optimism by providing a strong immediate reward for accurate self-awareness: extra course credit. By offering extra credit (see below), we maximize students’ immediate performance gain in addition to the benefit to be derived over multiple exams and feedback opportunities.

Extra credit is a pervasive feature of contemporary higher education, albeit one about which many educators are ambivalent (Harrison, Meister and LeFevre, 2011; Hill, Paladino and Eison, 1993; Lei, 2013; Norcross, Horrock and Strason, 1989). Reported to be used most often by better performing students and by female students, extra credit is viewed by faculty as both a means for students to deepen their level of understanding, as well as a means for improving grades. Students report that the opportunity to improve their grades is the strongest motivator for extra credit (Lei, 2013). It stands to reason, therefore, that offering extra credit for accurate self-evaluation of academic performance should encourage students to engage in the self-awareness process.

In addition to the extra credit, we maximized the exercise of academic self-evaluation by making self-awareness a focal point of each course and by assessing students’ accuracy of prediction over four exams administered during a single semester. In short, we attempted to maximize features of the courses that should have enhanced self-awareness.

METHODS

Overall Design

To examine the effect of performance self-monitoring on exam grades, we asked students to predict their exam scores immediately prior to taking each exam. We calculated their accuracy of prediction and assessed the relationship between prediction accuracy and exam performance. In order to examine the role of extra credit in accuracy, we carried out the study in two different classes, one that offered extra credit for accuracy (incentivized manipulation) and one that offered no extra credit of any sort.

Courses

The one-semester courses were a mid-level undergraduate personality course (syllabus available from the first author) emphasizing the tension between the conscious and the modern unconscious (Kihlstrom, 1987) in the formation and expression of personality. This tension was modeled experientially using in class exercises and didactically by assigned readings representing a broad range of personality theories.
Measures
Four 4-alternative forced choice exams were administered during each course. For each exam, predicted (P) and obtained (O) scores, we calculated an accuracy (A) score for each exam: [P-O]/[P+O]. In this case, we calculated a measure of accuracy (Ac) across the four exams: Ac = [P1-O1+P2+O2+P3+O3+P4+O4+CHOI] to determine predictor types and their relationship to final cumulative exam grades. Students with negative accuracy values underpredicted their exam grades, and positive accuracy values overpredicted their exam grades; and those with accuracy scores of 0 predicted perfectly what they scored on the exam.

Participants
Students in two personality classes participated in predicting their exam scores. This was part of a larger study of critical thinking approved by the local IRB. This report is based on those students (from a total of 300) who consented to have their data analyzed and who completed all four exams required in the class (222 students; 63 men, 149 women, 10 students did not indicate sex).

Procedures
Prior to each exam, students were asked to submit a numerical prediction of their performance on that exam (0-20). In one class, students could receive up to 3 extra credit (EC) points on a given exam for accuracy of prediction (3 points for predicting accurately, 2 points for being within 1 point; 1 point for being within 2 points). Students in the second course did not receive extra credit of any sort (NEC). Graded exams were returned to all students so that they could see which items they missed as a way of improving their learning and predictions on subsequent exams (Hacker, Boil, Horgan et al., 2004).

Analyses
We conducted three sets of analyses. First, we used paired comparison analyses to examine changes in performance accuracy from the exam to the semester. Second, we calculated the correlations between predicted and obtained scores for each exam for direct comparison with previous studies (Dunning et al., 2004). Third, we examined the mean cumulative exam score of each of the three predictor types (underpredictor; overpredictor; accurate) to determine if the types differed in level of performance as measured by final cumulative grade in the course.

RESULTS
Accuracy over exam administrations
Accuracy scores collapsed by extra credit status for the four exams were .05 (±.12), .06 (±.13), and .06 (±.13) for exam 1, 2, and 4, respectively. Mean accuracy scores by extra credit status (EC and NEC) were: Exam 1 = .04 (±.10) and .06 (±.14); Exam 2 = .06 (±.12) and .07 (±.14); Exam 3 = .05 (±.11) and .07 (±.14); and Exam 4 = .03 (±.11) and .09 (±.15). A repeated measures ANOVA of Accuracy with Extra Credit Status and Sex as a between subjects factor revealed a significant main effect of Extra Credit Status, Sex, or Extra Credit Status X Sex (p > .05).

To explore the degree to which the individual performance reflected group performance, we calculated the percent of students who were most accurate in predicting Exam #3 (the exam with the highest overall accuracy for both classes). Half of the students (50%) were most accurate on Exam #3, consistent with the group data. These were the students who actually tested accurate on Exam #4, exhibiting a systematic increase in accuracy over the four exams. Of the 48 students with highest accuracy for Exam #4, 14 (6.3% of all students) predicted exactly what they obtained on Exam #4.

The correlations between predicted and obtained exam scores were modest, although statistically significant (p < .001) for each of the four exams. Correlations between predicted and obtained exam scores by Extra Credit and No Extra Credit were: Exam 1 = .31 and .29; Exam 2 = .37 and .22; Exam 3 = .30 and .24; and Exam 4 = .49 and .29. To examine the correlations consistently lower for the no extra credit condition, only the last difference between correlations was significant, p < .05 (one-tailed test), a possible chance finding given the number of correlations calculated. Analysis by sex yielded no statistically significant differences.

Accuracy and Final Grade
A one-way ANOVA (Accuracy Predictor Type) revealed a significant main effect, F(2, 209) = 16.000, p < .001 on final mean cumulative exam grade. Overpredictors had a significantly lower mean (t(2), grade) = 32.7 (8.1) than accurate predictors, 38.4 (6.54) and underpredictors, 39.4 (6.7) p < .001; accurate and underpredictors were not significantly different from one another.

To determine if the availability of extra credit influenced prediction strategy, we examined the distribution of the predictor types across the four exams and between the conditions (EC and NEC). The distributions were very similar (differences were not statistically significant, p > .05) for the two conditions. EC: 71.63% accurate, 21.22% under, and accurate predictors, respectively; NEC: 69.9%, 25.2%, and 4.9% were over, under, and accurate predictors, respectively.

To compare our results with those reported by Hacker et al. (2000), we divided students into five groups of academic performance level based on final cumulative exam score % (collapsed by course): Group 1 < 50% (n = 11); Group 2 = 50-59% (n = 24); Group 3 = 60-69% (n = 44); Group 4 = 70-79% (n = 76); and Group 5 = 80-100% (n = 27). We then compared each group’s mean accuracy score for each of the four exams. The results appear in Table 1. The highest achieving students (Group 5) were clearly more accurate predictors, respectively; NEC: 69.9%, 25.2%, and 4.9% were over, under, and accurate predictors, respectively.

Table 1. Mean accuracy score for each exam by academic performance group (Perfect accuracy = 0).

<table>
<thead>
<tr>
<th>Group</th>
<th>Exam</th>
<th>Accuracy</th>
<th>50-59%</th>
<th>60-69%</th>
<th>70-79%</th>
<th>80-100%</th>
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<tr>
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</table>

Subjective Experiences of Students
The vast majority of student feedback about the courses was in the form of standard student ratings. There were five uncollected, but 5% of collected, student comments. Students often wrote directly addressing the use of performance prediction.

• I feel like SAC [self-awareness credit] really helped me keep my predictions in line. It helped me learn more about what I do and what I am capable of.

• I like that personal experience was shown.

• I feel like SAC [self-awareness credit] really helped me keep my predictions in line. It helped me learn more about what I do and what I am capable of.

• The SAC idea was helpful for me.

• I feel like SAC [self-awareness credit] really helped me keep my predictions in line. It helped me learn more about what I do and what I am capable of.

• I feel like SAC [self-awareness credit] really helped me keep my predictions in line. It helped me learn more about what I do and what I am capable of.
the degree to which different students actually experience negative affect after failure, independent of predictions: those who are accurate or underpredict may correctly anticipate more negative affect from failure more than those who overpredict, and therefore prefer to ward off disappointment proactively.

Perhaps the unrealistic optimists are those who experience and find intolerable the negative affect created when asked to focus on themselves, thereby interfering with test performance (Geller & Shaver, 1976). In addition, it is widely accepted that education, by asking students to re-examine their beliefs, consider alternative points of view, and push themselves beyond their comfort zones, demands that some tolerance of anxiety is required for true learning (Lyons, 2010; Roediger & Finn, 2009). Or maybe the overpredictors have a more casual investment in their academic performance.

Future study incorporating measurement of affect will be required to address these issues.

On a more positive note, a small group of students systematically improved in prediction accuracy over the semester. In particular, those students who had the highest cumulative exam performance (see Table 1), unlike all other students, showed a linear improvement in accuracy unrelated to exam grades over the semester. This might suggest that grade prediction was one more academic task that the best students learned how to do.

In contrast, those students who continued to predict less accurately, largely in the overoptimistic direction, ended the semester with poorer exam scores than at the beginning. This suggests that we also examine the affective consequences of our pedagogical strategies and be prepared to address them. With respect to the unrealistic optimists, perhaps the core issue is not cognitive, but rather affect regulation, something to be examined in future research.

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The authors would like to thank Andrew Lewine for suggesting the use of self-awareness extra credit to address the issue of motivation.

REFERENCES


