International Journal for the Scholarship of Teaching and Learning

Volume 10 | Number 2 Article 4

July 2016

Unrealistic Optimism in the Pursuit of Academic Success

Rich Lewine
University of Louisville, rrlewi02@louisville.edu

Alison A. Sommers

Unrealistic Optimism in the Pursuit of Academic Success

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

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

Rich Lewine and Alison Sommers

Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY 40208, USA

(Received 20 November 2015; accepted 27 June 2016)

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.

https://doi.org/10.20429/ijsotl.2016.100204

Measures

Four 4-alternative forced choice exams worth a maximum of 20 points each were administered during each course. Using predicted (P) and obtained (O) scores, we calculated an accuracy (A) score for each exam: [P-O]/[P+O]. In addition, we calculated a measure of accuracy (Ac) across the four exams: (Ac = [P1-O1+P2-O2+P3-O3+P4-O4]/[P1+O1+P2+O2+P3+O3+P4+O4]) to determine predictor types and their relationship to final cumulative exam grades. Students with *negative* accuracy values *underpredicted* their exam grade; students with *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 they could see which items they missed as a way of improving their learning and predictions on subsequent exams (Hacker, Bol, Horgan et al., 2000).

Analyses

We conducted three sets of analyses. First, we used paired comparisons of accuracy values for each exam to examine changes in accuracy that occurred over the course. 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

Mean (s.d.) accuracy values collapsed by extra credit status for the four exams were .05 (.12), .06 (.13), -.002 (.12), and .06 (.13) for exam 1, 2 3, and 4, respectively. Mean accuracy scores by extra credit status (EC and NEC) were: Exam 1 = .04 (.10) and .06 (.14); Exam 2 = .06 (.11) and .05 (.15); Exam 3 = -.001 (.09) and -.002 (.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 main effect, revealed no significant effects 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. There were, however, 48 students (21.6%) who were most 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 the last exam.

The correlations between predicted and obtained exam scores were modest, although statistically significant ($p < .001$) for each exam: .29, .29, .27, and .34 for exam 1, 2, 3, and 4, respectively. 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. Although the correlations were consistently lower for the no extra credit condition, only the last difference between correlations was significant, $p = .03$ (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 ($F2, 209 = 16.000$, $p < .001$) on final mean cumulative exam grade. Overpredictors had a significantly lower mean (*s.d.*) grade, 52.7 (8.11) than accurate predictors, 58.4 (6.54) and underpredictors, 59.4 (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 as a function of extra credit availability (EC) and no extra credit (NEC). The distributions were very similar (differences were not statistically significant, $p > .05$) for the two conditions. EC: 71.6%, 22.0%, and 6.4% were over, 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% ($n = 64$); Group 4 = 70-79% ($n = 74$); 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 (closer to 0) than the other four groups on Exams #1, 2, and 4, with the final accuracy for the highest performing group being 60 times more accurate than the next most accurate group. Extra credit status did not significantly change the results.

Subjective Experiences of Students

The vast majority of student feedback about the courses was in the form of standard student ratings. There were five unsolicited, ad-lib comments, all positive with two directly addressing the use of performance prediction.

> • "I feel like SAC [self-awareness credit] really helped me keep myself in check. It helped me get a more realistic idea of what my abilities are. And I would have to say that I personally applied the SAC point idea to my other courses when I took those exams as well. I have to say that I have done far better in my classes all around this semester".
> • "I find the more I use this critical thinking tool the better I have become at the prediction. I am not expecting one grade and getting another. This has lowered my anxiety of [sic] disappointment".

DISCUSSION

Prediction of academic performance can become more accurate over a semester but not via use of extra credit

At the group level, there was some improvement in the ability to predict exam performance from the first to the third exam, with a drop in accuracy for the final exam for both courses. We do not know the mechanism underlying this change other than the individual feedback each student generated by comparing obtained with predicted grade, perhaps as informed by having the graded exams available. It appears that the mere act of requiring self-evaluation, with no other discussion about how to predict grades and the meaning of accuracy/inaccuracy, may modestly improve prediction. This may be limited, however, as suggested by the return to a greater level of inaccuracy for exam 4. This could, of course, be a chance finding requiring further research to explore.

In our study, there were minimal differences in the accuracy of predicted exam scores, mean final grade, and distribution of accuracy scores between the class that received extra credit for accuracy of prediction and the class that did not. This raises the possibility that the prediction exercise is highly intrinsically driven for at least some of the students (as suggested by the spontaneous student feedback). It may also be that the conditions of this study were not optimal for improving self-evaluation, although we note that students received their graded exams for further study and that self-awareness was emphasized throughout the semester course. The one noteworthy exception is the better mean prediction accuracy of the poorest performing students when receiving extra credit (.08) than when not (.23). This is inconsistent with the generally held view that it is the *better* performing students who benefit most from extra credit and deserves more attention in the future.

Despite the use of extra credit and the semester-long emphasis on self-awareness, students' accuracy regarding their own performance was modest at best, a finding consistent with reports by others. Dunning et al. (2004) in reviewing the correlation between self-reported skill/knowledge and actual performance among college students, reported an average correlation of about .21 (Hansford & Hattie, 1982). In a later, more intensive review, the correlation was around .39 (Falchikov & Boud, 1989, reported in Dunning et al., 2004). The correlations in our study ranged from .27 to .34 suggesting a consistency in accuracy across some 30 years of research. In short, students' ability to correctly evaluate their own knowledge and performance has remained remarkably consistent and low over time.

Persistence of optimistic predictions in the face of poor performance: motivational strategy?

While modest prediction accuracy can improve over time and effort, there is a substantial range of individual differences, with most students consistently overpredicting their success. Hacker et al. (2000) found that only the higher performing students (80% or higher on exams) were accurate in their predictions, predictions that improved over three exams. In contrast, poorer performing students (78% of their sample) consistently overpredicted their performance. Similarly, Falchikov and Boud (1989) found that 68% of students overestimated their performance. Our results, in which 71% of our students overpredicted, are consistent with these earlier reports. Why do students persist in their overly optimistic view of their academic performance in the face of repeated evidence to the contrary?

One interpretation, pointed out in the Introduction, is that students are susceptible to cultural injunctions, such as "quitters never win and winners never quit." As sung by Kenny Rogers, however, sometimes "you got to know when to fold 'em" (Miller & Wrosch, 2007). Similarly, the combination of the positive psychology movement (Seligman, Ernst, Gillham, Reivich and Linkins, 2009) and the currently popular "flexible mind" injunction to educators (Dweck, 2006) may lead students to believe that persistent confidence in their own ability to do better will make it so. We frequently hear student services personnel and advisors tell students how they must believe in themselves, anyone can do anything if they put their minds to it, and all things are possible with persistent effort. The results from this study suggest we start a conversation about reducing potentially harmful overoptimism and increasing productive humility. Indeed, the recent success of vendors in offering predictive analytics algorithms to universities suggests that this movement may already be under way (Blumenstyk, 2016; Young, 2016).

Overprediction was clearly associated with lower grades in this study, as reported by others (see Falchikov & Boud, 1989; Hacker et al., 2000). Our findings suggest further that it may not strictly be a cognitively driven flawed self assessment that is critical (in which case both under- and overprediction should be associated with similar grades), but rather the direction of inaccuracy. More precisely, *unrealistic optimism* may be serving to protect a poorer performing student's self-esteem and prevent discouragement in the face of mediocre achievement. Put another way, accurate perception of reality may actually be depressing (the "sadder but wiser" phenomenon), while overoptimism keeps one going, at the risk of repeated failure. A counter-argument to this interpretation is found in the words of the student (cited above) who actually avoided negative affect (disappointment) by having a realistic view of how s/he would perform. This difference might be related to

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

		Academic	Performance	Group	
Exam	< 50%	50-59%	60-69%	70-79%	80-100%
#1	.193 (.159)	.154 (.098)	.050 (.146)	.016 (.079)	-.009 (.071)
#2	.135 (.156)	.139 (.119)	.075 (.139)	.037 (.084)	-.029 (.181)
#3	.046 (.268)	.056 (.129)	-.006 (.143)	-.005 (.063)	-.050 (.123)
#4	.382 (.156)	.108 (.110)	.050 (.127)	.036 (.084)	.0006 (.090)

Exam #1: $F4, 195 = 13.430$, $p < .001$
Exam #2: $F4, 195 = 7.361$, $p < .001$
Exam #3: $F4, 195 = 2.913$, $p = .023$
Exam #4: $F4, 195 = 28.61$, $p < .001$

https://doi.org/10.20429/ijsotl.2016.100204

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 presents a challenging paradox for instruction: some students (a small minority) seem to improve with a focus on anticipating their own performance, while a majority does worse. How accurate do the overly optimistic students believe they are being and with what confidence? How do they interpret their falling short? What changes in self-understanding (if any) occur for these students after an inaccurate prediction? Would explicit discussion about self-evaluation improve academic performance? Might predictive analytic data mitigate student inaccuracy and offer students a better basis for making predictions and triaging their efforts and self-discipline? And what can we learn from the accurate predictors who improve in accuracy and academic performance over a semester that we might share with the majority who do not?

There are two broad paradigms that we can adopt to explore these questions: cognitive style (Kozhevnikov, Evans and Kosslyn, 2014) and storytelling (Boje, 1991)."…[C]ognitive style represents adaptation to the external world that develops through interaction with the surrounding environment on the basis of specific cognitive abilities and personality traits" (Kozhevnikov et al., 2014, p. 21). Drawing on major contemporary theories and empirical research, these authors offer an integrated matrix that captures personality, learning styles, and information processing demands that could be used to carefully parse the demands of teaching goals and to explore suitable teaching strategies that take into account individual differences among students. An important feature of their model is that cognitive style is a dynamic process that reflects interaction between environmental demands (learning goals) and a broad array of individual differences in student learning approaches. Boje (1991), in contrast, suggests that organizations (including educational ones) rely on the use of group narrative to move toward the organization's goals. As applied to the findings in our study, we might ask how faculty and students understand and describe the purpose of taking classes, the role of learning strategies, and how narratives differ among the participants in the educational effort. Both cognitive style and storytelling provide long-term perspectives to better understand unrealistic optimism in the classroom.

Finally, what is the role of affect, especially negative affect, in the use of self awareness strategies for learning? As pointed out by Brookfield (1987; 2002), successful teaching is more than just transferring a set of skills. The strategies for developing critical thinking skills, such as being asked to predict one's own exam performance, can lead to anxiety or stress. This perspective 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.

ACKNOWLEDGEMENTS

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

REFERENCES

Prairie Home Companion with Garrison Keillor Minnesota Public Radio. http://prairiehome.org/listen/podcast/

Boje, B.M. (1991). The Storytelling Organization: A Study of Story Performance in an Office-Supply Firm. *Administrative Science Quarterly, 36*, 106-126.

Blumenstyk, G (2016). Hobsons acquires collaborative that promotes use of predictive analytics. *Chronicle of Higher Education,* January 12. http://chronicle.com/blogs/ticker/hobsons-acquires-collaborative-that-promotes-use-of-predictive-analytics/107769

Brookfield, S.D. (1987). *Developing Critical Thinkers. Challenging Adults to Explore Alternative Ways of Thinking and Acting*. San Francisco: Jossey-Bass Publishers.

Brookfield, S.D. (2002). Overcoming alienation as the practice of adult education: the contribution of Erich Fromm to a critical theory of adult learning and education. *Adult Education Quarterly, 52*(2), 96-111.

Cochran, S. & Spears, M. (1980). Student self-assessment and instructors' ratings: a comparison. *Journal of the American Dietetic Association, 76,* 253- 257.

Delbanco, A. (2012). *College: What it Was, Is, and Should Be*. Princeton: Princeton University Press.

Dunning, D., Heath, C. & Suls, J. (2004). Flawed self-assessment. Implications for health, education, and the workplace. *Psychological Science in the Public Interest, 5*(3), 69- 106.

Dweck, C. (2006). *Mindset. The New Psychology of Success*. New York: Ballantine (Random House).

Falchikov, N. & Boud, D. (1989). Student self-assessment in higher education: a meta-analysis. *Review of Educational Research, 59*, 395-430.

Geller, V. & Shaver, P. (1976). Cognitive consequences of self-awareness. *Journal of Experimental Social Psychology, 12*, 99-108.

Hacker, D., Bol, L., Horgan, D. and Rakow, E. (2000). Test prediction and performance in a classroom context. *Journal of Educational Psychology, 92*(1), 160-170.

Hansford, B.C. & Hattie, J.A. (1982). The relationship between self achievement/performance measures. *Review of Educational Research, 52*, 123-142.

Harrison, M., Meister, D. & LeFevre, A. (2011). Which students complete extra-credit work? *College Student Journal, 45*(3), 550-555.

Hill, G.W., Palladino, J. & Eison, J. (1993). Blood, sweat, and trivia: faculty ratings of extra-credit opportunities. *Teaching of Psychology, 20*(4), 209- 213.

Kihlstrom, J. (1987). The cognitive unconscious. *Science, 237*, 1445-1452.

Kozhevnikov, A., Evans, C. & Kossylyn, S. (2014). Cognitive style as environmentally sensitive individual differences in cognition: A modern synthesis and applications in education, business, and management. *Psychological Science in the Public Interest, 15*(1), 3-33.

Lei, S. (2013). Revisiting extra credit assignments: perspectives of college instructors. *Journal of Instructional Psychology, 40*(1), 14-19.

Lyons, N. (2010). *Handbook of Reflection and Reflective Inquiry. Mapping a Way of Knowing for Professional Reflective Inquiry*. New York: Springer.

Miller, G. & Wrosch, G. (2007). You've gotta know when to fold 'em. Goal disengagement and systemic inflammation in adolescence. *Psychological Science, 18*(9), 773-775.

Norcross, J.C., Horrock, L.J., & Strason, J.F. (1989). Of barfights and gadflies: Attitudes and practices concerning extra credit in college courses. *Teaching o f Psychology, 16*(4), 199-204.

Norcross, J.C., Dooley, H.S. and Stevenson, J.F. (1993). Faculty use and justification of extra credit: No middle ground? *Teaching of Psychology, 20*(4), 240-242.

Robertson, C. R, Lewine, R & Sommers, A. Perseverating to academic failure in male undergraduates. *NACADA Journal, 34*(1), 16-21.

Roediger, H.L. & Finn, B. (2009). Getting it wrong: surprising tips on how to learn. *Scientific American*, October 20. http://www.scientificamerican.com/article.cfm?id=getting-it-wrong

Seligman, M. Ernst, R., Gillham, J., Reivich, K. & Linkins, M. (2009). Positive education: positive psychology and classroom interventions. *Oxford Review of Education, 35*(3), 293-311.

Shaughnessy, J. (1979). Confidence-judgment accuracy as a predictor of test performance. *Journal of Research in Personality, 13*, 505-514.

Sinkavich, M. (1995). Performance and metamemory: do students know what they don't know? *Journal of Instructional Psychology, 22*(1), 77-90.

Young, J.R. (2016). What the slowdown in ed-tech investment means for colleges. *Chronicle of Higher Education*, May 31. http://chronicle.com/article/What-the-Slowdown-in-Ed-Tech/236648