

Achievement Goals, Locus of Control, and Academic Success and Effort in Introductory and Intermediate Microeconomics

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Abstract

Building on extensive research in educational psychology, this study measures mastery and performance goals in students in Introductory and Intermediate Microeconomics and relates those to academic outcomes such as effort (attendance, completion of reading assignments, and completion of homework), learning outcomes (exam and quiz scores), and affective measures such as interest in economics.

INTRODUCTION

An underexplored area within economics education is the influence that student motivation, fears, and feeling of control may have on learning outcomes and affective measures such as interest and enjoyment. This neglect in the economics literature is particularly striking given that such topics have received much attention in educational psychology over the past few decades. This study applies tools and concepts from educational psychology in an inquiry into their influence in introductory and intermediate microeconomics. Specifically, I investigate the roles of achievement goal theory, locus of control, and fear of failure in influencing student learning outcomes and affinity for economics.

According to Anderman and Wolters (2006, p. 370), achievement goal theory “has emerged as a prominent explanatory theory within the motivation literature over the last 25 years” whose main interest is concerned with reasons why students choose to engage in particular tasks. Within achievement goal theory students are said to be motivated to either develop a skill, termed mastery orientation, or demonstrate a skill, termed performance orientation. Students with a mastery orientation focus on learning and understanding while students with a performance orientation focus on creating an aura of competence (Kaplan and Maehr, 2007; Dweck, 1986). For students with a performance orientation, competence is demonstrated through comparison with others while for mastery oriented students, the comparison is to an internal standard or an absolute level (Kaplan and Maehr, 2007; Nicholls, 1984).

Extensive empirical research in educational psychology has shown that a mastery orientation is associated with desirable learning outcomes, including deeper, more elaborate study strategies, selection of more challenging tasks, persistence, and positive attitudes toward learning (Harackiewicz et al., 2000; Finney et al., 2004). Performance orientation has been associated with superficial or strategic learning strategies, selection of less challenging tasks, and withdrawal of effort when difficulty is encountered.

More recently, achievement goals have been further partitioned to include *approach* (representing positive possibilities) and *avoidance* (representing negative possibilities), creating a 2x2 structure (Elliot and McGregor, 2001). Thus, four distinct types of achievement goals exist: mastery-approach (focused on attaining task-based or intrapersonal competence), performance-approach (focused on attaining normative competence), mastery-avoidance (focused on avoiding task-based or intrapersonal incompetence), and performance-avoidance

(focused on avoiding normative incompetence) (Elliot and Murayama, 2008). A student with a mastery-approach goal would strive to learn as much as possible from a course, whereas a student with a mastery-avoidance goal would strive to avoid misunderstanding the course material or to not forget what he or she has learned (Finney et al., 2004). Performance-avoidance is evidenced by a student who thinks, “I don’t want to receive a low score on the math test,” whereas individuals who adopt performance-approach goals might think, “I want to receive a high score on the math test” (Smith, 2006).

Several studies have associated performance-approach goals with positive learning outcomes and performance-avoidance with negative learning outcomes (Harackiewicz et al., 2000; Elliot and Church, 1997). Kaplan and Maehr (2007) provide a recent review of this literature. Harackiewicz et al. (2000), examining long-term consequences of students' achievement goals, found that mastery goals positively predicted subsequent enrollment in psychology courses, whereas performance goals predicted long-term academic performance. They note, “These positive and complementary effects of mastery and performance goals on different measures of academic success are consistent with a multiple-goals perspective in which both goals can have beneficial consequences in college education” (p. 316). Interestingly, mastery goals have rarely been found to be associated with course grades.

The influence of achievement goals may be moderated by the extent to which students attribute success or failure to internal or external factors, i.e., factors under or not under their control. This attribution, called locus of control, has been extensively investigated using Rotter’s (1966) scale that identifies respondents as either “internals” or “externals.” Internals believe that events primarily result from their own behavior. For example, success on an exam is attributable by internals to their effort. Externals believe that events primarily are the result

of chance or someone else's actions. In an academic context, an external would likely consider failure on an exam to be the result of an unfair test (teacher's fault, for example). By itself, locus of control can have important implications. Gifford et al. (2006), for instance, find that college freshmen who were identified as internals obtained significantly higher GPAs and Carden et al. (2004) found that internals showed significantly lower academic procrastination, debilitating test anxiety, and reported higher academic achievement than externals.

This study measures mastery and performance goals, locus of control, and fear of failure in students in Introductory and Intermediate Microeconomics and relates those to academic outcomes such as effort (attendance, completion of reading assignments, and completion of homework), learning outcomes (exam and quiz scores), and affective measures such as interest in economics and enjoyment of class.

METHOD AND DATA

Participants who submitted all the surveys numbered 25 students in Introductory Microeconomics and 73 in Intermediate Microeconomics at a small, state-supported liberal arts college in upstate New York.¹ Almost all students were between 18 and 22 years old. Two students in Intermediate were majoring in economics, all the others were Business Economics majors taking a required course (one of four for the degree). Only a handful of students in Introductory were Business Economics majors (none were economics majors). Most were taking that course to fulfill either a one economics course requirement for their major or a general education requirement. The two courses examined are quite different in many ways besides the majors of students who take them. Intermediate is much more

¹ Fifty students registered for Introductory and 90 for Intermediate. One student in each course withdrew, others chose not to participate by completing the surveys.

quantitative and theory based, Introductory more descriptive and applied. Exams in the Intermediate were more problem and short-answer oriented while exams in Introductory were multiple choice.² The only course requirement in Introductory (for the semester studied) was submission of the exams. In Intermediate, students' course grades were based on exams (80%), homework assignments (10%), and class attendance (10%). Due dates for the assignments were flexible and students received extra credit for submitting more than the required six.

Five surveys were administered in stages. Achievement goals were measured using Elliot and Murayama's (2008) Academic Goal Questionnaire.³ This is a 12 statement survey designed to measure each element of the 2x2 structure. Responses were on a 5-point scale ranging from strongly disagree (1) to strongly agree (5). Elliot and Murayama demonstrated the validity of the instrument both with regard to antecedents such as need for achievement and fear of failure and consequences such as intrinsic motivation and exam performance.

Rotter's (1966) 29-statement survey is used to measure internal and external locus of control. One point is awarded for certain answers on 23 of the statements. The higher the score the more external the locus of control. A score of 13 or less is considered internal, above 13 is external. Interest in economics and enjoyment in class are measured using Harackiewicz et al's. (2000) 13 item survey. Students responded on a 5-point scale. Fear of failure is measured using Conroy's (2001) five statement survey. Responses were on a five-point scale from 1 (do not believe at all) to 5 (believe 100% of the time). Because a high fear of failure may intensify the effects of performance avoidance (Elliot and Murayama, 2008), an

² Surveys by Schaur, Watts, and Becker (2008) indicate that the exam format used here is similar to that used in comparable courses across the U.S.

³ All surveys are available at <http://employees.oneonta.edu/hadsell/>.

interaction term is added in the regression analysis. “High fear of failure” will be defined as a value greater than four (75th percentile) on the Conroy scale.

The Academic Goal Questionnaire, locus of control survey, and fear of failure survey were administered on-line to students mid-way through the spring 2009 term. The enjoyment and interest surveys were administered in class near the end of the semester. All surveys were confidential but not anonymous (so that the goals could be connected to their performance in the course). Completion of the surveys was optional. Students were provided extra credit points for their completion.

Learning outcomes were measured using three multiple choice exams (each containing 25-35 questions) in the Introductory class and three short-answer and problem exams (each containing 18-25 question parts) in Intermediate. Additionally, two essay questions were asked on the third exam in each course. The essay questions are used to measure deeper understanding of the kind associated with a mastery goal orientation. Additional measures of effort were taken: class attendance and homework submission in Intermediate, and access to on-line readings in Introductory.⁴

RESULTS

Summary statistics are provided in TABLE 1. The average of the exams is used as the dependent variable in the first set of regressions (OLS) used to examine the relationship between goal orientation and learning outcomes. Results are shown in TABLE 2 for Introductory and TABLE 3 for Intermediate. We see that for Introductory a higher

⁴ All course readings for Introductory are posted in electronic form in *Angel*, the college’s student-faculty interface (similar to WEBCT and BlackBoard). *Angel* allows detailed tracking of student access to all material. Records were made of how often students accessed posted readings “on-time” – that is, within one week of their initial coverage in class. Students were instructed to read the postings within this time period.

performance avoidance is associated with a higher exam score ($p < .05$). Thus, it appears that a stronger desire to not be worse than other students leads students to perform better on the exams. This occurred even though course grades were not based on relative performance. Perhaps general expectations for introductory courses that grades would be curved (which did not happen in this class) created an environment in which the incentive was to do no worse than one's peers, but this is only speculation. Note that fear of failure and locus of control are not significant correlates with exam average.

Turning to the results for Intermediate, we see that only a performance approach has a very strong positive association with exam scores ($p < .01$). The strong positive association of exam scores with performance approach in Intermediate and the failure to find a significant relationship between mastery approach and exam scores is somewhat surprising, given the positive learning approaches associated with the latter orientation. Yet, the findings for Intermediate are generally similar to findings elsewhere (Elliot and Murayama, 2008; Harackiewicz et al., 2000; Elliot and Church, 1997). The explanation could be in the types of questions asked on the exams. Perhaps students in Intermediate were not asked to show a deeper understanding by applying concepts to new situations or by synthesizing what they had learned.⁵

Tables 2 and 3 also show that mastery approach is strongly associated with higher levels of interest in economics, in both Introductory and Intermediate.⁶ Of further note for Intermediate, locus of control is negatively associated with interest: the more external the

⁵ Two essay questions asked on the final exam in each course, presumably measuring higher order thinking, unfortunately does not clarify the matter. In Introductory, only performance avoidance was statistically associated with an increase in score ($t=3.12$, coefficient=0.58, essay average=4.16, essay range=0-12). In Intermediate, there were no meaningful correlates.

⁶ Locus of control is not included in the Introductory regressions on Interest and Enjoyment as combined missing data reduce the number of observations dramatically (to 20).

student is the lower the self-rated interest in the class. These tables also report that enjoyment in Introductory is unrelated to any of the variables included, while in Intermediate locus of control is again negatively associated with the dependent variable. Finally, not surprisingly, class attendance is positively related with a mastery approach in Intermediate (attendance was not taken this semester in Introductory). Completion of homework assignments and on-time access of posted readings were not correlated with any of the variables (not shown).

CONCLUSION

This study provides an important perspective that may prove beneficial to economic educators. Much has been written in the economics education literature of methods and content, some has even been written concerning student personality type (e.g., Borg and Stranahan, 2002). All of these are vitally important. So too is an exploration of the motivations of students. Besides getting to know our students better, such an analysis offers an opportunity to improve the classroom experience. Like math ability, which has been found in prior studies to be a key determinant of success in Introductory Economics (Ballard and Johnson, 2004), academic achievement goals are malleable. Several studies have demonstrated that classroom goal structure (i.e., the environment created by the teacher, whether mastery or performance) can have significant impacts on student goals and learning outcomes (Karabenick, 2004; Meece, Anderman, and Anderman, 2006). Karabenick (2004), for example, finds that student help seeking is encouraged when students perceive a mastery oriented class structure and is discouraged when a performance structure is perceived. Study of student motivation from a psychological perspective has been largely absent from the

economic education literature (with a few exceptions, such as Borg and Stranahan, 2002, and Grimes et al., 2004). This study is another step in the direction of inclusion.

In addition to replication and refinement of the present study, future work should focus on the longer term effects of achievement goals, such as subsequent enrollment in economics courses. Future research could also expand the inquiry to include other goals such as work-avoidance and social goal theory (Kaplan and Maehr, 2007). An examination of the interaction of student goal orientation, classroom goal structure (policies and activities chosen by the teacher), and short- and long-term outcomes in economics could prove beneficial for all involved – leading to more interest and learning.

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Table 1 - Summary Statistics

Intermediate Micro

Variable	Range	Mean	Median	Maximum	Minimum	Std dev	Obs.
EXAM AVE	0 to 100	69.07	70.48	94.62	41.07	11.76	88
MASTAPP	-6 to 6	3.75	4.00	6.00	-2.00	1.56	81
MASTAVOID	-6 to 6	1.62	2.00	6.00	-4.00	2.53	81
PERFAPP	-6 to 6	3.53	4.00	6.00	-4.00	2.11	81
PERFAVOID	-6 to 6	2.75	3.00	6.00	-3.00	2.14	81
CONTROL	0 to 23	11.71	11.00	20.00	4.00	3.63	80
GENDER	0 or 1	0.32	0.00	1.00	0.00	0.47	90
FEAROFFAIL	-10 to 10	1.60	1.00	9.00	-4.00	2.84	81
INTEREST	10 to 50	36.35	36.00	50.00	18.00	6.26	72
ENJOYMENT	3 to 15	10.54	11.00	15.00	5.00	2.14	72

Introductory Micro

Variable	Range	Mean	Median	Maximum	Minimum	Std dev	Obs.
EXAM AVE	0 to 1	0.70	0.69	0.90	0.50	0.09	46
MASTAPP	-6 to 6	3.23	3.00	6.00	-3.00	1.71	44
MASTAVOID	-6 to 6	2.11	3.00	6.00	-4.00	2.69	44
PERFAPP	-6 to 6	2.86	3.00	6.00	-5.00	2.44	44
PERFAVOID	-6 to 6	2.36	3.00	6.00	-6.00	2.90	44
CONTROL	0 to 23	11.84	12.00	19.00	3.00	3.82	31
GENDER	0 or 1	0.32	0.00	1.00	0.00	0.47	46
FEAROFFAIL	-10 to 10	1.00	0.50	8.00	-4.00	2.94	44
INTEREST	10 to 50	36.76	36.50	46.00	27.00	5.44	34
ENJOYMENT	3 to 15	10.94	11.00	15.00	6.00	2.01	34

Table 2 - Introductory Economics

Dependent variable:	Exam Ave	Interest	Enjoyment
Constant	0.654 *** (0.048)	33.426 *** (2.427)	10.788 *** (0.966)
Mastery Approach	0.020 (0.019)	2.178 *** (0.791)	0.127 (0.315)
Mastery Avoidance	0.000 (0.013)	-1.038 * (0.580)	-0.041 (0.231)
Performance Approach	-0.020 (0.013)	-0.914 (0.731)	-0.025 (0.291)
Performance Avoidance	0.020 ** (0.009)	0.901 (0.671)	-0.050 (0.267)
Locus of Control	-0.069 (0.044)		
Fear of Failure	-0.004 (0.009)	0.198 (0.453)	0.208 (0.180)
Gender (female=1)	0.018 (0.049)	-3.114 (2.170)	0.026 (0.863)
High fear of failure x Performance Avoidance	0.063 (0.039)	-0.221 (1.727)	0.274 (0.687)
Obs.	25	32	32

*** (**) (*) significant at the 1% (5%) (10%) level.

Standard errors in parentheses.

Gender: 0 for male

High fear of failure: Rotter score > 75th percentile

Table 3 - Intermediate Microeconomics

Dependent variable:	Exam Ave	Interest	Enjoyment	Absences
Constant	61.348 *** (3.707)	38.338 *** (3.339)	11.948 *** (1.075)	2.483 *** (0.762)
Mastery Approach	0.204 (0.784)	1.458 *** (0.476)	0.207 (0.153)	-0.275 ** (0.111)
Mastery Avoidance	-0.700 (0.545)	-0.166 (0.328)	0.122 (0.106)	0.091 (0.076)
Performance Approach	2.031 *** (0.659)	0.108 (0.393)	0.018 (0.126)	-0.063 (0.093)
Performance Avoidance	-0.665 (0.742)	0.057 (0.452)	-0.090 (0.145)	0.034 (0.105)
Locus of Control	0.482 (2.491)	-0.566 *** (0.206)	-0.213 *** (0.066)	0.021 (0.048)
Fear of Failure	0.573 (0.625)	0.102 (0.396)	0.090 (0.127)	-0.143 * (0.089)
Gender (female=1)	3.988 (2.691)	-1.744 (1.649)	0.288 (0.531)	-0.219 (0.377)
High fear of failure x Performance Avoidance	-1.116 (1.209)	-0.805 (0.728)	0.016 (0.234)	0.091 (0.172)
Obs.	73	65	65	73

*** (**) (*) significant at the 1% (5%) (10%) level.

Standard errors in parentheses.

Gender: 0 for male

High fear of failure: Rotter score > 75th percentile