RESEARCH

Measuring Achievement Goal Orientations of Pharmacy Students

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Objectives. To measure the achievement goal orientations of pharmacy students attending a 3-year (accelerated) doctor of pharmacy (PharmD) program.

Methods. A 16-item survey based on the Achievement Goal Questionnaire (AGQ) was administered to first-year (P1) and second-year (P2) pharmacy students at the Appalachian College of Pharmacy (ACP). Students were instructed to indicate to what degree each statement was true for them using a 7-point Likert scale (1=not true of me, 7=very true of me).

Results. One hundred twenty of the 155 students (77%) completed the survey. Most students had mastery-approach, mastery-avoidance, performance-approach, and/or performance-avoidance goal orientations; few had work-avoidance goal orientations. Second-year students and male students had higher work-avoidance mean scores than did P1 students and female students ($p<0.05$).

Conclusion. Pharmacy students were mastery- and performance-oriented learners, and most did not have work-avoidance goal orientations. Male students and P2 students had higher work-avoidance than did female students and P1 students, respectively. More longitudinal studies are needed to confirm these findings.

Keywords: pharmacy students, motivation, attitudes, pharmacy education

INTRODUCTION

Pharmacy students need motivation in order to become self-directed, independent, and active learners. Various theoretical models including achievement goal theory, have been used to explain and understand students' achievement motivation.^{1,2} Students' motivation, especially achievement goal orientation, is related to learning strategies, help-seeking behaviors, persistence, and acquisition and utilization of skills.^{1,3-5} Students' achievement goal orientation determines how they interpret and respond to their environment.³ Pharmacy educators need to understand student motivation and achievement goal orientations in order to effectively instill life-long learning skills in their students.⁶

A 2x2 framework for conceptualizing students' achievement goal orientations has been proposed that includes mastery (eg, motivated to understand the material and develop their skills) and performance (eg, concerned with comparing themselves with others) goal orientations.⁷ Because mastery-oriented learners want to become competent by comprehending new content, they treat learning

as an end in itself rather than as a means to an end.³ Mastery goal orientation is not only desirable for pharmacy students but also helpful to them in developing as lifelong learners, which is the aim of pharmacy education. Pharmacy students with mastery-approach or mastery-avoidance goal orientation are likely to be more successful and become lifelong learners after graduation. Mastery-oriented learners tend to choose harder tasks, at the risk of failing, to gain more comprehensive knowledge. Performance-oriented motivation is derived from the desire to be praised for achieving or to do better than their peers. Thus, students who are performance-oriented learners tend to choose easier tasks in which success is guaranteed. Following this 2x2 framework, students can have either a mastery-approach goal orientation (ie, a desire to maximize learning and skills development, or a mastery-avoidance goal orientation, (ie, a fear of losing skills or the inability to master all the material). Students who compare themselves with others and are motivated by the desire to demonstrate their ability and achievements publicly have a performance-approach goal orientation, and those who do not want to appear incompetent or lacking in ability relative to others have a performance-avoidance goal orientation.^{8,9} A fifth goal orientation, called work-avoidance or academic-alienation, has been suggested and is included in our study. This goal orientation

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pertains to students who try to do as little work as necessary to get by.¹⁰ These students have no desire to develop and demonstrate competence and tend to have low internal locus of control.¹¹

An individual's response to and interpretation of the world are influenced by his/her goal orientation. Compared to students with other goals, students with mastery goal orientation have been found to perceive tasks as valuable, seek help when confused, value cooperativeness, use deep-learning strategies, self-regulate effectively, and experience positive emotion.^{9,12-17} Studies regarding pharmacy students' motivation to learn have been conducted in the United States and abroad.^{8,11,18-21} In 1 study, 50% of the pharmacy students were mastery-oriented learners, 42% were performance-oriented learners, and 8% were academically alienated learners.¹¹ Mastery and performance goal orientations are not opposite ends of an achievement goal orientation continuum. One study found that some pharmacy students had simultaneous mastery and performance goal orientation.²⁰ Students' goal orientation changes over time as they progress in the curriculum.^{18,20} Although P1 pharmacy students retained a mastery goal orientation, they shifted from mastery to academic-alienation goal orientation in 1 year.²⁰ However, no known studies have been conducted on students at 3-year PharmD programs. Students attending 3-year PharmD programs experience more stress than students in a traditional 4-year PharmD program.²² Because students at 3-year PharmD programs complete the curricular requirements in a shorter timeframe, they may have different achievement goal orientations. Therefore, little is known about the achievement goal orientations of pharmacy students at accelerated (3-year) PharmD programs.

The aim of this study was to measure the achievement goal orientations of pharmacy students attending an accelerated PharmD program in the United States. Established in 2003, Appalachian College of Pharmacy (ACP) is a private not-for-profit pharmacy school located in Oakwood, Virginia, in Central Appalachia, a predominantly rural area. The Appalachian College of Pharmacy offers a 3-year accelerated PharmD degree and has an annual intake of 80 students. The specific objectives of the study were to determine the students' achievement goal orientations (ie, mastery-approach, mastery-avoidance, performance-approach, performance-avoidance, and work-avoidance), and to determine the relationship between the students' demographics and their motivation for learning.

METHODS

This cross-sectional nonexperimental study was conducted with students at ACP, and was approved by the Institutional Review Board. The study targeted all

PharmD-degree students in the classroom portion of the curriculum at ACP (ie, P1 and P2 students).

The survey instrument used in this study was based on the Achievement Goal Questionnaire (AGQ)⁷ and the Achievement Goal Questionnaire-Revised (AGQ-R).²³ These questionnaires, or parts thereof, have been found to have satisfactory reliability when used to measure students' goal motivation.²⁴⁻²⁷ Entitled "ACP Students' Attitudes Towards Learning This Semester," the survey instrument was administered to students by a faculty member during regular classroom instruction time on 1 day in the fall semester of 2011. Students were given 10 minutes to complete the instrument and place it in an envelope at the front of the classroom. Students were informed that their participation was voluntary, anonymous, and confidential.

The 1-page survey instrument consisted of 2 sections. The first section consisted of 16 statements regarding goals for studying, effort the student intends to put toward learning, and willingness to learn. Of these 16 items, 3 items each measured mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goal orientations; the remaining 4 items measured work-avoidance goal orientation. Because work-avoidance goal orientation was negatively worded, it was reverse-coded. Students were asked to indicate whether each of these statements was true or not true for them, using a Likert scale ranging from 1 (not true of me) to 7 (very true of me) (Table 1).

The second section consisted of demographic questions: class standing (P1 or P2 students), gender (male or female), and age range (under 25, 25 to 30, or over 30 years old). Only students in the classroom portion of their coursework at ACP (ie, P1 and P2 students) were included in the study. Third-year students, who were in the advanced pharmacy practice experience (APPE) portion of the curriculum, were excluded from the study.

Data were entered in Microsoft Excel 2007 and exported to Predictive Analytics Software (PASW, SPSS Inc, Chicago, IL) for analysis. For each item, a mean was computed by summing all student scores on the rating scale and dividing by the number of students. A total score for each individual student on all 5 goal orientations was computed by adding the student's ratings on all the items in the scale. Those who rated themselves above the neutral score on 1 or more of the goal orientations were considered to have that orientation. Another mean score was computed by dividing the scale score by the number of students. Means, standard deviations, and frequency distributions were computed for all study variables and scales. The independent *t* test was used to compare differences in mean motivation-to-learn scale scores by respondents'

Table 1. Self-Assessment of Pharmacy Students Regarding Their Motivation for Learning (N=120)

Survey Instrument Statement	Mean (SD)	Student Responses, No. (%) ^a						
		Not true of me, 1	2	3	4	5	6	Very true of me, 7
My goal is to perform well relative to other students. (performance approach)	6.2 (1.1)	-	2 (1.7)	2 (1.7)	8 (6.7)	6 (5.0)	41 (34.2)	61 (50.8)
My goal is to avoid doing worse than other students. (performance avoidance)	6.0 (1.4)	3 (2.5)	2 (1.7)	1 (0.8)	12 (10)	13 (10.8)	29 (24.2)	60 (50)
My aim is to completely master the material in my courses. (mastery approach)	6.2 (0.9)	-	-	1 (0.8)	6 (5.0)	9 (7.5)	56 (46.7)	48 (40)
I prefer not to work hard in my classes. (work avoidance)	2.1 (1.6)	63 (53.4)	28 (23.7)	5 (4.2)	11 (9.3)	5 (4.2)	2 (1.7)	4 (3.4)
I am striving to avoid an incomplete understanding of course material. (mastery avoidance)	6.0 (1.4)	4 (3.3)	2 (1.7)	2 (1.7)	7 (5.8)	9 (7.5)	36 (30.0)	60 (50.0)
I am striving to do well compared to other students. (performance approach)	6.0 (1.2)	1 (0.8)	-	4 (3.4)	11 (9.2)	12 (10.1)	38 (31.9)	53 (44.5)
My goal is to learn as much as possible this semester. (mastery approach)	6.5 (0.8)	-	-	-	3 (2.5)	11 (9.2)	30 (25.0)	76 (63.3)
I am striving to avoid performing worse than other students. (performance approach)	5.8 (1.5)	4 (3.3)	3 (2.5)	2 (1.7)	15 (12.5)	12 (10.0)	31 (25.8)	53 (44.2)
My goal is to do as little work as possible this semester. (work avoidance)	1.8 (1.4)	76 (63.3)	20 (16.7)	8 (6.7)	7 (5.8)	5 (4.2)	2 (1.7)	2 (1.7)
I am striving to understand course content as thoroughly as possible. (mastery approach)	6.4 (0.9)	-	-	1 (0.8)	5 (4.2)	11 (9.2)	31 (25.8)	72 (60.0)
My aim is to avoid learning less than I possibly could this semester. (mastery avoidance)	4.3 (2.4)	30 (25.4)	7 (5.9)	3 (2.5)	21 (17.8)	7 (5.9)	19 (16.1)	31 (26.3)
I intend to perform better than other students this semester. (performance approach)	5.8 (1.2)	1 (0.8)	-	1 (0.8)	21 (17.8)	16 (13.6)	32 (27.1)	47 (39.8)
I plan to get through my courses by doing the least amount of work possible. (work avoidance)	2.0 (1.5)	69 (59.0)	23 (19.7)	5 (4.3)	10 (8.5)	8 (6.8)	-	2 (1.7)
My goal is to avoid learning less than it is possible to learn in my courses. (mastery avoidance)	4.1 (2.3)	25 (21.4)	15 (12.8)	6 (5.1)	21 (17.9)	5 (4.3)	16 (13.7)	29 (24.8)
My goal is to avoid performing poorly compared to other students. (performance avoidance)	5.7 (1.6)	5 (4.2)	3 (2.5)	1 (0.8)	14 (11.8)	14 (11.8)	33 (27.7)	49 (41.2)
I intend to work really hard in my coursework this semester. (work avoidance, reverse-coded)	6.5 (0.9)	-	1 (0.8)	1 (0.8)	4 (3.3)	9 (7.5)	25 (20.8)	80 (66.7)

^a Response scale range: 1 = not true of me, 7 = very true of me. Not all students responded to all survey instrument items. Percentages based on valid responses per item.

gender and class standing. The analysis of variation (ANOVA) was used to compare mean differences in motivation-to-learn scale scores by age of respondents. Missing values were imputed with the item mean. The Cronbach alpha was used to measure the reliability of all 5 goal-orientation scales. An *a priori* internal consistency reliability was set at a minimum of 0.70. An alpha of <0.05 was used for significance.

RESULTS

Of the 79 P1 students and 76 P2 students at ACP, 120 (77%) completed the survey instrument. Most respondents were P1 students ($n=76$, 63.3%), female ($n=66$, 55%), and under age 25 ($n=73$, 60.8%). Mastery- and performance-approach goal orientations and performance- and work-avoidance goal orientations were all internally consistent with Cronbach alpha scores greater than 0.70. Most students rated most of the statements on the survey instrument as true for them (Table 1). A majority of students scored above neutral on the mastery-approach ($n=118$, 98.3%), mastery-avoidance ($n=81$, 67.5%), performance-approach ($n=109$, 90.8%), and performance-avoidance ($n=107$, 89.2%) goal-orientation scales (Table 2). Nine students (7.5%) rated the work-avoidance goal-orientation statements as true for them.

There were no significant mean scale differences on mastery-approach, mastery avoidance, and performance-approach scores between P1 and P1 students ($p>0.05$, Table 3). However, P2 students had significantly higher mean scale scores on performance-avoidance (18.52 vs 16.87, $p=0.009$) and work-avoidance scores (9.50 vs 6.22, $p=0.001$) than did P1 students. There was no significant difference in mean mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance scores by gender ($p>0.05$). However, male students had significantly higher mean work-avoidance scores than did female students (8.89 vs 6.23, $p=0.003$; Table 3). There was no significant difference in mean mastery-approach, mastery-avoidance, performance-approach, performance-avoidance, and work-avoidance goal-orientation scores by age category of students ($p>0.05$).

DISCUSSION

Appalachian College of Pharmacy PharmD students endorsed mastery-approach and mastery-avoidance goal orientations, despite undertaking a condensed 3-year curriculum. Endorsing mastery orientation is desirable for pharmacy students, as it is associated with behaviors that boost performance (eg, persistence, asking questions, use of deep studying strategies).^{9,12-17} Additionally, having mastery orientation helps students develop as lifelong learners, an important objective of pharmacy education. ACP should continue motivating its students to develop mastery goal orientation and lifelong learning habits by modifying the learning environment and curriculum. This study's findings support the results of other studies that pharmacy students had a mastery goal orientation.^{11,19,20}

Appalachian College of Pharmacy students had performance-approach and performance-avoidance goal orientations. Performance-oriented learners strive for ends such as grades, passing a class, or performing better than their classmates. Faculty members should deemphasize normative comparisons and encourage students to learn for the purpose of gaining competence or to have mastery goal orientations. This study's findings support those of other studies reporting that many students are performance-oriented learners.^{11,19,20} There is evidence that students with performance-avoidance goal orientation have high anxiety, disorganized study habits, low interest, and low achievement.^{9,13,28-30}

We found that ACP students adopted both mastery-oriented and performance-oriented motivation traits or had multiple goal orientations. In line with previous research, this study's findings confirmed that students' mastery and performance goal orientations are not mutually exclusive.²⁰ If a student has a goal of mastering course material, it does not mean that the same student cannot also have a goal of earning an "A" in the course.

We found that most students at ACP rated themselves as not having work-avoidance goal-orientated motivations, a result that concurs with that of studies at other institutions.^{11,20} Similar to the findings of another study at a 4-year program, 8% of our students had work-avoidance goal,¹¹ suggesting that the type of program (3-year vs

Table 2. Achievement Goal Orientations of Students Based on Self-Assessments of Their Motivation to Learn^a (N=120)

Goal Orientation	Items, No.	Frequency (%)	Mean (SD)	Median	Possible Range	Cronbach Alpha
Mastery approach	3	118 (98.3)	19.1 (2.1)	20	3-21	0.785
Mastery avoidance	3	81 (67.5)	14.4 (4.9)	15	3-21	0.664
Performance approach	3	109 (90.8)	18.1 (3.0)	19	3-21	0.790
Performance avoidance	3	107 (89.2)	17.5 (3.8)	18.4	3-21	0.781
Work avoidance	4	9 (7.5)	7.4 (4.7)	5	4-28	0.865

^a Response scale range: 1=not true of me, 7=very true of me.

Table 3. Relationship of Goal Orientation to Class Level and Gender, Based on Pharmacy Students' Self-Assessment of Their Motivation to Learn^a

Achievement Goal Orientation	Class Level			Gender		
	First-Year, Mean (SD), n=76	Second-Year, Mean (SD), n=44	P	Male, Mean (SD), n=54	Female, Mean (SD), n=66	P
Mastery approach	19.3 (1.7)	18.7 (2.6)	0.17	18.9 (2.0)	19.3 (2.1)	0.26
Mastery avoidance	14.3 (4.9)	14.6 (4.6)	0.68	14.9 (5.0)	14.0 (4.6)	0.27
Performance approach	18.0 (3.1)	18.2 (2.6)	0.66	18.3 (2.8)	17.9 (3.1)	0.52
Performance avoidance	16.9 (4.2)	18.5 (2.6)	0.01 ^b	17.3 (4.3)	17.6 (3.3)	0.66
Work avoidance	6.2 (3.2)	9.5 (5.9)	0.001 ^a	8.9 (5.6)	6.2 (3.3)	0.003 ^a

^a Response scale range: 1=not true of me, 7=very true of me.

^b Significant at $p < 0.05$.

traditional 4-year program) is not associated with student goal motivations. Students who are motivated by work-avoidance or academic alienation are not interested in developing or demonstrating competence and tend to do poorly in their courses.^{20,31} The work-avoidance goal orientation of these 9 students can be explained by the stress levels associated with the pharmacy learning environment and curriculum. More should be done to help ACP and other pharmacy students with work-avoidance goal orientation to change by means of encouraging the development of mastery goal orientation (eg, by establishing classroom goal structures).

There was no difference in students' goal orientation by academic year of student. However, P2 students rated significantly higher on performance-avoidance and work-avoidance orientations than did P1 students. The reason for this finding and whether the observed difference is practically relevant is unclear. A longitudinal study is needed to confirm and determine if this phenomenon is pervasive throughout the professional curriculum. This finding may suggest that ACP students become more nonchalant about their schooling as they progress from their first to their second year in the program. A previous longitudinal study had similar findings regarding the shift in goal orientation in pharmacy students as they progress through the curriculum.²⁰

There was no difference in students' goal orientation by gender, although male students rated themselves higher on work-avoidance than did female students. A previous study found that male medical, pharmacy, and nursing students were more likely than female students to be performance oriented.¹¹ In our study, there was no difference among students of different ages regarding mastery orientation, a finding that contrasts with that of a previous study showing that older students were more likely than younger students to be mastery-oriented learners.¹¹

There are several limitations to our study. Given that the sample was comprised only of students at a single

3-year PharmD program, the findings of this study may not be generalizable to students at other accelerated programs or other types of programs in the United States. Because of this study's cross-sectional design, causality cannot be inferred. The response rate and sample size for the P2 students was small, and the Cronbach alpha for mastery orientation was low. Finally, social-desirability bias cannot be completely ruled out. Although responses in this study were anonymous, this is no guarantee of data accuracy; however, we are not aware of any incentive the students had to be deceptive.

CONCLUSION

Pharmacy students in a 3-year accelerated PharmD degree program were mastery- and performance-oriented learners, and most did not have work-avoidance goal orientations. Male students and P2 students had higher work-avoidance goal orientation than did female students and P2 students, respectively. More longitudinal studies are needed to confirm these findings.

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