

Effect of Pass/Fail Grading vs. Letter Grading on Pharmacy Students' Achievement Goal Orientations

Juliette A. Miller, PharmD¹; Russ Palmer, PhD²; Devin Lavender, PharmD²; Rebecca Stone, PharmD²;

Blake R. Johnson, PharmD, MPH²; Beth Bryles Phillips, PharmD²

¹ St. John Fisher University, Wegmans School of Pharmacy, Rochester, NY; ² University of Georgia College of Pharmacy, Athens, GA

BACKGROUND

- Pass/fail (P/F) grading systems can affect students' achievement goal orientations (the reason or purpose for engaging in learning activities)¹

- Examples of a 2 X 2 achievement goal framework:²⁻⁵

Mastery-approach

- Motivation to master a task
- E.g. studying to understand material

Mastery-avoidance

- Motivation to avoid losing knowledge
- E.g. studying to not forget concepts

Performance-approach

- Motivation to achieve high performance
- E.g. studying to earn an A

Performance-avoidance

- Motivation to avoid poor performance
- E.g. studying to not fail a test

Work-avoidance (a fifth concept some employ)

- Motivation to do the least work possible
- E.g. copying a friend's assignment

- Few studies have examined relationships between grading systems and goal orientations in pharmacy education

OBJECTIVE

- To determine if PharmD students in a P/F version of a recitation series had different goal orientations from students who participated in a traditional letter grade (A-F) version of the same recitations

METHODS

- Design:** A questionnaire given with end of semester evaluations adopted from the Achievement Goal Questionnaire-Revised with two multiple choice questions and 15 five-point Likert scale questions⁶

- Comparison groups:** P2 students (who took P/F recitations in Fall 2021) and P3 students (who took A-F recitations in Fall 2020)

- Data analysis:** Respondents were paired by grade point average, Pharmacotherapy I final course grades, and demographics. Descriptive and inferential statistics were applied

RESULTS

Table 1. Baseline Characteristics

	Pass/Fail Group (n=132)	A-F Group (n=136)
Race- n (%)		
Hispanic/Latinx	7 (5.3)	2 (1.5)
Asian	29 (22.0)	40 (29.4)
Native American	1 (0.8)	0 (0.0)
Black	24 (18.1)	13 (9.6)
White	67 (50.8)	64 (47.1)
Not provided	3 (2.3)	22 (16.2)
In-State- n (%)		
Yes	127 (96.2)	114 (83.8)
No	2 (1.5)	6 (4.4)
Not provided	3 (2.3)	16 (11.8)
Total GPA (mean)	3.495	3.483
PCAT Overall Official Score (mean)	70.884	72.602
Pharmacotherapy I Final Grades	82.472	84.867

Pharmacy students who took P/F recitations had higher goal orientation averages for mastery-approach, performance-approach, mastery-avoidance, and performance-avoidance, compared to students who took recitations with the traditional A-F grading.

Table 2. Goal Orientation Averages from the Likert Scale Questions

	N	Mean (Standard Deviation)	P-Value
Mastery-approach average			<0.001
P/F group	132	4.727 (0.485)	
A-F group	134	4.234 (0.782)	
Mastery-avoidance average			0.006
P/F group	132	3.749 (1.164)	
A-F group	133	3.380 (1.001)	
Performance-approach average			<0.001
P/F group	132	4.261 (0.848)	
A-F group	133	3.900 (0.854)	
Performance-avoidance average			0.010
P/F group	132	4.135 (0.924)	
A-F group	133	3.840 (0.922)	
Work-avoidance average			0.218
P/F group	132	2.520 (1.660)	
A-F group	133	2.293 (1.309)	

Table 3. Student Reported Goal Orientation Towards Recitations

	Pass/Fail Group (n=132)	A-F Group (n=136)
Mastery-approach- n (%)	112 (84.8)	92 (67.6)
Mastery-avoidance- n (%)	7 (5.3)	11 (8.1)
Performance-approach- n (%)	5 (3.8)	12 (8.8)
Performance-avoidance- n (%)	3 (2.3)	15 (11)
Work-avoidance- n (%)	3 (2.3)	3 (2.2)
No response- n (%)	0 (0)	3 (2.2)

Table 4. Student Preferred Grading Scale for Recitations

	Pass/Fail Group (n=132)	A-F Group (n=136)
Letter grading scale- n (%)	31 (23.5)	58 (42.6)
Pass/fail grading scale- n (%)	100 (75.8)	76 (55.9)
Either- n (%)	1 (0.8)	0 (0)
No response- n (%)	0 (0)	2 (1.5)

DISCUSSION

- Based on these results in conjunction with literature on goal orientation theory, it may benefit pharmacy educators to encourage approach goal orientations and discourage avoidance goal orientations among students
- One implication is to consider shaping P/F grading systems to incentivize students' adoption of approach goals rather than avoidance goals, such as using a P/F system but placing emphasis on individualized feedback
- At the same time, pharmacy educators may support the adoption of performance-approach goals within P/F courses by developing competitive activities like games or authentic activities such as presentations that motivate many students to demonstrate their competence

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