RESEARCH

Investigating the Relationship Between Pharmacy Students' Achievement Goal Orientations and Preferred Teacher Qualities

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Objective. To investigate the relationships between pharmacy students' preferred teacher qualities and their academic achievement goal orientations.

Methods. Participants completed an achievement goal questionnaire and a build-a-teacher task. For the latter, students were given a \$20 hypothetical budget to purchase amounts of 9 widely valued teachers' qualities.

Results. Three hundred sixty-six students participated. Students spent most of their budget on the traits of enthusiasm, expertise, and clear presentation style, and the least amount of money on interactive teaching, reasonable workload, warm personality, and intellectually challenging. In relation to achievement goals, negative associations were found between avoidance goals and preferences for teachers who encourage rigorous thinking and self-direction.

Conclusion. These novel findings provide a richer profile of the ways students respond to their learning environment. Understanding the relationships between teachers' characteristics and pharmacy students' achievement goal orientations will contribute to improving the quality of pharmacy learning and teaching environments.

Keywords: achievement goals, motivation, pharmacy education, teacher qualities, student preferences

INTRODUCTION

Most faculties (schools of pharmacy) seek their students' opinions regarding teaching and instructor qualities, and it is not uncommon to find that students rate the same instructor differently. However, it is unclear why different students rate an instructor differently. The goals that university students adopt in class may be the answer to this question,¹ specifically achievement goals, which theorists believe play a major role in education.^{2,3}

According to achievement goal theorists, students engage in educational activities with 1 of 2 broad goals in mind: mastery goals or performance goals.⁴⁻⁶ For either goal, gaining competence is the student's primary aim.⁷ However, they perceive competence in different ways. Mastery-oriented students view competence as learning and understanding the task thoroughly and use self-referential standards to define success vs failure.⁸⁻¹⁰ On the other hand, performance-oriented students view competence

as performing well compared to other students and they define success vs failure based on teacher-referential standards.^{8,11}

Elliot and McGregor have proposed that mastery and performance goals can be further divided into approach and avoidance components.¹² Students who adopt a mastery-approach goal aim to learn and understand the course materials as thoroughly as possible, whereas those who are oriented towards the mastery-avoidance goal aim to avoid not understanding the course materials thoroughly. Students adopting the performance-approach goal are motivated to outperform other students or to demonstrate their ability to either teachers or peers, whereas students adopting the performance-avoidance goal aim to avoid doing worse than other students or appearing less talented. This distinction is supported by a large body of empirical research and is robust in predicting and understanding students' engagement and achievement.¹³⁻¹⁵

These goal orientations are differentially associated with a range of motivation, academic, and psychological correlates. Avoidance goals are associated with negative outcomes, for example, performance-avoidance and mastery-avoidance goals have been linked to depression¹⁶ and low

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grades on examinations.^{17,18} In contrast, the mastery-approach goal has been associated with deep learning,¹⁹ high individual interest,²⁰ high self-regulation,²¹ and willingness to cooperate.²² Yet, to the achievement theorists' surprise, the mastery-approach goal can rarely predict high academic achievement (ie, grades).¹³ The performance-approach goal, however, is associated with high grades on examinations,^{24,25} but also with "surface" learning approaches such as memorization.²³

To find an explanation for the unexpected relationship between the "approach" types of achievement goals and academic achievement, Senko and his colleagues hypothesized that each type of goal affects students' learning strategies differently.¹¹ According to the authors, students who adopt the mastery-approach goal tend to study materials that are interesting to them regardless of the subject matter's importance or testability, while students who are performance-approach oriented do not. The latter will study what they think will appear on the examination and try to figure out what is important to their teachers instead of following their own interests. As a result, they gain higher grades than their mastery-approach peers.²⁶

The quality of higher education largely depends on the qualities of teachers in this sector.²⁷ Determining which qualities are considered essential and effective can be difficult to define as stakeholders in higher education (eg, students, teachers, administrators, and scholars) have individual views and opinions about what these qualities are.²⁸ However, they all believe that teacher qualities have a great impact not only on students' education but also on students' futures as well.²⁹ One area that teacher qualities play a major role in is students' achievement goals.^{30,31} A recent study conducted by Shim and colleagues found that teachers who strongly pursue mastery goals tend to foster the adoption of mastery goals by their students, while teachers who strongly pursue performance goals tend to foster the adoption of those goals by their students.³² Although such impacts are well documented, little is known about how students' achievement goals might influence their preferences for teachers' qualities.³³

Senko and colleagues found that mastery-approach and performance-approach goals adopted by students did affect the qualities and traits that students wanted to see in their teachers.³³ Students who adopted a mastery-approach goal most valued teachers who challenged them intellectually and had an extensive experience in their subject areas. In contrast, students who adopted a performance-approach goal valued teachers who provided suggestions about how to gain high marks on examinations and who presented their material clearly. Valuing these qualities did not suggest that these students did not like other qualities such as warmth and enthusiasm. It simply meant that

students considered the latter qualities less important and not necessities. These so-called "luxury" qualities were desirable only after obtaining the essential ones. While Senko and colleagues tested the effect of both mastery and performance approach types, we believe that investigating the impact of mastery and performance avoidance types and their relationship to teacher qualities is also important. Given that avoidance types are maladaptive and unproductive, knowing the preferred teacher qualities of students who strongly adopt them is beneficial in order to review teaching methods that might foster adoption of these goals.

Thus, our study had 3 aims: to investigate which qualities pharmacy students most preferred in their teachers; to test assumptions about how mastery-approach and performance-approach goals affect students' preferences for various teacher qualities in a pharmacy education setting;³³ and to investigate the effects of avoidance types of achievement goals (mastery avoidance and performance avoidance) on teacher qualities. To our knowledge, no study has assessed the effects of the 4 types of achievement goals on students' preferences of teacher qualities.

METHODS

The participants for this study were second-year and fourth-year undergraduate pharmacy students enrolled in a bachelor's degree program at The University of Sydney's Faculty of Pharmacy. Completion of this 4-year program enables graduates to register as a pharmacist in Australia.³⁴

The survey comprised 2 measures: the Achievement Goal Questionnaire¹² (AGQ) and the build-a-teacher task.³³ Both instruments are available from the corresponding author. In addition to these measures, gender and age were included as socio-demographic indicators in the survey.

The AGQ is a validated and psychometrically robust instrument³⁵ intended to measure the 4 types of student achievement goals and contained 12 items. Students rated each item on a 1 to 7 scale (1 = not at all true of me, 7 = very true of me).

The build-a-teacher task is a validated and commonly used instrument for measuring teacher qualities.³³ It contains a list of 9 widely valued teacher qualities. The task required students to design their ideal teacher by "buying" qualities with a limited budget. The purchasing scale ranged from \$0 to \$10. This method encouraged students to carefully consider their choices as the more they spent on one quality the less money was left to spend on other qualities.^{33,36}

The study was initiated in the first semester of the academic year. Students were invited to participate in the study during normal lectures or tutorials (small group discussions). They were advised that participation was

voluntary, and if they chose to participate, they could withdraw from the study at any time. In addition, students were advised that their decision to participate would not impact on their academic performance results or influence student-teacher relationships. Researchers approached students as a group and not individually. The first author administered the survey instrument.

Students completed the survey in paper form. For the build-a-teacher task, students were given a hypothetical \$20 budget to purchase the 9 teachers' qualities. The written instructions explained that the maximum amount of money students could spend on any 1 quality was \$10. Students were asked to spend their full budget in a way that reflected their preferences. Completing the task took approximately 20 minutes.

SPSS 21 (SPSS Inc, Chicago, Illinois) was used for all statistical analyses. Descriptive statistics regarding gender and age were reported. A split-plot ANOVA design (SPANOVA), with academic year as the between-subjects factor and teacher qualities as the within-subjects factor, was used to investigate the impact of academic year upon student preferences for teacher qualities and to compare student responses to the 9 different teacher qualities.³⁷ If the sphericity assumption was violated, the Huynh-Feldt degrees of freedom were reported. Bonferroni correction was performed as needed. A multiple regression analysis procedure was performed to assess the effect of each achievement goal type on student spending on teacher qualities.

Conduct of this study was approved by the Human Research Ethics Committee, The University of Sydney.

RESULTS

Three hundred sixty-six students (235 female, 128 male, and 3 who preferred not to reveal their gender) participated in this study. The mean age of the students was 21.3 years (standard deviation=2.7 years). The survey yielded a response rate of 73.2%.

The Mauchly test indicated that the assumption of sphericity had been violated ($p<0.05$), therefore, degrees of freedom were corrected using Huynh-Feldt estimates of sphericity. A SPANOVA test revealed no significant impact of academic year on student preferences for teacher qualities ($p=0.66$). However, there were significant differences between teacher qualities that students prefer in that the test showed students prioritized some qualities over others ($p<0.01$). Students' most preferred quality was enthusiasm/entertaining (mean $\pm$ SD, 3.1 ± 2.2), followed closely by topic expertise, clear presentation style, and clarity about how to succeed. They considered reasonable workload (mean $\pm$ SD, 1.6 ± 1.6) and interactive teaching style (mean $\pm$ SD, 1.6 ± 1.5)

the least essential (Table 1). The effect comparing the 2 academic years was not significant ($p=0.23$), suggesting no difference between the 2 academic years. Bonferroni pairwise comparisons were performed and the variables were placed in groups where there were no significant differences. No significant differences were found among the qualities of enthusiasm, topic expertise and clear presentation style. However, these qualities did significantly differ in mean scores from other teacher qualities such as good feedback, intellectually challenging, warm/compassionate personality, reasonable workload, and interactive teaching style.

Multiple regression was performed to assess the impact of the different types of achievement goals on the 9 teacher qualities. The model contained 4 independent variables (performance-approach, mastery-approach, performance-avoidance and mastery-avoidance goals). The relationships between students' achievement goals and the teacher qualities they preferred were determined by any significant relationship between a goal and the money spent on a teacher quality.

As shown in Table 2, the more students pursued mastery-avoidance goals, the less they spent on the teacher quality of enthusiasm ($p=0.03$). Furthermore, the more students pursued performance-avoidance goals, the less they wanted their teacher to challenge them intellectually ($p=0.01$). In addition, the more students pursued performance-approach goals, the less they spent on the quality of warm/compassionate personality ($p=0.01$).

DISCUSSION

This study tried to answer 3 important questions: What teacher qualities do students most prefer? To what extent do mastery- and performance-approach goals influence student preferences for teacher qualities? To what extent do mastery- and performance-

Table 1. Pharmacy Students' Ratings of Desirable Teacher Qualities

Teachers' Qualities	Mean (SD)
Enthusiastic/entertaining	3.1 ^a (2.2)
Topic expertise	3.1 ^a (2.0)
Clear presentation style	2.8 ^{a,b} (2.2)
Clear about how to succeed	2.4 ^b (2.0)
Good feedback	1.9 ^c (1.7)
Intellectually challenging	1.8 ^c (1.7)
Warm/compassionate personality	1.7 ^c (1.7)
Reasonable workload	1.6 ^c (1.6)
Interactive teaching style	1.6 ^c (1.5)

Note: Qualities that do not share the same superscript are significantly different using Bonferroni correction at the 0.05 level.

Table 2. Regression Analyses (*p*-value) of Goal Type with Teacher Quality

Teachers' Qualities	M-AP ^a	M-AV ^b	P-AP ^c	P-AV ^d
Enthusiastic/entertaining	0.16	0.03	0.14	0.06
Intellectually challenging	0.46	0.28	0.76	0.01
Topic expertise	0.06	0.96	0.27	0.53
Clear about how to succeed	0.76	0.76	0.09	0.06
Clear presentation style	0.07	0.39	0.96	0.63
Reasonable workload	0.19	0.05	0.76	0.08
Interactive teaching style	0.37	0.18	0.83	0.20
Warm/compassionate personality	0.73	0.36	0.01	0.98
Good feedback	0.21	0.71	0.18	0.53

The overall model is significant at $p < 0.05$ according to ANOVA results.

^a M-AP: Mastery-approach goal

^b M-AV: Mastery-avoidance goal

^c P-AP: Performance-approach goal

^d P-AV: Performance-avoidance goal

avoidance goals influence student preferences for teacher qualities? To answer all of these questions precisely, we used a budget methodology specifically designed to differentiate between essential and nonessential teacher qualities³³ and a validated measure of achievement motivation.³⁵

That the enthusiasm quality emerged as one of the most preferred teacher qualities was not a surprise to us. A qualitative study conducted by Alrakaf and colleagues to investigate undergraduate pharmacy students' preferences for teaching indicated, without prompting, that students highly value this quality.³⁸ Interestingly, the bottom ranked quality was interactive teaching style, which is viewed by many scholars as highly valued by students and beneficial in terms of academic achievements.³⁹⁻⁴¹

A closer look at the teacher qualities students preferred revealed that on the whole, the highly valued qualities were those that reflected teacher engagement with the learning process where the emphasis was on the level of teacher commitment to the task of optimizing student learning and achievement. The least-valued qualities, on the other hand, were those that reflected student engagement with the learning process, where the emphasis was on student commitment to optimizing their own learning and achievement. Take for example, the low ranking for the teacher quality "intellectually challenging." This quality requires student commitment to learning and an ability to perform self-directed learning tasks. These results were supported by the findings of our previous work regarding our pharmacy students' approaches to learning, in which students demonstrated being dependent upon and valuing external sources of support and found self-directed learning approaches challenging. Our previous research showed

both cross-sectionally and longitudinally that pharmacy students preferred to learn through dependence on teacher-sourced strategies rather than self-sourced strategies, and that deep processing and critical thinking were not routinely favored by students.^{34,42}

The low ranking that the quality of having an interactive teaching style received may have resulted from the introduction of the online-recorded lecture system, which enables academics to record lectures and make them available to students electronically. Although all other pharmacy classes (workshops, tutorials, and laboratories) are face to face, no attendance is required at recorded lectures. Thus, students may have felt that having a teacher with an interactive teaching style was not as essential as in the past. The ability to use Internet sites such as YouTube as a source for information may also explain why students considered interactive teaching style the least essential teacher quality. The use of Internet technology is a defining feature of this generation of students, because they are the first generation to have had the Internet as a part of their lives from birth.^{43,44}

Our findings in relation to our first aim supported those that Senko and colleagues found in their study,³³ yet regarding the second aim, our results were quite different. In contrast to Senko and colleagues' results, the only significant relationship we found was a negative one between performance-approach goals and buying the teacher quality of a warm personality. Students who more strongly pursued performance-approach goals were less likely to prefer a warm and compassionate teacher. This result might be attributed to the competitive nature of performance-approach-oriented students who tend to affirm their competence by outperforming their peers. Evidence suggests that warm and compassionate teachers may be willing to take into account the circumstances of struggling students and give preferential treatment with respect to grades.⁴⁵

Our study expanded upon previous research by examining the impact of mastery- and performance-avoidance goals,³³ showing that they had significant negative relationships with the enthusiasm and intellectually challenging teacher qualities, respectively. This indicated that the more strongly students adopted mastery- and performance-avoidance goals, the less necessary it was that their teachers be enthusiastic or challenge them intellectually. These findings could be attributed to the specific motivational characteristics of students who adopted the avoidance types of goals. Fear of facing shame, being embarrassed, and/or being criticized by teachers have been highly linked to students who pursue these goals.⁴⁶ The aim of students who adopt the mastery-avoidance goal is to avoid not understanding the course materials

thoroughly, so a teacher who uses humor and anecdotes might be seen as a distraction from this effort. Also, an intellectually challenging teacher may inadvertently create an intimidating environment for students who pursue a performance-avoidance goal as these students tend to be afraid of being criticized and appearing untalented in front of the teacher and their peers. Furthermore, students who adopt either type of avoidance goals perceive challenging activities as a threat to their self-esteem.⁴⁷

Using a pharmacy cohort from only one institution is a limitation for this study. However, the faculty of pharmacy where the study was conducted is the only school in Sydney that offers a bachelor's degree in Pharmacy. In order to generalize these results, a national study of Australian pharmacy students would be a good next step, as well as a multinational study on pharmacy students. The strengths of the study are that we used 2 validated measuring instruments and a unique and engaging method of determining student preferences for teacher qualities.

CONCLUSION

Pharmacy students value a range of teacher qualities that are stimulating and promote achievement rather than deep thinking. Students' engagement with learning is characterized by a preference for teacher-focused strategies rather than self-focused strategies. In keeping with this approach to learning, students who adopt avoidance-type achievement goals value least of all those teacher qualities that promote self-directed learning. These findings highlight the nexus between teaching and learning and can be used in the development of learning, teaching, and assessment strategies that optimize topic mastery, critical thinking, and academic achievement.

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