RESEARCH ARTICLES

Effect of Dispositional Traits on Pharmacy Students' Attitude Toward Cheating

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Objective. To explore the relation between dispositional traits and pharmacy students' attitudes toward cheating in a university setting.

Methods. A questionnaire was administered primarily to pharmacy students at a comprehensive university in the southeastern United States to assess self-esteem, self-efficacy, idealism, relativism, student attitudes toward cheating, tolerance for peer cheating, detachment from the university, Machiavellian behavior, and demographic information.

Results. Gender, degree of idealism, relativism, and Machiavellian traits were found to influence student attitudes toward cheating, while age, grade-point average (GPA), race, income, and marital status did not.

Conclusions. Considered collectively, these data support the study model prediction that the major determinants of student attitudes toward cheating are based on the degree of idealism and relativism evident in the students' dispositional trait. Idealism was found to be inversely related to the likelihood of a student engaging in cheating or tolerating peer cheating.

Keywords: ethics, cheating, attitudes, behavior, pharmacy students

INTRODUCTION

Cheating occurs at all academic levels and many students accept academic dishonesty as normal.^{1,2} The surge in cheating seems to have been exacerbated by the proliferation of technology, erosion of ethics and accountability in society, and the ever-increasing stakes associated with attaining an education. Retention or failure to progress in a program often has a negative impact on the students' immediate financial well-being as a result of scholarship loss or initiation of student loan repayment.³⁻⁶ Given the numerous incentives, cheating occurs across disciplines and beyond college into diverse professions.⁷⁻¹²

Several studies suggest that cheating is prevalent and steadily increasing in health disciplines that place significant emphasis on high ethical standards, integrity, and professionalism, such as medicine, dentistry, pharmacy, and nursing.^{7,12-16} Baldwin and colleagues reported that 39% of medical student respondents witnessed some type of cheating among classmates during the first 2 years of

their medical education, 67% had heard about cheating, and 5% admitted cheating during medical school.¹⁷ In a survey of 253 baccalaureate and associate-degree nursing students, 61% to 94% of students had witnessed peer cheating, while 8% to 39% had cheated themselves.¹⁸ In pharmacy colleges and schools, a similar trend of academic dishonesty also has become prevalent, where as many as 80% of students admit cheating or witnessing cheating while attending pharmacy school.¹⁹⁻²¹

Numerous studies cataloging cheating behavior consistently report that predictors of student cheating include opportunity to cheat, academic standing, life experiences, being male, and institutional setting. However, few studies have described the behavioral characteristics, attitudes, and external factors that explicitly lead to academic dishonesty among pharmacy students or focused on the correlation between certain dispositional traits and the likelihood of risky cheating behavior.

Those who cheat as students are more prone to participate in unethical activities as professionals in clinical and workplace settings.²⁻²³ Given the increasing number of pharmacy colleges and schools and the growing interest in pursuing pharmacy degrees, individuals with varying dispositional traits will be admitted to pharmacy programs

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and ultimately become practicing pharmacists. Dispositional traits are defined as those internal characteristics which govern how individuals behave. Thus, it is imperative to identify personality types and attitudes associated with cheating so that appropriate interventions can be developed to counteract unethical behavior and maintain the integrity and standards of the profession.

This study explored the perceptions and behavior of pharmacy students based on individual, interpersonal, and institutional variables. Specifically, it examined whether the absence or presence of certain traits affects student propensity to participate in academic dishonesty, including Machiavellianism, self-efficacy, self-esteem, and lifestyle orientations, such as idealism (the absolute adherence to ethical or honorable principles as the standard regardless of circumstances), and relativism (ability to rationalize that a potential unethical action may be appropriate if it produces a positive outcome for the person).

These variables were included based on previous observations in a population of primarily business students that those who displayed fewer traits of idealism were more accepting of peer cheating,⁸ and that higher levels of Machiavellianism, defined as the need to develop and defend one's power and success, were associated with higher levels of relativism (pragmatism) and lower levels of idealism.⁸

The study model was designed to answer the following research questions:

- (1) Will self-esteem, self-efficacy, Machiavellianism, tolerance for peer cheating, detachment from the university, grade point average, and annual income influence idealism?
- (2) Will self-esteem, self-efficacy, Machiavellianism, tolerance for peer cheating, detachment from the university, grade point average, and annual income influence relativism?
- (3) Will self-esteem, self-efficacy, Machiavellianism, tolerance for peer cheating, detachment from the university, grade point average, and annual income influence student attitudes toward cheating?
- (4) Will idealism and relativism influence student attitudes toward cheating such that (a) idealism will be positively associated with student attitude toward cheating and (b) relativism will be negatively associated with student attitudes toward cheating?
- (5) Are there gender differences that suggest that males have higher levels of Machiavellianism and relativism and are more likely to condone cheating behavior than females?

METHOD

Participants and Procedures

The survey instrument was administered during class times to pharmacy students at a comprehensive university in the southeastern United States. The instrument contained items designed to assess self-esteem, self-efficacy, Machiavellian behavior, tolerance for peer pressure, detachment from the university, income, idealism, relativism, student attitudes toward cheating, and demographic information, such as gender classification, age, ethnicity, and GPA. Prior to its inception, the study was approved by Hampton University's institutional review board. The survey instrument took approximately 15 minutes to complete. All research participants were volunteers who were offered extra credit as an incentive to participate.

Of the 393 questionnaires distributed, 393 participants responded, for a response rate of 100%. Participants in this study varied with respect to age, ethnicity, and educational level. Thirty-eight percent were male and 62% were female. Approximately 94% were between 17 and 29 years of age, 5% were between 30 and 39 years, and 1% were over 40 years. Approximately 80% were African-American, 3% Caucasian, 2.6% Hispanic, 2.8% Asian, and 4% other. Approximately 7% were married and 93% were not married. Thirty-four percent had only a high school education, 47% had some college education, 10% had a bachelor's degree, and almost 8% had completed a graduate degree. Almost 99% were full-time students and 1.5% were part-time. Approximately 59% were unemployed and the remaining students were employed full or part-time.

Measures

The following constructs were used to develop and test the hypothesized model shown in Figure 1. Unless stated otherwise, we used a 5-point Likert scale response format for the survey instrument, with response options ranging from 1 = strongly disagree to 5 = strongly agree. A 22-item instrument was used to assess student attitudes toward cheating.^{8,23} Response options ranged from "strongly believe that it is not wrong" (1) to "strongly believe that it is wrong" (5). The Cronbach alpha for the scale was 0.92. A 17-item instrument was used to measure idealism (8 items) and relativism (9 items).⁸ The alphas for idealism and relativism were 0.87 and 0.80, respectively. A 17-item instrument was used to assess self-efficacy; and a 4-point, 10-item Rosenberg instrument was employed to measure self-esteem.^{8,23,24} The alphas were 0.86 and 0.84, respectively. The degree of Machiavellianism in respondents was assessed using a 5-point, 20-item measure with an alpha of 0.77.⁸ Three-point instruments developed by Dr. Ulysses J. Brown, III, were used to measure

tolerance for peer cheating and to assess detachment from the university. The alpha values were 0.75 and 0.76. Self-reported student demographic information included age, estimated annual income, gender, overall GPA, and employment status.

Analysis

The hypothesized student attitude toward cheating model presented in Figure 1 was evaluated using SEM and the LISREL (Scientific Software International, Inc., Lincolnwood, IL) computer program, as described previously.⁸ SEM's major strength is that it permits the simultaneous testing and estimation of multiple dependent and independent relationships among theoretical constructs. The covariance matrix was used as the input for all models, and the maximum likelihood estimation procedure was employed to produce model parameters. Measures of absolute and incremental fit were used to determine how well the data fit the hypothesized model.⁸

RESULTS

The means, standard deviations, reliability estimates, and zero-order correlations are presented in Table 1.

Common-Method Variance Tests

Because all constructs in this study were based on self-report measures, Harman's One-Factor Test was performed to determine whether common-method variance was a serious issue in this study.²⁵ All survey items were

entered together into an unrotated factor analysis and the results examined. If substantial common method variance were present, either a single factor would emerge or one general factor would account for most of the total variance explained in the items.²⁵ After entering all items into the factor analysis model, 31 factors emerged from the analysis, the first of which accounted for only 12.5% of the total variance. No general factor emerged from the analysis. Thus, common method variance was deemed not to be a serious issue in this study.

Model Fit Indicators

We used the following indices to assess the fit of the nomological network developed in Figure 1. The goodness-of-fit index (GFI), which ranges from 0 to 1, measures absolute fit of the model by comparing the fitted model with the actual data. For values greater than 0.9, the model fit the data well.⁸

The absolute-fit measures, maximum likelihood ratio chi-square statistic, associated *P*, and GFI collectively provide a measure of the extent to which the covariance matrix estimated by the hypothesized model reproduces the observed covariance matrix.⁸ The root mean square error of approximation (RMSEA) was also considered, as it provides an estimate of the measurement error. The Non-Normed Fit Index (NNFI), or Tucker-Lewis Index (TLI), which assesses a penalty for adding parameters to the model, was used to assess model fit.⁸ The Normed Fit Index (NFI) provides information about how much better

Figure 1. Hypothesized model.

Table 1. Means, Standard Deviations, Reliability Estimates and Zero-Order Correlations

Variable	Mean(SD)	1	2	3	4	5	6	7	8	9
Idealism	37.3 (6.6)									
Relativism	34.2 (6.1)	0.23 ^a								
Student attitude toward cheating	80.0 (15.2)	0.21 ^a	0.01							
Self-esteem	34.9 (5.3)	0.24 ^a	0.04	-0.02						
General self-efficacy	66.6 (10.8)	0.33 ^a	0.08	0.04	0.6 ^a					
Annual income	12620 (15365)	0.02	-0.01	0.03	0.05	-0.01				
Machiavellian	59.4(8.1)	-0.25 ^a	-0.31 ^a	-0.2 ^a	0.1	0.08	0.09			
Tolerance for cheating	7.5(2.5)	-0.21 ^a	0.13 ^b	-0.17 ^a	-0.21 ^a	-0.29 ^a	-0.07	-0.06		
Detachment from the university	5.7(2.6)	-0.16 ^a	0.03	-0.02	-0.27 ^a	-0.25 ^a	0.01	-13.0 ^a	0.24 ^a	
Overall grade point average	3.2(0.4)	0.04	-0.01	0.02	0.06	0.06	0.03	-0.03	-0.05	-0.05

n=393

^a $P \leq 0.01$

^b $P \leq 0.05$

the study model fits than does a baseline model, rather than as a sole function of the difference between the reproduced and observed covariance matrices.²⁶ The Comparative Fit Index (CFI), which is least affected by sample size and has attributes similar to those of the NFI, compares the predicted covariance matrix to the observed covariance matrix.

Test of the Model

The 2-step approach to structural equation modeling was employed to test the model.⁸ After the measurement model was inspected for fit and established as satisfactory for fit indices, structural coefficients were interpreted.

Measurement Model. The measurement model had acceptable fit indices ($\chi^2 = 13.045(7)$, $P = 0.071$, RMSEA = 0.042, GFI = 0.994, NFI = 0.975, CFI = 0.986). That is, the chi-square statistic was at its minimum, and the P was nonsignificant. The GFI was above its recommended threshold level of 0.90, and RMSEA was less than 0.08, indicative of an acceptable model. The chi-square statistic divided by the degrees-of-freedom coefficient was less than 3, indicating an acceptable model fit.^{8,25} The CFI, NFI, and NNFI also indicated an acceptable fit of the model to the data.

Interpretation of Structural Equation Model. Table 2 presents the structural coefficients for the overall model. Idealism, relativism, and student attitude toward cheating were the 3 endogenous variables in our study. Self-efficacy, Machiavellian behavior, tolerance for peer cheating, and detachment from the university significantly influenced idealism in our model, in part establishing

support for research question 1. However, self-esteem, income, and GPA were not significant predictors of idealism. The paths from self-efficacy to relativism, Machiavellian behavior to relativism, and tolerance for peer cheating to relativism were all significant, indicating support for research question 2. Neither self-esteem, income, detachment from the university, nor GPA predicted relativism. Machiavellian behavior, tolerance for peer cheating, and idealism influenced student attitudes toward cheating in our model, establishing support for research question 3. However, self-efficacy, self-esteem, income, detachment from the university, GPA, and relativism were not significant predictors of student attitudes toward cheating. The path from idealism to student attitude toward cheating was significant, indicating support for research question 4, whereas the path from relativism to student attitude toward cheating was not significant.

Gender Differences. The gender model, which had acceptable fit of the model to the data, warrants interpretation ($\chi^2=38.2$ (18), $P=0.679$, RMSEA=0.034, GFI=0.996, CFI=1.0). Table 3 displays structural coefficients observed across the hypothesized gender model, providing support for research question 5, which queried potential gender differences. Gender was the only demographic that influenced dispositional traits. For female respondents, self-efficacy, Machiavellian behavior, and detachment from the university predicted idealism, while self-efficacy, Machiavellian behavior, and tolerance for peer cheating predicted idealism for male students.

In the female model, Machiavellian behavior and tolerance for peer cheating influenced relativism. In

Table 2. Student Attitude Toward Cheating Baseline Model^a

Parameter	Path Coefficient	R ² ^b
Idealism ^b		
Self-esteem	0.08 ^c	21.2
Self-efficacy	0.16	
Income	0.01	
Machiavellianism	-0.24 ^c	
Tolerance for Peer Cheating	-0.32 ^c	
Detachment from University	-0.22 ^c	
Grade Point Average	0.12	
Relativism ^b		
Self-esteem	0.01	13.2
Self-efficacy	0.08 ^c	
Income	0.01	
Machiavellianism	-0.24 ^c	
Tolerance for Peer Cheating	0.38 ^c	
Detachment from University	-0.04	
Grade Point Average	-0.33	
SATC ^b		
Self-esteem	-0.19	10.1
Self-efficacy	0.01	
Income	0.01	
Machiavellianism	-0.35 ^c	
Tolerance for Peer Cheating	-0.92 ^c	
Detachment from University	-0.01	
Grade Point Average	0.29	
Idealism	0.35 ^c	
Relativism	-0.16	

Abbreviations: SATC = student attitude toward cheating.

^a Statistics are based on a sample of 393 respondents.

^b These are the endogenous variables in the model; the exogenous variables are listed underneath.

^c $P < 0.05$, based on t values.

contrast, self-efficacy and Machiavellian behavior both predicted relativism in the male model. Idealism was the only significant predictor of student attitudes toward cheating for female students. That is, female students reporting a higher level of idealism were more likely to have high personal values with respect to their attitudes toward cheating. In contrast, Machiavellian behavior and tolerance for peer cheating both influenced male student attitudes toward cheating. That is, male students who reported high levels of Machiavellianism and high

tolerance for peer cheating also were likely to have lower personal values with respect to their attitudes toward cheating.

Using a one-way ANOVA with gender as the factor variable and including all variables used in this study, post-hoc analyses revealed that differences exist across self-efficacy, idealism, and detachment from the university. In a comparison of genders, female students reported significantly higher idealism scores while male students reported significantly higher relativism scores and greater detachment from the university.

DISCUSSION

Empirical evidence supports our claim that dispositional traits influence idealism, relativism, and student attitudes toward cheating and that reported scores reflect gender differences. The maintenance of academic integrity among pharmacy students is important because pharmacy school is the training ground that prepares students to be ethical pharmacists. When compared to other majors, such as business and engineering, there is a relative dearth of empirical information regarding pharmacy students, their perception of academic dishonesty, as well as the dispositional traits that may influence cheating behaviors. The aim of this study was to explore the perceptions and behavior of pharmacy students using variables at the individual, interpersonal, and institutional levels. Specifically, the current project investigated the antecedents of idealism, relativism, and tolerance for peer cheating on student attitudes toward cheating.

The research questions in the current study are based on a contextual model and predict that certain parameters will negatively or positively influence student attitudes toward cheating.⁸ Using structural equation modeling to address our research questions, we found that the dispositional constructs predicted levels of idealism and relativism on student attitudes toward cheating. Age, GPA, race, income, and marital status had no effect on student attitudes toward cheating or on tolerance for peer cheating. Only gender, idealism, and relativism had an influence. There was a positive correlation between tolerance of peer cheating and relativism. Relativistic students believe that moral actions depend on the nature of the situation and the individuals involved. Thus, their judgment of others is based more on circumstances than the ethical principle that was violated.²⁷ Relativistic students tend to be highly pragmatic and may view cheating as a possible last resort that is preferable to the alternative of failing a test, assignment, or course.

Contrary to relativism, higher levels of idealism were negatively correlated with tolerance for peer cheating. These data are consistent with those of previous studies

Table 3. Unstandardized Values by Gender for the Student Attitude Toward Cheating Model^a

Parameter	Path Coefficient		R(%) ^b	
	Females ^c	Males ^c	Females	Males
Idealism ^b			22.6	32.6
Self-esteem	0.07 (0.865)	-0.01 (-0.69)		
Self-efficacy	0.14 (3.36) ^d	0.16 (2.571) ^d		
Income	-0.01 (-0.266)	0.01 (1.633)		
Machiavellianism	-0.22 (-4.202) ^d	-0.19 (-3.467) ^d		
Tolerance for Peer Cheating	-0.12 (-0.765)	-0.68 (-3.394) ^d		
Detachment from University	-0.36 (-2.168) ^d	0.04 (0.196)		
Grade Point Average	0.07 (1.157)	0.65 (0.518)		
Relativism ^b			17.8	15.0
Self-esteem	-0.03 (-0.305)	0.01 (0.018)		
Self-efficacy	0.03 (0.697)	0.17 (2.936) ^d		
Income	-0.01 (-0.094)	0.01 (1.536)		
Machiavellianism	-0.32 (-6.459) ^d	-0.18 (-3.477) ^d		
Tolerance for Peer Cheating	0.5 (3.255) ^d	0.24 (1.29)		
Detachment from University	-0.18 (-1.107)	-0.07 (-0.419)		
Grade Point Average	-0.73 (-0.687)	0.03 (0.021)		
SATC ^b			7.2	19.2
Self-esteem	-0.15 (-0.739)	-0.44 (-1.368)		
Self-efficacy	-0.02 (-0.223)	0.16 (0.926)		
Income	-0.01 (-0.360)	0.02 (1.825)		
Machiavellianism	-0.19 (-1.419)	-0.54 (-3.414) ^d		
Tolerance for Peer Cheating	-0.57 (-1.536)	-1.51 (-2.732) ^d		
Detachment from University	-0.29 (-0.724)	0.39 (0.831)		
Grade Point Average	0.22 (1.641)	-4.33 (-1.298)		
Idealism	0.36 (2.315) ^d	0.21 (0.966)		
Relativism	-0.12 (-0.771)	-0.15 (-0.621)		

Abbreviations: SATC = student attitude toward cheating.

^a Statistics are based on a sample of 393 respondents (Female, n=243, Males, n=150)

^b These are the endogenous variables in the model; the exogenous variables are listed underneath

^c T-values are in parentheses directly after the path coefficients

^d $P < 0.05$

showing that higher levels of idealism are associated with higher ethical beliefs and decision-making.²⁷ A comparison of students categorized as having higher levels of idealism and relativism were remarkably similar in that both were correlated with high levels of self-efficacy, but surprisingly, inversely associated with Machiavellian traits.

Other factors influencing students attitudes toward cheating include tolerance for peer cheating, self-esteem, and self-efficacy.²⁸⁻³⁰ Our findings, in part, support those of other studies, which suggest that students with poor academic success, lower intelligence, poor understanding of the instructional material, and a lack of confidence in their ability to perform required tasks (lower self-efficacy) were more likely to cheat.^{8,9,31}

As with previous works, we also found gender differences. Male students were more likely to tolerate cheating behavior in their peers, which may suggest that they are more likely to engage in academic dishonesty. Male students who were tolerant of peer cheating had more Machiavellian traits, which suggest moral flexibility. This finding supports the work of other researchers who have identified a negative correlation between Machiavellianism and moral reasoning.^{32,33} This finding suggests that male behavior may be performance driven and reflective of societal upbringing and expectations in that male adults are encouraged to engage in more aggressive and risk-taking behavior and to attain higher levels of academic and career performance. Among female students, only idealism significantly predicted their attitudes toward

cheating. Female students who reported higher levels of idealism also were more likely to have high personal values with respect to cheating.

Finally, because there are some indications that institutional setting may contribute to cheating behavior, this study examined whether detachment (or alienation) from the university influences tolerance toward peer cheating or student attitudes toward cheating. Institutional factors examined include class size, attitude of the professor toward cheating, types of assessments used, institution size, degree of punishment for students caught cheating, institutional definitions of cheating, and student "connectedness" to the institution.^{8-9,34} Detachment from the university was positively correlated to higher tolerance for peer cheating. These findings are corroborated by Ashworth and colleagues who reported that master's degree students who did not feel closely connected to their respective institutions often cited alienation as the reason for facilitating and excusing unethical behavior.³⁵

The current research has some limitations. The cross-sectional design of the study does not allow for causal inferences, and longitudinal designs are needed to examine the behavior of these constructs over time. Student self-reporting is a potential methodology weakness, as the self-reported GPAs of students who cheat may be unreliable or skewed in a way that other students' self-reported grades are not. Common method bias and inflated predictive relationships is another possible limitation associated with this study's use of self-report measures. However, using Harman's one-factor test did not indicate that common method variance was problematic in the structural equation model.²⁵

Future areas of inquiry for this type of research would be to compare and contrast robust samples of minority group members and to compare the responses of pharmacy students who enter with and without bachelor's degrees. It would also be interesting to examine this model with respect to working and nonworking students in the pharmacy program and to measure these variables longitudinally. These additional measures could be useful in identifying the types of training strategies that would be most likely to deter or decrease cheating in pharmacy school and beyond.

CONCLUSION

This study explored multiple characteristics of self-esteem, self-efficacy, Machiavellianism, tolerance for peer cheating, detachment from the university, overall GPA, and income in pharmacy students. Using structural equation modeling, we investigated the antecedents of idealism, relativism and student attitude toward cheating using a structural equation modeling framework. Dispositional constructs influence the endogenous variables

and gender differences exist with respect to idealism and relativism as well as to peer tolerance for peer cheating. Our examination of the antecedents of student attitude toward cheating, idealism, and relativism in pharmacy students contributes to the existing body of knowledge about cheating behavior. Another contribution of the current research is the large percentage of African-Americans in the study sample, which adds to the richness of the existing literature. Analyses of diverse samples may provide additional insight into respondent behavior that may be useful to the administration, staff and faculty, at institutions of higher learning and may increase "generalizability" of the results. With the growing number of students seeking pharmacy careers, it is increasingly important to examine the propensity toward academic dishonesty and to consider strategies that would decrease the incidence of cheating in both school and workplace. Future research should focus on effective strategies, such as student honor codes that are appropriately implemented and overseen by institutional faculty members and administrators.

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