STUDIA UNIVERSITATIS BABEȘ-BOLYAI OECONOMICA
VOLUME 69, ISSUE 3, 2024, pp. 56-72
DOI: 10.2478/subboec-2024-00015

EXPLORING THE LINK BETWEEN ROMANIAN ACCOUNTING STUDENTS' GOAL ORIENTATIONS, SELF-EFFICACY, TEST ANXIETY AND PERFORMANCE: A CLUSTER ANALYSIS APPROACH

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Abstract: This empirical study examines the relationship between learning motivation, self-efficacy, test anxiety, and academic performance in the context of a Financial Accounting course, using Achievement Goal Theory (AGT) as a framework. A sample of 149 second-year students enrolled in the Accounting and Management Information Systems program completed a questionnaire based on the Motivated Strategies for Learning Questionnaire (MSLQ). The data were analyzed using correlation, cluster analysis, and ANCOVA. The results confirmed significant differences between four motivational profiles: mastery, performance, multiple goals, and low motivation, regarding their impact on self-efficacy, test anxiety, and performance. The findings suggest that students with multiple goals achieve better academic outcomes, emphasizing the importance of a multidimensional approach to learning motivation.

JEL classification: A22, I23, M41.

Keywords: financial accounting education; learning motivation; self-efficacy; test anxiety; academic performance; Achievement Goal Theory.

1. Introduction

The relationship between student motivation, academic performance, and emotional well-being has been extensively explored in educational psychology. Understanding the factors that influence academic success is particularly critical in higher education, where students encounter increasingly complex academic demands. In this context, Achievement Goal Theory (AGT) provides a valuable framework for examining how different types of learning motivation influence academic outcomes.

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Over time, several theories have been developed to explain learning motivation, but three are internationally recognized as the most representative: Self-Determination Theory, Attributional Theory, and Achievement Goal Theory. The latter, AGT, is central to the present study and has been the foundation of numerous scientific investigations aimed at describing and explaining achievement behavior (Dull et al., 2015).

In accounting education, where the curriculum requires advanced problem-solving skills and high levels of technical proficiency, the distinction between mastery and performance goals becomes particularly salient. Mastery-oriented students are more likely to engage in deep learning strategies, focusing on understanding the material and improving their skills. In contrast, performance-oriented students tend to prioritize high grades or outperforming peers, often at the expense of thorough comprehension. This divergence in learning approaches can significantly impact students' academic achievements, self-efficacy, and test anxiety.

As the importance of fostering effective learning strategies in accounting education grows, it becomes crucial to understand how different goal orientations—mastery and performance—affect students' self-efficacy, test anxiety, and performance outcomes. By examining these relationships, educators can design more effective interventions that enhance student motivation, reduce anxiety, and ultimately improve academic achievement.

The literature highlights that understanding how students are motivated, and structuring courses to positively influence student motivation, can significantly enhance student engagement and learning. As Svinicki and McKeachie (2014) suggest, the reasons why students vary in their motivation is a compelling question, and several theoretical frameworks offer valuable insights. The present study builds on this existing knowledge by exploring the less-researched area of accounting education.

This study examines the relationships between learning motivation, self-efficacy, test anxiety, and academic performance using a sample of 149 second-year students enrolled in the Accounting and Management Information Systems program at Babeș-Bolyai University. By conducting a comprehensive analysis of students' motivational profiles, this research aims to provide new insights into the impact of mastery and performance goals on academic outcomes within a financial accounting course.

In this study, the same instrument employed by Dull et al. (2015) was applied to a new cohort of accounting students at the Faculty of Economics and Business Administration, Babeș-Bolyai University. The objective is to evaluate the relevance and applicability of previous findings in a different academic and cultural context, offering further insights into the influence of goal orientation on academic performance in accounting.

Based on these considerations, we formulated the following research question: What are the academic learning motivations in Romania within the field of accounting, and how do they influence student outcomes?

2. Literature Review

2.1 Achievement Goal Theory

Achievement Goal Theory (AGT) rapidly emerged as one of the most prominent frameworks in motivation research following its introduction in the early 1980s (Urdan and Kaplan, 2020). Four scholars, Carole Ames, Carol Dweck, Martin Maehr, and John Nicholls, are widely credited with developing AGT. Their work highlighted that students define success in different ways. Some students view success as learning, understanding, or developing new skills—an internal standard for achievement. This orientation often encourages deeper engagement with learning materials and resilience in the face of obstacles. Conversely, students who define success as outperforming others or appearing intelligent adopt an external, socially comparative standard, which can lead to shortcuts in learning, such as cheating, or avoidance of challenging tasks (Urdan and Kaplan, 2020).

AGT differentiates between two primary types of goals: mastery (learning) goals and performance goals (Nicholls, 1984; Dweck and Leggett, 1988). Mastery goals emphasize developing competence through learning and understanding, while performance goals focus on demonstrating competence relative to others. Research consistently shows that these goals have distinct implications for academic behaviors and outcomes (Harackiewicz et al., 1998; Senko et al., 2011).

Given the difficulty in shifting students away from performance-driven motivations, educators might better serve students by emphasizing mastery of knowledge rather than attempting to reduce performance goals entirely (Haynes et al., 2008; Dull et al., 2015). Ramburuth and Mladenovic (2004) further suggest that a combination of approaches, rather than a strict focus on either mastery or performance, may be optimal in fields like accounting, where both deep conceptual understanding and technical detail are essential.

In accounting education, the adoption of mastery versus performance goals significantly impacts student motivation and academic outcomes. Dull, Schleifer, and McMillan (2015) found that accounting students who adopt mastery goals exhibit higher levels of intrinsic motivation and self-efficacy, while performance-goal-oriented students tend to experience increased test anxiety, often leading to surface learning strategies that hinder long-term retention (Pintrich and DeGroot, 1990).

2.2 Key Self-Report Instruments in Achievement Goal Theory Research

Several prominent scholars in the field of AGT have developed self-report questionnaires to assess students' achievement goal orientations. These instruments have become central to AGT research, offering insights into how students' goals influence their motivation, learning behaviors, and academic outcomes. Some of the most widely used instruments include those developed by Nicholls et al. (1985), Ames and Archer (1988), Midgley et al. (2000), and Elliot and Church (1997).

Nicholls, Patashnick, and Nolen's (1985) questionnaire was among the first to distinguish between task and ego orientations, laying the groundwork for future research into how these orientations affect student motivation. Ames and Archer

(1988) designed a questionnaire rooted in Ames' theoretical model, which interprets goal orientations as processes shaped by the learning environment. Their work demonstrated how classrooms emphasizing mastery goals promote adaptive motivational patterns.

The Patterns of Adaptive Learning Scales (PALS), developed by Midgley et al. (2000), is one of the most widely used tools in AGT research, offering a comprehensive view of how achievement goals interact with the classroom environment. Elliot and Church (1997) further refined AGT with the Achievement Goals Questionnaire (AGQ), introducing the 2x2 framework that distinguishes between mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals.

The Motivated Strategies for Learning Questionnaire (MSLQ), developed by Pintrich and colleagues in the late 1980s, is another critical tool, assessing both cognitive and motivational components of student learning. The MSLQ has been instrumental in AGT research, offering a broad understanding of how students regulate their learning in response to their goals.

Four notable studies have used the MSLQ to assess accounting students' learning strategies and motivation. These include research by Opdecam et al. (2012), Becker (2013), Dull et al. (2015), and Papageorgiou (2022), each providing valuable insights into how achievement goal orientations and self-regulated learning strategies influence academic outcomes in accounting education.

2.3 Self-Efficacy and Test Anxiety

The concept of self-efficacy was introduced by Albert Bandura (1977) as part of his broader theory of social cognitive learning. Self-efficacy refers to an individual's belief in their ability to successfully perform a task or achieve a goal. Studies have consistently shown that students with high self-efficacy are more motivated to persist in challenging tasks and achieve higher academic outcomes (Zimmerman, 2000). In accounting education, where technical skills and problem-solving are critical, self-efficacy is a strong predictor of success (Hart and Wang, 2016).

Self-efficacy can be shaped by several key factors, including mastery experiences (successes achieved through effort), vicarious experiences (observing others succeed), and verbal encouragement (Miller, 2014, p. 170). As students become more confident in their abilities, they are more likely to engage in effective learning strategies, improving their academic outcomes.

On the other hand, test anxiety—often linked to performance goals—is a well-documented affective outcome. Students who focus on outperforming peers or demonstrating competence in high-stakes environments tend to experience elevated levels of test anxiety, which negatively impacts performance (Cassady and Johnson, 2002). Accounting, as a field where exams play a significant role in evaluating success, is particularly prone to this phenomenon. Research by Daniels et al. (2008) shows that interventions aimed at fostering mastery goals can help reduce test anxiety and improve academic performance in accounting courses.

2.4 Cluster Analysis in Achievement Goal Theory

In AGT research, cluster analysis is commonly used to identify different combinations of mastery and performance goals. Due to the lack of a standardized instrument to assess multiple-goal orientation, researchers often evaluate mastery and performance goals independently, subsequently merging the results through statistical methods like cluster analysis (Daniels et al., 2008).

Dull et al. (2015) applied cluster analysis in accounting education, identifying students who pursued both mastery and performance goals, termed "multiple goal" students. These students exhibited higher levels of self-efficacy and better academic outcomes than students pursuing only one type of goal. This result aligns with the wider body of educational research, highlighting the significance of employing a multidimensional framework when addressing learning motivation (Senko et al., 2011).

2.5 Research Hypotheses

Building on the theoretical insights and empirical findings from the literature, this study aims to explore the specific relationships between students' achievement goal orientations—mastery and performance—and key academic outcomes such as self-efficacy, test anxiety, and performance in the context of a financial accounting course. Given the complex demands of accounting education, where both deep conceptual understanding and high-stakes evaluations are critical, understanding how students' motivational profiles influence these outcomes is crucial for educators and researchers alike. Previous studies (Dull et al., 2015; Pintrich and DeGroot, 1990) have shown that mastery-oriented students tend to exhibit higher self-efficacy and engage in deeper learning strategies, while performance-oriented students often experience higher levels of test anxiety and adopt surface learning approaches. In this context, the following hypotheses are proposed to examine the predictive power of students' goal orientations on their academic success and emotional well-being:

H1: Students' motivational orientations toward learning serve as predictors of self-efficacy in a financial accounting course.
H2: Students' motivational orientations toward learning are related to their levels of test anxiety in a financial accounting course.
H3: Students' motivational orientations toward learning are predictive of their anticipated performance (grade) in a financial accounting course.
H4: Students' motivational orientations toward learning serve as predictors of their actual performance (grade) in a financial accounting course.

3. Research Design

The study involved 149 students (118 female and 31 male) enrolled in the second year of the Accounting and Management Information Systems program at the Faculty of Economics and Business Administration of the Babeș-Bolyai University in Cluj-Napoca. The study was undertaken after the end of the exam session related to the winter semester 2020-2021, i.e. in the 2nd week of the second semester of the academic year.

Table 1: MSLQ-based questions included in the questionnaire

Mastery goal orientation or intrinsic goal orientation
1. In a course like this, I prefer materials that really challenge me so that I can learn new things.
2. In a course like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn.
3. The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.
4. When I have the opportunity in this class, I choose assignments that I can learn even if they do not guarantee a good grade.
Performance or extrinsic goal orientation
5. Getting a good grade in this subject is the most satisfying thing for me.
6. The most important thing for me right now is to improve my overall average, so my main concern in this course is getting a good grade.
7. If possible, I want to get better grades in this subject than most other students.
8. I want to do well in this subject as it is important to show my ability/performance to my family, friends, employer or others.
Self-efficacy for learning and performance
9. I think I will get an excellent grade in this subject.
10. I am sure I can understand even the most difficult content in the material provided.
11. I am confident that I can learn the basic concepts taught in this course.
12. I am confident that I can understand the most complex material presented by the teacher in this course.
13. I am confident that I can do an excellent job on the assignments and tests in this course.
14. I expect to do well in this subject.
15. I am sure I can master the skills that are taught in this subject.
16. Considering the difficulty of this course, the teacher and my abilities, I think I will do well in this class.
Test anxiety
17. When I take a test, I think about how poorly I do compared to other students.
18. When I take a test, I think about items in other parts of the test that I cannot answer.
19. When I take tests I think about the consequences of failure.
20. I have an anxious, upset feeling when taking an exam.
21. I feel my heart beating fast when I take an exam.

The data were collected through an anonymous questionnaire posted on the faculty's Moodle educational platform (within the Financial Accounting 2 course) and were further processed in the SPSS statistical program. The questionnaire included a total of 30 questions, of which the first 21 were based on the MSLQ (Motivated Strategies for Learning Questionnaire), well established in the literature for approximately 30 years for investigating students' motivational learning strategies (Pintrich and DeGroot, 1990). These questions (Table 4) aim to measure mastery goal orientation or intrinsic goal orientation (first 4), performance orientation or extrinsic goal orientation (questions 5-8), self-efficacy regarding learning and performance achievement (questions 9-16) and test anxiety (questions 17-21).

For these questions a Likert scale from 1 to 7 was used (1 - “not at all true for me” - 7 “very true for me”). The aggregate variables for each of the four investigated aspects are given by the mean value of the answers to the questions (variables) that refer to the respective aspect, i.e. those that compose the aggregate variable. By means of factor analysis (Varimax rotation method in SPSS), the goodness-of-fit of the measurement scales of the four aggregate variables was analyzed. From the results obtained, considering the threshold of 0.6 for an item to be part of an aggregate variable, it was found that all items grouped appropriately to form the aggregate variable, except item (question) 3 which aims to measure the Mastery goal. As a result, this question was removed from the related aggregate variable in order not to distort the results obtained.

The last 9 questions of the questionnaire refer to the grades obtained/expected in the courses Basic Accounting (BA) and Financial Accounting 1 (FA1). (whole numbers from 1 to 10, except the grade in the midterm exam in Financial Accounting 1 where the values are in 0.5 point increments), the overall average at the end of the first year of study (values from 1 to 10 in 0.5 point increments), the profile of the high school graduated (Real - Mathematics, Real - Natural Sciences, Humanities, Economics) and gender. These questions (excluding the expected grade and the final grade in Financial Accounting 1) are included in the questionnaire as potential covariates in the research (to account for their possible effect on the dependent variables analyzed).

Table 2: Descriptive statistics

Variable	N	Min.	Max.	Average	Standard deviation
Mastery	149	1.33	7.00	4.7966	1.27587
Performance	149	1.00	7.00	4.4379	1.48782
Self - efficacy	149	1.00	7.00	4.5772	1.24494
Test - anxiety	149	1.00	7.00	4.1302	1.54901
Expected grade in FA 1	149	4.00	10.00	7.4228	1.62822
Final grade in FA 1	147	3.00	10.00	6.9388	1.61001
Grade for the midterm exam in FA 1	144	0.50	10.00	6.0035	2.26133
Final grade in BA	148	4.00	10.00	8.5000	1,36775
Overall average year 1	148	5.50	10.00	8.2568	1.03261

To explore the univariate relationships among all pertinent variables, correlation analysis was performed. Additionally, cluster analysis was employed to categorize students and identify their achievement goal profiles (also known as learning motivation profiles), based on variables assessing mastery and performance goals. Subsequently, ANOVA and ANCOVA were utilized to assess whether, and to what extent, the identified groups (i.e. achievement goal profiles) differed in self-efficacy, test anxiety, expected grade, and final grade in the Financial Accounting 1 course.

4. Results

4.1 Correlation analysis

The correlations between the 11 variables measured in this study are presented in Table 3. The existence in general of a significant level of correlation between the dependent variables and the covariate variables (the overall average of the first year of study, the final grade in the Basic accounting course and the grade in the midterm examination in the Financial accounting 1 course) is an argument for using them as covariate (control) variables. As for the variables high school graduation profile and gender, they show a significant correlation only with the dependent variables self-efficacy and test anxiety. Female respondents show a higher level of test anxiety (mean 4.32) than male respondents (mean 3.37).

Table 3: Matrix of correlations between variables

	Mastery	Performance	Self-efficacy	Test anxiety	Final grade in FA1	Expected grade in FA1	Midterm exam grade in FA1	Final grade BA	Overall average year 1	High school profile
Mastery										
Performance	.187*									
Self-efficacy	.546**	.379**								
Test anxiety	-.182*	.149	-.238**							
Final grade in FA1	.389**	.263**	.547**	-.153						
Expected grade in FA1	.368**	.264**	.541**	-.202*	.611**					
Midterm exam grade in FA1	.306**	.202*	.505**	-.076	.734**	.565**				
Final grade in BA	.149	.162	.321**	-.076	.535**	.522**	.425**			
Overall average year 1	.203*	.183*	.333**	-.046	.664**	.602**	.535**	.616**		
High school profile	.198*	.090	.215*	-.070	.043	.075	.184*	-.012	-.064	
Gender	.059	-.108	.128	-.268**	-.006	.057	-.002	-.052	-.189*	.205*

* Significant correlation at the 0.05 level ** Significant correlation at the 0.01 level

There is a significant ($p<0.05$) but low intensity (0.187) correlation between the variable measuring mastery goals and the variable measuring performance goals. This suggests that accounting students aiming for high grades are also driven to understand and master the subject matter (Dull et al., 2015). This positive association aligns with the notion of a multi-goal learning approach (Daniels et al., 2008).

As for the correlations between the variables measuring the mastery goals respectively the performance goals and the four dependent variables (self-efficacy, test anxiety, expected grade in FA1 and final grade in FA1), they are statistically significant, except for the correlation between the performance goals and test anxiety variables. The strongest correlation in this context is between the variable mastery goals and the variable self-efficacy (0.546).

4.2 Formatting groups (clusters)

Following the approach employed by Dull et al. (2015) and Daniels et al. (2008), clusters were generated using the standardized scores (z-scores) for the variables that measure mastery and performance goals. In SPSS, the k-means clustering technique was applied to produce a four-group/cluster solution. This method seeks to minimize variance within clusters while maximizing variability between them. Consistent with the findings of Daniels et al. (2008), the four clusters represent distinct combinations of goals. The centroid values of the clusters are presented in Table 4.

Table 4: Centroid values of groups/clusters

Type of objective	Group/Cluster 1 Multiple goals	Group/Cluster 2 Mastery	Group/Cluster 3 Performance	Group/Cluster 4 Low motivation
Mastery	0.97902	0.41573	-0.75864	-1.15762
Performance	0.85918	-0.68417	0.81830	-1.11433
N	37	50	37	25

Group/cluster 1 is referred to as ‘Multiple Goals’ due to the positive centroid values, indicating that students in this cluster exhibit above-average scores for both mastery and achievement variables. Group/cluster 2 is named ‘Mastery’ because the average score for the mastery goal (knowledge/competence) is higher than the performance goal, as reflected by the positive centroid for mastery and the negative centroid for performance. In contrast, Group/cluster 3 is labeled “Performance”, emphasizing performance as the primary goal. Group/cluster 4 is labeled as “Low motivation”, as both centroid values are negative. Thus, these four groups/clusters represent four possible combinations of students’ goal orientation or motivation profiles in the Financial Accounting discipline. The one-way ANOVA statistical test applied in SPSS showed that the four groups/clusters differed significantly ($p<0.001$) for both variables. Descriptive statistics related to the groups/clusters are presented in Table 5.

Table 5: Descriptive statistics for groups/clusters

Variable	N	Min.	Max.	Average	Standard deviation
Grup/Cluster 1 Multiple goals					
Mastery	37	5.00	7.00	6.0457	.68617
Performance	37	4.50	7.00	5.7162	.77092
Self - efficacy	37	3.50	7.00	5.6273	.90443
Test - anxiety	37	1.00	6.80	4.2973	1.64696
Expected grade in FA1	37	4.00	10.00	7.8378	1.48162
Final grade in FA1	37	4.00	10.00	8.2432	1.40249
Midterm exam grade in FA1	37	2.00	10.00	6.9730	1.87804
Final grade in Basic Accounting	37	5.00	10.00	8.7838	1.15795
Overall average year 1	36	6.50	10.00	8.5278	1.04160
Group/Cluster 2 Mastery					
Mastery	50	4.33	6.67	5.3270	.65445
Performance	50	1.00	4.50	3.4200	.92090
Self - efficacy	50	2.00	6.88	4.5776	1.14534
Test - anxiety	50	1.60	6.20	3.6480	1.43232
Expected grade in FA1	50	3.00	10.00	6.7600	1.59796
Final grade in FA1	50	4.00	10.00	7.1200	1.56022
Midterm exam grade in FA1	48	1.00	10.00	5.6458	2.54316
Final grade in Basic Accounting	50	4.00	10.00	8.2800	1.53915
Overall average year 1	50	6.00	10.00	8.1300	1.03416
Group/Cluster 3 Performance					
Mastery	37	1.33	4.67	3.8286	.76861
Performance	37	4.25	7.00	5.6554	.70551
Self - efficacy	37	2.00	5.75	4.2019	1.04752
Test - anxiety	37	1.00	7.00	4.5784	1.60540
Expected grade in FA1	35	3.00	10.00	6.8286	1.58087
Final grade in FA1	37	4.00	10.00	7.5946	1.70717
Midterm exam grade in FA1	34	2.50	9.50	6.1324	1.94356
Final grade in Basic Accounting	36	5.00	10.00	8.5556	1.38243
Overall average year 1	37	1.33	4.67	3.8286	.76861
Grup/Cluster 4 Low motivation					
Mastery	25	1.67	4.33	3.3196	.92915
Performance	25	1.75	4.25	2.7800	.67438
Self - efficacy	25	1.00	4.88	3.5776	1.02392
Test - anxiety	25	1.80	6.40	4.1840	1.35391
Expected grade in FA1	25	4.00	8.00	6.1200	1.30128
Final grade in FA1	25	5.00	9.00	6.5600	1.41657
Midterm exam grade in FA1	25	.50	8.50	5.0800	2.16833
Final grade in Basic Accounting	25	5.00	10.00	8.4400	1.26095
Overall average year 1	25	5.50	9.00	7.9400	.85781

Post hoc ANOVA and t-tests for pairwise comparisons between clusters, conducted in SPSS, indicate that each group is significantly distinct from the others, with one exception: the 'Multiple Goals' and 'Performance Goal' clusters show similarly high-performance goal scores (5.71 and 5.65, respectively). However, the 'Multiple Goals' cluster demonstrates a significantly higher mastery goal score compared to the 'Performance Goal' group.

Subsequent analyses were conducted to examine the relationship between group/cluster membership and various academic outcome variables. These analyses aimed to draw inferences about how different combinations of mastery and performance goals influence self-efficacy (a motivational outcome), test anxiety (an affective outcome), expected grade (a cognitive outcome), and final grade (a behavioral outcome) in the Financial Accounting 1 course.

4.3 Comparison of target groups/clusters with outcome variables

In order to examine the associations between group/cluster membership and the five academic outcomes measured by self-efficacy, test anxiety and expected grade and final grade, analysis of covariance (ANCOVA) was used. The ANCOVA models included the goal groups (multiple goals, knowledge mastery goal, performance goal, and low motivation) as independent variables, academic outcomes as dependent variables, and the five covariate variables discussed above (overall average in year 1 of study, final grade in the Basic accounting course and grade in the midterm exam in the Financial accounting 1 course, profile of the high school graduated, and gender) (Table 6).

Table 6: Analysis of covariance: main effects of clusters and covariate variables

	Mean Square	F	Sig.	η^2
Self-efficacy				
Cluster	13.823	16.647	.000	.273
Overall Average year 1	.215	.259	.612	.002
Midterm exam grade FA1	14.132	17.020	.000	.113
Final grade BA	1.869	2.251	.136	.017
High school profile	.005	.006	.938	.000
Gender	3.643	4.387	.038	.032
Test anxiety				
Cluster	6.630	3.152	.027	.066
Overall Average year 1	.452	.215	.644	.002
Midterm exam grade FA1	1.279	.608	.437	.005
Final grade BA	.599	.285	.595	.002
High school profile	.022	.010	.919	.000
Gender	21.641	10.288	.002	.072
Note expected				
Cluster	4.800	3.488	.018	.073
Overall Average year 1	19.693	14.310	.000	.097

	Mean Square	F	Sig.	η^2
Midterm exam grade FA1	17.579	12.773	.000	.088
Final grade BA	5.966	4.335	.039	.032
High school profile	.754	.548	.460	.004
Gender	8.488	6.168	.014	.044
Final note				
Cluster	3.991	4.727	.004	.097
Overall Average year 1	16.726	19.810	.000	.130
Midterm exam grade FA1	53.809	63.732	.000	.326
Final grade BA	3.552	4.208	.042	.031
High school profile	2.422	2.868	.093	.021
Gender	1.647	1.950	.165	.015

Finally, pairwise comparisons of clusters were examined using Tukey's difference tests to determine the nature (significant/non-significant) of any differences between clusters (Table 7).

Table 7: Pairwise comparisons of clusters (Tukey's test)

Dependent variable	Cluster	Cluster	Difference in averages	Standard error	Sig.
Self-efficacy	3	1	-1.42541*	.24299	.000
		4	.62429	.27059	.101
		2	-.37571	.22665	.350
	1	3	1.42541*	.24299	.000
		4	2.04970*	.27059	.000
		2	1.04970*	.22665	.000
	4	3	-.62429	.27059	.101
		1	-2.04970*	.27059	.000
		2	-1.00000*	.25601	.001
	2	3	.37571	.22665	.350
		1	-1.04970*	.22665	.000
		4	1.00000*	.25601	.001
Test anxiety	3	1	.28108	.35336	.856
		4	.39438	.39349	.748
		2	.93038*	.32959	.028
	1	3	-.28108	.35336	.856
		4	.11330	.39349	.992
		2	.64930	.32959	.204
	4	3	-.39438	.39349	.748
		1	-.11330	.39349	.992
		2	.53600	.37229	.477
	2	3	-.93038*	.32959	.028
		1	-.64930	.32959	.204
		4	-.53600	.37229	.477

Dependent variable	Cluster	Cluster	Difference in averages	Standard error	Sig.
Expected grade in FA1	3	1	-.64865	.35767	.271
		4	1.03459	.39829	.050
		2	.47459	.33361	.487
	1	3	.64865	.35767	.271
		4	1.68324*	.39829	.000
		2	1.12324*	.33361	.005
	4	3	-1.03459	.39829	.050
		1	-1.68324*	.39829	.000
		2	-.56000	.37683	.449
	2	3	-.47459	.33361	.487
		1	-1.12324*	.33361	.005
		4	.56000	.37683	.449
Final grade in FA1	3	1	-1.00927*	.35806	.028
		4	.70857	.39765	.286
		2	.06857	.33467	.997
	1	3	1.00927*	.35806	.028
		4	1.71784*	.39315	.000
		2	1.07784*	.32931	.007
	4	3	-.70857	.39765	.286
		1	-1.71784*	.39315	.000
		2	-.64000	.37197	.317
	2	3	-.06857	.33467	.997
		1	-1.07784*	.32931	.007
		4	.64000	.37197	.317

* Significant difference ($p<0.05$)

Self-efficacy. Significant differences in self-efficacy were observed among the goal groups, supporting hypothesis H1. The ‘multiple goals’ cluster demonstrated significantly higher self-efficacy compared to the ‘mastery,’ ‘performance,’ and ‘low motivation’ clusters (Table 7). Additionally, the ‘mastery’ cluster exhibited significantly higher self-efficacy than the ‘low motivation’ cluster.

Test anxiety. The goal clusters differ significantly with respect to test anxiety, thus confirming the H2 hypothesis, but only the difference between the ‘performance’ cluster (highest level 4, 57) and the ‘mastery’ cluster (lowest level 3, 64) is statistically significant (Table 7).

Expected grade in Financial Accounting 1. The goal groups differ significantly in terms of expected grade, which confirms hypothesis H3. The cluster “multiple goals” shows a significantly higher level of expected grade than the clusters “mastery”, and “low motivation” (Table 7).

Final grade in Financial Accounting 1. Significant differences in final grades were found across the goal groups, supporting hypothesis H4. The “multiple goals” cluster shows a significantly higher final score compared to the “mastery of knowledge goal,” “performance goal,” and “low motivation” clusters (see Table 7). No statistically significant differences were observed in the other pairwise comparisons between clusters in terms of final grade.

Covariate variables. The main effects of the covariate variables shown in Table 6 indicate that gender is significant. The data showed that male students typically had higher self-efficacy (4.86 vs. 4.5) as well as higher expectations of the grade they would receive (7.70 vs. 7.34), and female students typically had higher test anxiety (4.32 vs. 3.37). Final grades, however, were on average roughly equal between male and female students. (For reasons of space we have not presented descriptive statistics broken down by respondents' gender.)

Regarding high school profile, the data in Table 6 indicate that this variable does not show a significant effect on the dependent variables. The covariate variables targeting grades/average show a significant impact on the expected grade as well as on the final grade. In addition, the grade in the partial examination of Financial Accounting 1 shows a significant effect on the self-efficacy variable.

5. Research Conclusions, Contributions and Perspectives

This paper describes an empirical study on achievement goal theory and the relationship between learning motivation and self-efficacy, test anxiety and performance (outcomes). The study was conducted on a group of 149 students enrolled in the second year of the Accounting and Management Informatics degree program, who completed an anonymous online questionnaire that included 30 questions aimed at measuring mastery orientation, performance orientation self-efficacy for learning and performance achievement (and test anxiety, as well as grades obtained/expected in the courses Basic Accounting and Financial Accounting 1, overall average at the end of year 1, profile of the high school they graduated from and gender.

In this study, cluster analysis was employed to categorize students and identify their achievement goal profiles (also referred to as motivational learning profiles), based on variables measuring mastery and performance goals. Subsequently, ANOVA and ANCOVA were conducted to assess whether, and to what extent, the identified groups (i.e., achievement goal profiles) differed in self-efficacy, test anxiety, expected grade, and final grade in the Financial Accounting 1 course.

The obtained results confirmed the four hypotheses formulated, indicating that belonging to the identified groups/clusters ("Multiple objectives", "Mastery", "Performance" and "Low motivation") is significantly associated with the dependent variables (self-efficacy, test anxiety, expected grade and final grade in Financial Accounting 1). Students in the 'Multiple Objectives' cluster had on average significantly higher values for the variables self-efficacy, expected grade and final grade than students belonging to the other clusters. This indicates that a combination of objectives is preferable to a single objective orientation approach (even if this is aimed at mastering knowledge/skills). This result contrasts with the results obtained by Dull et al. (2015) and Daniels et al. (2008) who found no significant differences between the respective groups (except for the 'low motivation' group). However, in our study, only the difference between the "Performance Goals" cluster (highest level 4.57) and the "Mastery Goals" cluster (lowest level 3.64) is statistically significant.

These findings suggest that students' learning approaches in (financial) accounting courses can affect their academic outcomes, and that the pathway to academic success is likely multidimensional. If instructors can shape the way students engage with the challenges of a course, they may significantly influence students' experiences, motivation, and academic performance (Dull et al., 2015).

Given the challenges in addressing the bias toward performance-oriented motivation (Haynes et al., 2008), educators might focus on enhancing students' motivation to master knowledge and skills, rather than attempting to diminish performance motivation or surface learning approaches. Instead, efforts could be directed toward reducing test anxiety. Regular use of these questionnaires could allow teachers to track the learning environment and support students in shifting towards a stronger emphasis on mastery of knowledge or deeper learning approaches, even if they cannot entirely steer students away from the performance-focused strategies they are accustomed to.

This study extends the existing body of research on Achievement Goal Theory (AGT) by examining its applicability within the context of accounting education, field where empirical research on student motivation remains relatively limited. Through the analysis of a cohort of Romanian accounting students, this paper contributes novel insights into how mastery and performance goal orientations influence self-efficacy, test anxiety, and academic performance. While previous studies, such as those by Dull et al. (2015) and Daniels et al. (2008), have highlighted the beneficial effects of multiple-goal orientations on academic outcomes, this research provides additional evidence in a different academic and cultural setting, thereby expanding the generalizability of AGT.

Moreover, this study emphasizes the importance of adopting a multidimensional approach to student motivation, particularly in technical fields like accounting, where both conceptual mastery and performance are critical to success. The findings reinforce the notion that a combination of mastery and performance goals leads to better academic outcomes, thereby offering practical implications for teachers seeking to design interventions that not only improve student learning strategies but also reduce test anxiety. These contributions are valuable for advancing understanding in both educational psychology and accounting education, and they offer a framework for further research on motivational profiles across diverse academic disciplines.

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