How Achievement Emotions Relate to the Short-Term Stability of Goal-Orientation Profiles in an Introduction to Accounting Course

Hannu Ojala and Päivi Kosonen

Acknowledgements. We gratefully acknowledge comments from Eija Kärkinen, Heta Tuominen, Markku Niemivirta, Jaana Viljanen, Gregg Stoner, Salma Ibrahim, Minna Ikävalko and the participants of the Botnia Accounting and Auditing seminar (Vaasa, August 2024), the Research Seminar of Motivation, Learning and Wellbeing, University of Eastern Finland (Joensuu, November 2024), FERA Conference on Education 2024, hosted by the University of Turku (Turku, November 2024), the 'Accountability, Governance, the Capital Market' Research Hub day of Kingston University, London (December 2024), and The British Accounting and Finance conference (BAFA) 2025 in Belfast (April 2025). European Financial Accounting Conference (EUFIN) 2025 in Bristol (August 2025). Special thanks to Emma-Riikka Myllymäki and Jari Huikku for their invaluable contributions to data collection. Hannu Ojala thanks the University of Eastern Finland for its financial support for travel expenses.

Abstract

Achievement emotions and achievement goal orientations jointly shape how students engage with demanding coursework. Nevertheless, very little is known about how these two constructs co-evolve within a single Introduction to Accounting course. Drawing on Control-Value Theory and Achievement Goal Theory and using latent profile analysis, we surveyed 98 first-year business students at the start and end of a six-week course. Latent-profile analysis revealed four re-

Hannu Ojala is a Professor of Accounting at the University of Eastern Finland and a Senior Fellow at Aalto University School of Business, Finland.

Päivi Kosonen is a University Lecturer in Accounting at the University of Eastern Finland, Finland.

curring goal-orientation configurations: Non-Competitive, Somewhat Competitive, Well-Adjusted, and Success-Seeking, which remained structurally stable throughout the term. Roughly two-thirds of students preserved their initial profile; the remainder moved in roughly equal numbers toward different configurations. Logistic-regression results showed that changes in enjoyment or boredom did not predict shifts. Increases in worry significantly triggered them. Increased worry nearly doubled the odds of shifting into a less adaptive profile, even after controlling for gender and high school GPA.

1. Introduction

We argue that students' achievement goals and emotions matter because they shape how students behave in class and how they judge their own progress. Understanding these patterns is crucial for teachers and programme directors, because a more supportive environment can help students both succeed academically and protect their well-being. In particular, emotions can be strongly associated with students' motivation (Putwain & Symes, 2012; Pekrun, 2019), yet only a few studies have asked whether specific achievement emotions, such as enjoyment, boredom and worry, drive changes in motivation over time in business education.

This question is especially pressing in an introductory accounting course, where large amounts of technical content are taught quickly (cf. Lucas, 2000), and success in the course partly determines access to later study options. Students who begin the module with mastery-oriented goals ("I want to understand") may drift toward performance-avoidance goals ("My aim is to avoid doing worse than other students") if negative emotions take hold. Conversely, timely enjoyment and a sense of control can keep students on a productive path (Pekrun, 2006).

The present study, therefore, follows 98 first-year accounting students over a six-week course to examine: (1) Which combinations of achievement goal profiles emerge at the start and end of the course. (2) How stable are these profiles, that is, do students remain in the goal profile until the end of the course? (3) Whether changes take place toward more or less adaptive profiles by the course end. (4) Which emotions, enjoyment, boredom or worry, best explain any shifts to another achievement goal profile? Thereby, this study follows the call by Huikku et al. (2022) to examine achievement goals using a longitudinal approach in the context of the Introduction to Accounting course. By linking goal profiles and achievement emotions within a single course, we aim to give educators concrete insight into when and why motivation changes.

The remainder of the paper is structured as follows. Section 2 discusses prior literature and develops the hypotheses. Section 3 describes the data and models. Section 4 presents the results of the primary analyses. Section 5 discusses our results and concludes the paper.

2. Literature review

2.1. The Stability of Achievement Goal Profile Structures

The Achievement Goal Theory (AGT) has gained significant attention within educational research since the mid-1980s, serving as a cornerstone for understanding students' motivation and behaviours related to achievement (Senko et al., 2011). The theory conceptualised students' motivations and behaviours in educational settings (Dweck, 1986; Nicholls, 1984). The

AGT highlights the significance of students' reasons for selecting courses, completing tasks, and persevering in their learning endeavours (Meece et al., 2006).

Initially, the AGT defined two goal dimensions within a dichotomous framework: mastery-approach goals and performance-approach goals (Dweck & Leggett, 1988). Mastery-approach goal-oriented students aspire to acquire an in-depth understanding and mastery of the task at hand. Their focus lies in developing and refining their skills and competence relative to the task (Harackiewicz et al., 1998). Prior research has consistently demonstrated that students adopting a mastery-approach goal exhibit strong motivation, characterised by a focus on work mastery, a preference for challenging tasks, and an intrinsic drive to meet their own, internally set standards of excellence (Elliot & McGregor, 2001).

Conversely, performance-approach goals typically entail a desire to outperform peers, often manifested in exam performance (Hulleman et al., 2010), with a strong emphasis on ego orientation, relative ability, and self-enhancement (Hulleman et al., 2010). Competitiveness is a major predictor of performance-approach goals (Harackiewicz et al., 1997; Elliot & McGregor, 2001). Subsequent developments have introduced performance-avoidance, where students strive to avoid appearing incompetent (Elliot & McGregor, 2001).

Among university students, research has shown that women are more inclined than men to adopt mastery goals, derive greater enjoyment from lectures, and engage more frequently in rehearsal-based study strategies (Harackiewicz et al., 1997, 2002). Using a single measurement and variable-based approach during an introduction to accounting course, Huikku et al. (2022) reported that male students had significantly higher scores in performance goal than female students, while the differences were insignificant in mastery and performance avoidance goals.

Recent research (cf. Niemivirta et al, 2019) has extended the AGT framework beyond single-dimensional constructs by examining goal orientation profiles, which consider the simultaneous adoption of multiple goals (e.g., mastery-approach, performance-approach and avoidance goals). Indeed, prior work has shown that students often endorse multiple achievement-related goals concurrently, with such multidimensional goal pursuit linked to a variety of academic outcomes (Tuominen-Soini et al., 2012). In this vein, the stability of these *profile structures* over time has become a relevant area of inquiry, particularly in structured academic contexts such as accounting education. Based on the above discussion, we set our first hypothesis.

H1. *The achievement goal profile structure identified at the beginning of the introductory accounting course remains stable by the end.*

2.2. The Stability of Students' Achievement Goal Orientations

Next, we focus on the stability of students' achievement goal orientations. Although the first and second research questions both concern stability, they capture related but not identical phenomena. In fact, under some circumstances, they are logically connected: if every student reports the same levels of mastery-approach, performance-approach, and performance-avoidance goals at both measurement points, then the overall latent *profile structure* must remain stable, and all students necessarily retain their initial profiles. However, profile structure stability does not automatically imply individual-level stability. The latent structure can remain unchanged even if some students' achievement goal orientations shift. For example, a trade-

off could occur where the movements of certain students between profiles are offset by the opposite movements of others, resulting in a preserved structure at the group level. Thus, the first research question (and H1) concerns the invariance of the overall profile configuration. In contrast, the second research question addresses the likelihood of individual students maintaining their initial membership within that structure.

Regarding the stability of students' achievement goal orientations, prior literature has addressed students at various stages of education. Studies addressing the transition to upper secondary education also suggest that goal orientation profiles remain reasonably stable, even during educational transitions (Gonçalves et al., 2017; Tuominen-Soini et al., 2012). Miller (2015) demonstrated using a multi-institution sample of first year and senior students at colleges and universities across the United States that college students' goal orientations could predict their participation in high-impact educational practices (such as internships, study abroad, and capstone experiences), suggesting that these orientations are not fixed but malleable and play a meaningful role in shaping academic engagement and development.

Pulkka and Niemivirta (2013) investigated the stability and change in adult students' achievement goal orientations over a four-month period, as well as the relationship between these orientations and their perceptions of the learning environment within the Finnish National Defence University context. The study employed a person-centred longitudinal approach, allowing for the identification of distinct goal orientation profiles among students and tracking their evolution over the study period. The research found that while 60% of students maintained consistent achievement goal orientations, others did not. In their book chapter on a person-oriented approach to achievement goal orientations, Niemivirta et al. (2019, p. 19) conclude that students' achievement goal profiles do not fluctuate randomly but are relatively stable over time.

Senko and Harackiewicz (2005) identified two forms of achievement goal regulation across tasks, goal switching and goal intensification, and call for future research assessing individual variability in goal regulation. Goal switching involves shifting the dominant goal type, such as from a mastery goal to a performance goal, or between performance-approach and performance-avoidance orientations, depending on the task. For instance, a student may prioritise mastery in one activity but switch to a performance approach in another. Goal intensification refers to changes in the strength of goal endorsement without altering the type of goal. A student might, for example, strongly endorse mastery goals during a lab assignment but show weaker endorsement during an exam. These changes can be minor (indicating stability) or substantial (indicating instability).

Senko and Harackiewicz (2005, pp. 325–326) predicted strong goal stability alongside only modest goal regulation, reasoning that broader classroom dynamics—such as evaluation procedures and teaching styles—tend to remain relatively constant throughout the semester. Their empirical findings supported this expectation, providing evidence for the stability of students' goals across time. These findings would provide support for an idea of goal stability in a six-week Introduction to Accounting course, where classroom dynamics would be unlikely to change.

From a multiple-goals perspective (Barron & Harackiewicz, 2001; Pintrich, 2000), change can be viewed more broadly as adjustments within an individual's entire cluster of goals. Fryer and Elliot (2007) suggest that a college room goal change becomes particularly plausible when considering both the nature of goal adoption and the variety of ways an individual's goal commitments may shift. Goal adoption can be understood as a continuous variable rather than a

discrete one, meaning achievement goal adoption is not an all-or-nothing process; individuals can endorse goals to varying extents.

The stability of achievement goals within an introduction to accounting course (in a business school context) has not been much researched. Therefore, following prior literature from other disciplines, we propose the following hypotheses:

H2: *Most students will retain their initial achievement-goal profile throughout the introduction to accounting course.*

2.3. The Directionality of Students' Achievement Goal Orientation Shifts

While H1 and H2 address the potential stability of achievement goal profiles, we will continue the inquiry by considering the directionality of change when it does occur. Prior research indicates that changes in goal orientation are not neutral or random. Instead, they may systematically reflect students' adaptation—or maladaptation—to the academic environment. Mastery-approach goals predict adaptive learning patterns (Pulkka and Niemivirta, 2013) like high engagement, enjoyment, and GPA. Performance-approach goals are ambivalent, offering achievement benefits but risking emotional stress. In contrast, performance-avoidance goals are considered maladaptive (Pulkka and Niemivirta, 2013), promoting anxiety, surface-level strategies, and underperformance.

Senko and Harackiewicz (2005) investigated how competence feedback influences goal stability among students enrolled in an introductory psychology course, both across a semester and in a laboratory experiment. Their results indicated that goals were generally stable over the semester and reflected the competence feedback students received. Notably, students seemed to shift between the two performance goals after receiving feedback from the initial set of exams, while their mastery goals were also regulated independently of feedback. In particular, declines in students' competence perceptions appeared to trigger corresponding shifts in their pursuit of goals.

Huikku et al. (2025) examined students' shifts between approaches to learning profiles in an Introduction to Accounting course. While students' approaches to learning differ from achievement goals, they share similar characteristics. Namely, intrinsic motivation underlies mastery goals and a deep approach to learning (Hulleman et al., 2010). Hulleman et al. (2010, p. 423), and numerous non-goal items employed to assess mastery goals closely resemble those used to measure interest and intrinsic motivation. Similarly, extrinsic motivation underlies performance goals and the surface learning approach. Mastery goals generally encourage using deep learning strategies, while performance goals are more likely to lead to surface-level approaches to learning (Senko et al., 2011).

Huikku et al. (2025) found that the majority of students initially exhibited a deep-dominated learning profile (83 students) compared to a smaller group with a surface-dominated profile (39 students). Over the duration of the course, however, more than one-third of the initially deep-dominated students (32 students) shifted to a surface-dominated profile. As a result, by the end of the course, the distribution had reversed, with more students classified as surface-dominated (64) than deep-dominated (58). Logistic regression analyses further indicated that this shift was predicted by a decline in mastery goals, an increase in performance goals, and students' perceptions of low teaching quality. Given the conceptual overlap between mastery goals and a deep approach to learning, as well as between performance goals and a

surface approach, these findings may shed light on the potential development of mastery and performance goals throughout an introductory accounting program.

In demanding and assessment-intensive contexts such as introductory accounting courses, students may experience heightened performance pressure, leading them to shift from mastery-oriented profiles to those dominated by performance-approach or performance-avoidance goals. Senko & Harackiewicz (2005) suggest that shifts may occur between approach and avoidance goals, as well as between approach goals, specifically mastery and performance approach. Fryer and Elliot (2007) emphasise that changes in goal commitment are frequently tied to contextual challenges and perceived threats to competence, conditions commonly encountered in technical disciplines. An introductory accounting course might be a likely candidate for being perceived as a technical course. Lucas (2000, 497) examines introductory accounting students' views on accounting and suggests that "Students are primarily motivated to pass the examination. They express no doubts about what is required to achieve this, they must work through the learning materials and learn the techniques."

We argue that there are grounds to expect that students may shift to a less adaptive achievement goal profile towards the end of the course because their assessments are getting closer, and students may view the content of the introduction to accounting as a technical discipline dealing with numbers. Anxiety, a negatively affecting achievement emotion, is frequently reported among accounting students, often worsened by time-pressured exams, frequent testing, and a fear of making numerical errors (Lucas & Meyer, 2005). While moderate anxiety can sometimes enhance focus and preparation, persistent or intense anxiety generally undermines learning by diverting cognitive resources from task engagement (Pekrun, 2006). Female students in business disciplines, including accounting, often report higher anxiety levels and greater worry about failure, potentially due to stereotype threat and lower confidence in quantitative domains (Lucas & Meyer, 2005). If such emotions occur during the course, we expect that they trigger shifts towards less adaptive profiles.

Contrary to the hypothesis that students' achievement goals shift from adaptive to maladaptive during an introductory accounting course, Mladenovic (2000) provided evidence that course design can foster more constructive outcomes. In her study, the introductory accounting course incorporated aligned learning tasks, diverse teaching methods, and assessments that engaged with the political, social, and historical dimensions of accounting. By explicitly addressing and challenging students' initially negative perceptions, the course promoted the development of more realistic views of the discipline. Moreover, the active discussion of differences between teachers' and students' perceptions in lectures and tutorials further contributed to these adaptive changes.

Following the above discussion, we set the following hypotheses.

H3: *When a profile change occurs, students are more likely to transition to a less adaptive profile by the end of the course*

2.4. The Association between the Changes in Achievement Emotions and Short-Term Stability of Goal-Orientation Profiles

Building on the prior discussion of stability (H1–H2) and directionality (H3) of achievement goal profiles, this section explores the achievement emotions that may drive these shifts. According to Control-Value Theory of Achievement Emotions by Pekrun (2006), emotions such

as enjoyment, anxiety, and boredom arise from students' appraisals of control (over learning tasks) and value (assigned to those tasks). These emotions are not just by-products of achievement processes. Instead, they actively shape cognitive, motivational, and behavioural outcomes, including goal adoption and persistence (Pekrun et al., 2002).

Goetz et al. (2006, 25) recommend that students' emotions should be investigated using domain-specific approaches. Emotions may be essential in academically demanding and quantitatively intensive fields like accounting. Studies have shown that enjoyment and interest are closely linked to mastery-oriented goals**,** promoting deep learning and adaptive engagement (Pekrun et al., 2009). In contrast, worry **(**Elliot & McGregor, 2001), as well as anxiety and boredom, are more frequently associated with performance-avoidance goals, which undermine intrinsic motivation and academic resilience (Möcklinghoff et al., 2023).

We expect that this emotional–motivational interplay is especially critical in introductory accounting courses, where students may experience both a heightened desire to succeed and a fear of failure. For example, female students may face stereotype threats that add to their worries and foster performance-avoidance goals (Brodish & Devine, 2009). At the same time, high-achieving students who enjoy mastering mathematical concepts may increasingly align with mastery-based profiles (Li et al., 2021). Emotional responses can thus either reinforce stable motivational patterns or serve as triggers for profile transitions, pushing students toward either more or less adaptive configurations depending on their affective experiences.

This line of inquiry highlights the bidirectional relationship between emotional dynamics and achievement goal orientations. While emotions can result from motivational orientations, they also have the power to shape students' motivational patterns across time, particularly within cognitively and emotionally burdensome domains like accounting.

Based on the above discussion, we propose the following hypotheses:

H4a: *Increases in students' enjoyment across the semester will predict movement into more adaptive achievement-goal profiles.*

H4b: *Increases in students' worry or boredom across the semester will predict movement into less adaptive achievement-goal profiles.*

3 Methods

3.1. Participants and procedure

Data for this study were collected from a mandatory introduction to accounting course in a Nordic country in 2017. The course can be considered a high-stakes first-year course within the bachelor's degree program, because its final grade is important in determining eligibility for admission into various majors selected at the end of the first academic year. Additionally, performance in this course directly contributes to students' qualifications for international study exchange programs.

Two researchers administered the survey during the course's initial lecture. University entrance data were used to obtain information regarding students' high school grade points, while data on students' exam performance served as indicators of their in-course performance.

Initially, the sample comprised 321 participants, representing all students registered for the course, of which 38% were female. However, after filtering out individuals who did not com-

plete the survey questionnaire or were not enrolled in the business school, the final number of observations for the current study stood at 154 at the beginning of the course. Because we need survey questionnaire data at the beginning and the end of the course, the usable information drops to 98 students. The study office administered the exam following the completion of the lectures. It comprised questions on bookkeeping, financial statement ratios, and short essay responses. The overall course evaluation (maximum of 106 points) was based on the final exam (up to 60 points), two open-book midterm exams (up to 20 points), and teamwork contributions (up to 26 points).

Ethical approval was obtained from the business school to investigate the association between students' achievement goals, study success, student characteristics, and learning environment. Additionally, permission was individually sought from each participating student via the cover page of the research questionnaires. Emphasis was placed on the voluntary nature of participation, and students who opted to participate had the opportunity to complete the questionnaire at the start of the lecture, with the lecture paused for this purpose. This approach ensured that participating students did not need to sacrifice their free time outside class and did not miss any lecture content. Furthermore, participants were assured that their responses would remain confidential, and measures were taken to protect their anonymity.

3.2. Research instruments

Achievement goals were measured using the revised Achievement Goal Questionnaire (AGQ-revised) by Elliot and Murayama (2008), which was incorporated into the survey questionnaire. Additionally, we used measurement instruments by Duff and Mladenovic (2015) to capture the emotions of students using the following measurement items: "I expect that I will enjoy accounting studies" (enjoyment), "I do not have a personal interest in accounting, and I expect it to be boring." (boredom) and "I am worried about my learning in accounting." (worry). Variable definitions are presented in Table 1.

Table 1. Variable definitions.

VARIABLE	DESCRIPTION
Performance-Approach Goal	The mean of the raw scores was constructed from the 'Achievement Goal Questionnaire revised' (AGQ-revised) by Elliot and Murayama (2008).
Mastery-Approach Goal	The mean of the raw scores was constructed from the 'Achievement Goal Questionnaire revised' (AGQ-revised) by Elliot and Murayama (2008).
Performance-Avoidance Goal	The mean of the raw scores was constructed from the 'Achievement Goal Questionnaire revised' (AGQ-revised) by Elliot and Murayama (2008).
Changes in Enjoyment	Change in a five-point Likert scale measurement item, "I expect that I will enjoy accounting studies" from inventory by Duff and Mladenovic (2015) during the introduction to accounting course.
Changes in Boredom	Change in a five-point Likert scale measurement item, "I do not have a personal interest in accounting, and I expect it to be boring." from inventory by Duff and Mladenovic (2015) during the introduction to accounting course.
Changes in Worry	Change in a five-point Likert scale measurement item, "The student feels anxious about learning accounting" from inventory by Duff and Mladenovic (2015) during the introduction to accounting course.
Female	Equals to 1 if the student is female and zero if the student is male.
HSGPA	High school grade point average of matriculation examination.

3.3. Analysis strategy

Data analysis proceeded in four steps closely aligned with the hypotheses H1-H4. First, we verified the factor structures and factor reliabilities of mastery, performance, and performance-avoidance orientation items. Then, we constructed mean variables. Table 2 shows the measurement items underlying the empirical analysis's mean variables. Each mean variable consists of two to four measurement items, with a Likert scale ranging from 1 to 5. Therefore, the theoretical scales of the mean of variables range from 1 to 5.

Furthermore, our analysis reveals that all subscale scores exhibit adequate internal consistency. The Cronbach's alpha values for the Performance, Mastery, and Performance-avoidance goals are 0.947, 0.764, and 0.863, respectively. Following Nunnally's (1978) guidelines, Cronbach's alpha values between 0.7 and 0.8 are deemed satisfactory, those between 0.8 and 0.9 are considered good, and values above 0.9 are classified as excellent. Thus, Cronbach's alpha values in our analysis range from satisfactory (Mastery goal), good (Performance-avoidance goal) to excellent (Performance goal).

Table 2. Construct Assessment Regarding Achievement Goals (n = 98)

CONSTRUCT	INDICATOR	LOADING	DECISION	CRONBACH'S A
Performance-approach goal				0.947
	I am striving to do well compared to other students.	0.911	Retained	
	My aim is to perform well relative to other students.	0.922	Retained	
	My goal is to perform better than the other students.	0.945	Retained	
Mastery-approach goal				0.764
	My aim is to completely master the material presented in this class.	0.655	Retained	
	My goal is to learn as much as possible.	0.621	Retained	
	I am striving to understand the content of this course as thoroughly as possible.	0.924	Retained	
Performance avoidance goal				0.863
	I am striving to avoid performing worse than others.	0.714	Retained	
	I am striving to avoid an incomplete understanding of the course material.	0.971	Retained	
	My aim is to avoid doing worse than other students.	0.801	Retained	

Notes. Latent confirmatory factor analysis construct represented by the performance-approach, mastery-approach, and performance-avoidance goal items are based on responses to the inventory AGQ-revised (Elliot & Murayama, 2008).

The above three scales (performance-approach, mastery-approach and performance-avoidance goals) were used as inputs when we performed a latent profile analysis (LPA) to identify subgroups of students with distinct achievement goal orientations. LPA is a statistical technique rooted in latent class modelling, a subset of structural equation modelling (Vermunt & Magidson, 2005). It assumes unobservable or latent subgroups that can be inferred from observed variables. In the context of this study, LPA could uncover latent profiles of students based on their questionnaire responses about their achievement goals. By assigning students

to distinct profiles, LPA allowed us to explore how different subgroups may exhibit unique patterns (Lubke & Muthén, 2007) of achievement goals.

In LPA, the researcher does not decide the number of LPA classes; instead, a statistical criteria for determining the appropriate number of classes of LPA is used (cf. Nylund et al., 2007). Bayesian Information Criteria (BIC) is the tool for LPA model selection (Schwarz, 1978). Figure 1 illustrates the latent profiles at the beginning and end of the course.

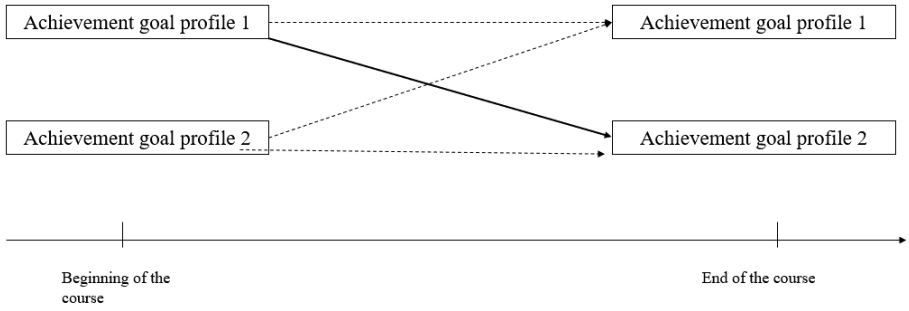

Figure 1. Goal profiles at the beginning and the end of the course

Following H1, we will compare how the achievement goal profile structure emerges at the beginning and the end of the course. The comparison includes the number of profiles and the mean scores of input scales (performance-approach, mastery-approach and performance-avoidance goals) in each profile. Given the absence of prior research examining the stability of achievement goal profiles specifically within a business school course context, there is no established basis for predicting the number or nature of profiles that may emerge at the beginning and end of the course. As such, this remains an empirical question to be addressed by the present study.

As the second step, we examine Hypothesis 2 (H2), which investigates whether students remain in the same achievement goal profile throughout the course or transition to a different one. Specifically, we assess the stability of these profiles from the beginning to the end of the course (represented by horisontal arrows in Figure 2), as well as directional shifts, either towards a more adaptive profile (upward diagonal arrow) or towards a less adaptive profile (downward diagonal arrow). The profiles are organised along a continuum based on their adaptiveness. The least adaptive profile (Profile 1) is characterised by high performance-avoidance and low mastery-approach orientation, while the most adaptive profile exhibits low performance-avoidance and high mastery-approach goal orientations.

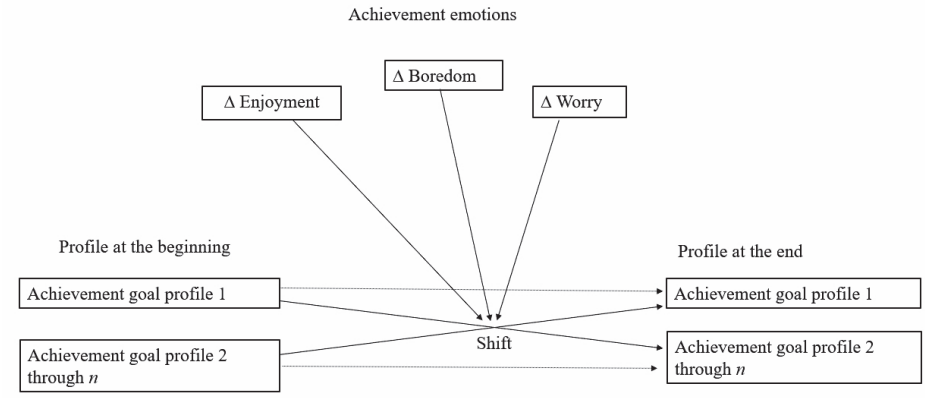

Figure 2. The theoretical model

In the third step, we test Hypothesis 3 (H3), which posits that when students' achievement goal profiles change during the course, these transitions are more likely to be toward less adaptive profiles. To evaluate this, we focus on the diagonal transitions illustrated in Figure 2, representing shifts between different profiles from the beginning to the end of the course. Transitions downward along this continuum (diagonal arrows pointing to lower-ranked profiles) are interpreted as maladaptive shifts, whereas upward transitions indicate movement toward more adaptive motivational orientations. H3 is supported if the frequency or likelihood of shifts to less adaptive profiles exceeds that of shifts to more adaptive profiles, revealing a trend of motivational decline. We use the Binomial Test to compare such shifts.

Fourth, the upper part of Figure 2 illustrates how we provide evidence to H4 using logistic regression to explain potential shifts from one profile to another using changes in achievement emotions as predictors. *Changes in enjoyment, boredom*, and *worry* are measured as follows (see Table 1: Variable definitions). For example, *Change in enjoyment* is calculated from a five-point Likert scale measurement item, "I expect that I will enjoy accounting studies," from an inventory by Duff and Mladenovic (2015) collected using a survey questionnaire at the beginning and end of the course. The change is the end value minus the initial value. The change in boredom and worry was calculated identically. The logistic regression is described in Equation

$$\text{ProfileShift} = \alpha_0 + \alpha_1 \text{Incr.inEnjoyment} + \alpha_2 \text{Incr.inBoredom} + \alpha_3 \text{Incr.inWorry} + \Sigma_1 \text{Controls} + e$$

Potential influences of gender and prior academic ability were controlled by including the following two variables: *Female* and high school grade point average *(HSGPA)*. The female variable was coded as '1' if a student was female and '0' otherwise. Huikku et al. (2022) found that male students were more likely to adopt performance-approach goals in an introduction to accounting course than female students. Furthermore, female students reportedly adopt mastery approach goals (Bouffard et al., 1995; D'Lima et al., 2014). Regarding the association between achievement goals and SALs, Palos (2020) found that female students with a mastery-approach goal approach were highly likely to adopt a deep approach to learning.

Students' ability may affect their achievement profile. In the context of Norwegian psychology education, Diseth (2007) showed that high school grade point average (HSGPA) had a direct effect on examination grades and an indirect effect via self-efficacy and performance approach. Therefore, we measured prior academic ability using the HSGPA (cf. Diseth, 2007; Huikku et al., 2022; Huikku et al., 2025), provided by the university where the students in the

current study were enrolled. As an HSGPA measure, we use students' matriculation examination points similarly to Huikku et al. (2022) and Huikku et al. (2025).

4. Results

4.1. Achievement orientations at the beginning and the end of the course

Figure 3 summarises log-likelihood values, degrees of freedom, and the BIC for four models with an increasing number of achievement goal classes (from one class to five). Here, the BIC, a measure of model fit that balances goodness of fit with model complexity, was calculated for each model. Lower BIC values indicate a better trade-off between fit and complexity. In BIC values, researchers seek the lowest values that identify the optimal number of classes (cf. Schwarz, 1978; Burnham & Anderson, 2004). A four-class solution emerged as the best fit for the data, as evidenced by the lowest Akaike Information Criteria (AIC) and BIC values for this solution.

As a robustness check, we also examined whether the latent profile structure would have differed had we based the analysis on all 154 students who completed the baseline survey, rather than restricting it to the 98 students who participated at both measurement points. The results indicated that the same four-profile solution emerged, and the overall structure remained unchanged. This suggests that attrition did not affect the identification of latent profiles.

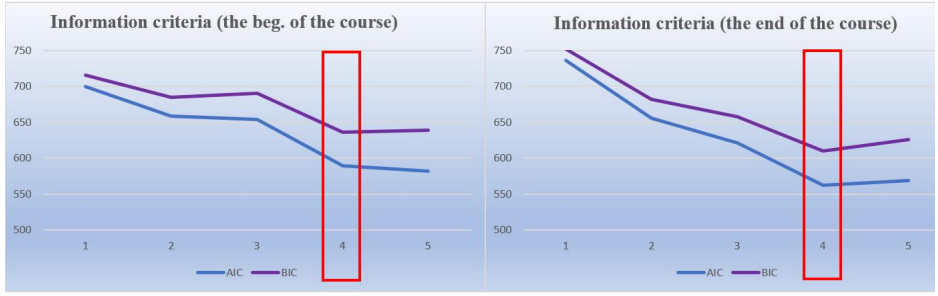

Figure 3. Akaike and Bayesian Information Criteria (n = 98)

In Profile 1, students report low performance-approach orientation and high performance-avoidance, suggesting a disengagement from competitive academic striving. The highest performance-avoidance score refers to a maladaptive pattern of motivation (cf. Tuominen-Soini et al. 2012). Accordingly, we label this the Non-competitive profile. Profile 2 shows a moderate increase in performance-approach orientation and a reduction in performance-avoidance. Therefore, we label it Somewhat competitive profile. Profile 3 continues this pattern, with further increases in performance-approach orientation and continued decreases in performance-avoidance, while mastery remains fairly stable. We label this configuration as the Well-adjusted profile. Finally, Profile 4 is characterised by high levels of both performance- and mastery-approach orientations, and low performance-avoidance, reflecting a highly motivated and positively engaged group. We label this the Success-seeking profile.

Overall, the profiles maintain a consistent structure across time, with four distinct groups present at both the beginning and end of the course. Moreover, the mean scores for the three goal orientations (performance-approach, mastery-approach, and performance-avoidance) display comparable developmental trends across the profiles at both time points. From Pro-

file 1 to Profile 4, performance-avoidance decreases, performance orientation increases clearly, and mastery-approach orientation increases moderately. These consistent structural patterns provide empirical support for Hypothesis 1 (H1), as we posited that the latent achievement goal profile structure identified at the beginning of the introductory accounting course would remain stable by the end.

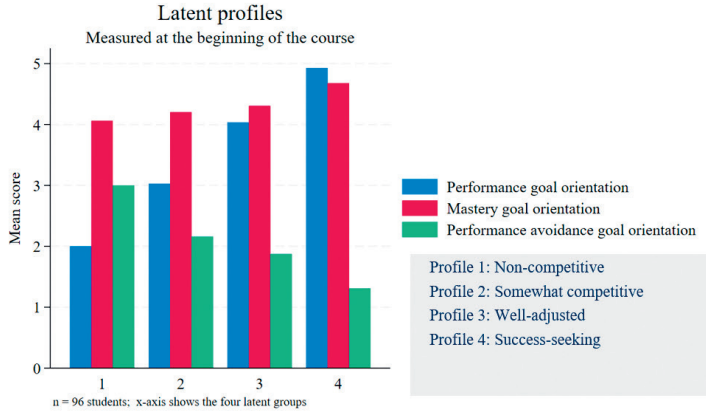

Figure 4a. Latent Profiles at the Beginning of the Course

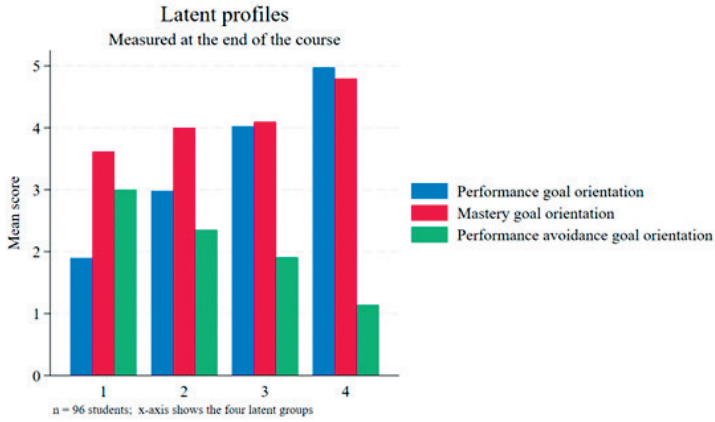

Figure 4b. Latent Profiles at the End of the Course (n = 98)

Next, Table 3 provides descriptive statistics for the entire sample in Panel A and separately for each profile (at the beginning and end of the course) in Panel B. The scores for performance-approach goals at the beginning (mean = 3.828) and end (mean = 3.795) of the course are relatively high and stable, indicating a consistent focus on outperforming others. Mastery-approach scores at the beginning (mean is 4.360) are the highest among the achievement goal variables, suggesting a strong emphasis on learning and skill mastery. However, a slight reduction in scores is observed at the end of the course. There is a clear increase in worry (mean increase of 0.490) from the beginning to the end of the course, which aligns with the proximity of the final exam, indicating heightened stress levels. Enjoyment scores show a slight decline (mean decrease is -0.102), while boredom remains largely stable with minimal increases (mean

increase is 0.020). Female representation is 34.3%, and the mean high school GPA (HSGPA) is 28.9. The mean values of HSGPA are similar to those reported earlier. Huikku et al. (2025) reported a mean HSGPA value of 26.3, and Huikku et al. (2022) reported the mean HSGPA (titled as Prior Knowledge) separately for female (mean 29.7) and male students (mean 26.4). Overall, students experience moderate increases in worry, but their levels of enjoyment and boredom remain stable throughout the course.

Table 3 Panel A. Descriptive statistics for the sample (n = 98)

	MEAN	MEDIAN	STANDARD DEVIATION
Performance, beg.	3.828	4.000	0.958
Performance, end	3.795	4.000	1.014
Mastery, beg.	4.360	4.333	0.538
Mastery, end	4.199	4.333	0.646
Perf. Avoid, beg.	1.906	2.000	0.902
Perf. Avoid. End	1.936	2.000	0.839
Enjoyment, beg.	3.939	4.000	0.793
Enjoyment, end	3.847	4.000	0.878
Incr. in enjoyment	-.102	0.000	0.753
Boredom, beg.	1.707	2.000	0.811
Boredom, end	1.724	1.000	0.939
Incr. in boredom	0.020	0.000	0.773
Worry, beg.	1.586	2.000	0.639
Worry, end	2.071	2.000	0.987
Incr. in worry	0.490	0.000	0.900
Female	0.343	0.000	0.477
HSGPA	28.939	32.00	8.419

Panel B divides the sample into the four latent profiles, Non-competitive, Somewhat Competitive, Well-adjusted and Success-seeking, showing mean scores at the beginning and end of the course. Success-seeking students display the strongest performance-approach orientation throughout the course (mean score at the beginning is 4.93, and 4.97 at the end). At the other extreme, Non-competitive students remain well below the scale mid-point (mean score at the beginning is 2.00, and at the end 1.90), confirming their low concern for outperforming peers. All groups value understanding, as can be seen from their high mastery goal score, but Success-seekers again have the highest scores (at the beginning 4.68, and at the end 4.80). Mastery decreases during the course for Non-competitive students (at the beginning 4.06, at the end 3.62) and holds at a moderate level for the two middle profiles. Non-competitive students consistently show the highest performance-avoidance scores (beginning 3.00, end 3.00), whereas Success-seekers remain the least worried about looking incompetent (beginning 1.31, end 1.14).

Enjoyment scores are highest among Success-seekers and stay almost unchanged (beginning 4.32, end 4.31). In contrast, Non-competitive students report a sharp drop (beginning 3.82, end 3.00). Boredom rises most for the Non-competitive group (beginning 1.73, end 2.15) but falls slightly for Success-seekers (beginning 1.50, end 1.35) and for Somewhat Competitive students (beginning 1.91, end 1.83). Worry increases across all profiles, yet its level and growth are clearest in the Non-competitive profile (beginning 1.91, end 2.46, change +0.55) and Well-adjusted groups (beginning 1.60, end 2.20, change +0.60). Success-seekers begin with the lowest worry (1.29) and maintain that low worry despite its modest rise to 1.73.

Female students cluster in the less competitive profiles: 64 % of Non-competitive and 52 % of Somewhat Competitive members are women, compared with only 14 % in the Success-seeking profile. These shares change little by the end of the course. High-school GPA is highest for Non-competitive students (mean score 32.6) and lowest for the Well-adjusted group (mean score 27.8), suggesting that stronger prior grades do not automatically translate into a competitive goal set.

Table 3 Panel B. Descriptives by Profiles (n = 98)

VARIABLES / PROFILES	NON-COMPETITIVE	SOMEWHAT COMPETITIVE	WELL-ADJUSTED	SUCCESS SEEKING
Performance, beg.	2.000	3.029	4.036	4.929
Performance, end	1.897	2.982	4.024	4.974
Mastery, beg.	4.061	4.203	4.306	4.679
Mastery, end	3.615	4.000	4.098	4.795
Perf. Avoid, beg.	3.000	2.159	1.874	1.310
Perf. Avoid. end	3.000	2.351	1.911	1.141
Enjoyment, beg.	3.818	3.609	3.892	4.321
Enjoyment, end	3.000	3.722	3.878	4.308
Incr. in enjoyment	-0.818	0.113	-0.014	-0.013
Boredom, beg.	1.727	1.913	1.730	1.500
Boredom, end	2.154	1.833	1.780	1.346
Incr. in boredom	0.427	-0.080	0.050	-0.154
Worry, beg.	1.909	1.783	1.595	1.286
Worry, end	2.462	2.000	2.195	1.731
Incr. in worry	0.553	0.217	0.600	0.445
Female, beg,	0.636	0.522	0.297	0.143
Female, end	0.615	0.579	0.244	0.192
HSGPA, beg.	32.636	29.348	27.811	28.643
HSGPA, end	32.923	26.000	30.073	27.308

4.2. Students' shifts from one profile to another

Table 4 in the manuscript analyses students' movement between achievement goal orientation profiles during the course. Table 4 shows that the Well-Adjusted Profile and the Success-Seeking Profile exhibit the highest stability rates. Students in these profiles are less likely to shift to another profile compared to those in less competitive profiles, indicating a strong alignment between their initial goals and evolution throughout the course. The Non-Competitive Profile shows the lowest stability, with a significant proportion of students transitioning to other profiles. This suggests that students in this group may face external or internal pressures, prompting them to reevaluate their goals.

Table 4. Shifts from one profile to another (n = 98)
Panel A. Students' profiles at the beginning and the end

	END				
BEGINNING	NON-COMPETITIVE	SOMEWHAT COMPETITIVE	WELL ADJUSTED	SUCCESS-SEEKING	TOTAL
Non-competitive	7	3	1	0	11
Somewhat competitive	5	11	6	1	23
Well adjusted	1	4	28	3	36
Success-seeking	0	0	6	22	28
Total	13	18	41	26	98

Chi-squared p-value is 0.758

Panel B. Shifts from one profile to another

Profile	Beginning	Shift up	Shift down	No shift	End
Non-competitive	11.1 %	4.0 %	0.0 %	7.1 %	11.2 %
Somewhat competitive	23.2 %	7.1 %	5.1 %	11.1 %	23.5 %
Well adjusted	37.4 %	3.0 %	6.1 %	28.3 %	36.7 %
Success-seeking	28.3 %	0.0 %	6.1 %	22.2 %	28.6 %
	100.0 %	14.1 %	17.2 %	68.7 %	100.0 %

Binomial Test Statistic (Downward Shifts): 17 (out of 31 total directional shifts), p-value is 0.360

A smaller percentage of students' transition from less competitive profiles (e.g., Non-Competitive or Somewhat Competitive) to more competitive profiles (e.g., Success-Seeking). This reflects the challenges in adopting more competitive goal orientations, possibly due to emotional or contextual barriers. The downward shifts are clearer, particularly from the Success-Seeking Profile to less competitive profiles. Table 4 shows that the first (non-competitive) profile initially has the fewest students and even fewer at the end. To summarise, students do not shift much in either direction (14% to a more competitive profile or 17% to a less competitive profile). The Chi-squared test (p-value is 0.758) indicates that statistically, the distributions of students in the profiles are not different between the beginning and the end. The binomial test yields a p-value of 0.36, indicating that there is no statistically significant evidence to support the hypothesis that downward shifts occur more frequently than upward shifts. In other words, based on this data, we cannot reject the null hypothesis that upward and downward shifts are equally likely. Therefore, H3 is not supported.

4.3. Achievement emotions as predictors of the shifts

Figure 5 illustrates that achievement emotions such as enjoyment, boredom, and anxiety remain relatively stable throughout the course. These findings suggest that students' emotional experiences during the accounting course are not significantly influenced by the progression of the course or shifts in their achievement goal orientations. However, an exception to this general trend is the increase in worry or anxiety towards the end of the course. The heightened worry observed in the later stages of the course may be attributed to the proximity of the final exam.

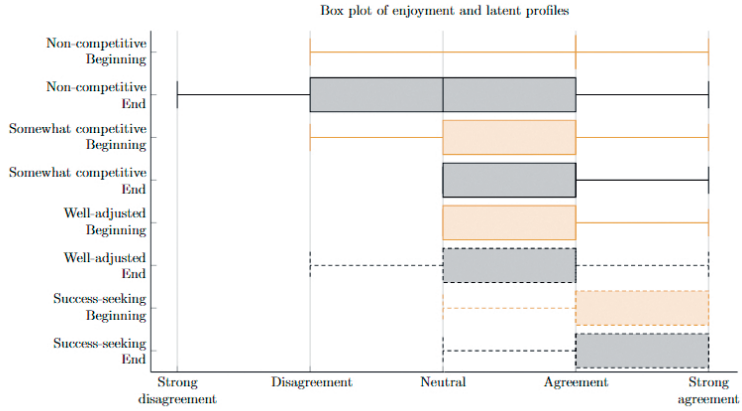

Figure 1: Figure 5a. Box plot of enjoyment and latent profiles (n = 98)

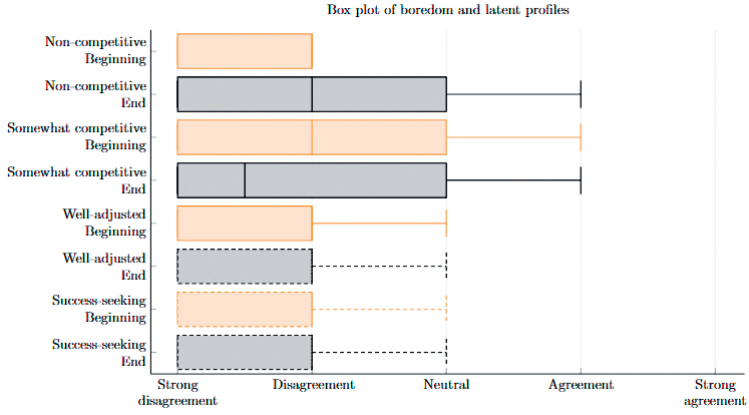

Figure 2: Figure 5b. Box plot of boredom and latent profiles (n = 98)

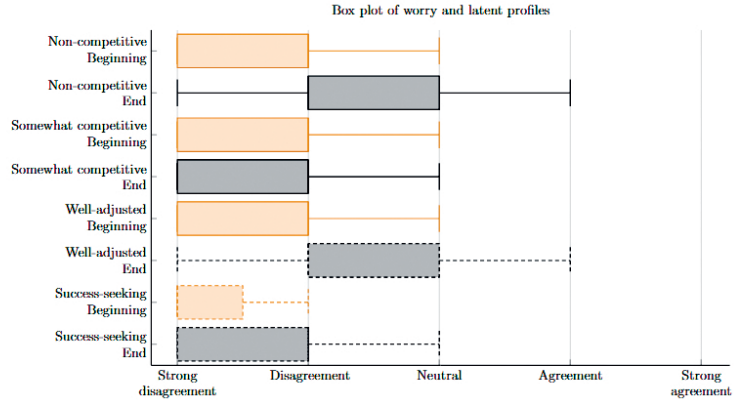

Figure 3: Figure 5c. Box plot of worry and latent profiles (n = 98)

The findings in Figure 5c are consistent with the literature on achievement goals, demonstrating a strong association between increased worry and performance-avoidance goals. Performance-avoidance goals are closely linked with worry across various dimensions of test anxiety (Möcklinghoff et al., 2023), and performance–avoidance goals and worry mediate the effect of stereotype threat on performance (Brodish & Devine, 2009). A direct correlation between performance-avoidance goals and worry has also been observed in academic testing contexts (Stan & Oprea, 2015), and they mediate the relationship between competence beliefs and anxiety (Putwain & Symes, 2012). In line with this, the current study's descriptive statistics show that the Non-Competitive profile, characterised by heightened performance-avoidance, is prone to increases in students' worry.

Table 5 examines the impact of changes in achievement emotions (enjoyment, boredom, and worry), along with gender and high school GPA (HSGPA), on shifts between achievement goal profiles. The analysis distinguishes between shifts to a more competitive profile (Panel A) and a less competitive profile (Panel B). Panel A explores the predictors of students transitioning from less competitive profiles (e.g., Non-Competitive or Somewhat Competitive) to more competitive profiles (e.g., Well-Adjusted or Success-Seeking). Increased enjoyment does not significantly influence upward shifts (coefficient = 0.971, p-value = 0.949), suggesting that a rise in enjoyment alone may not motivate students to adopt a more competitive orientation. The same applies to other changes in achievement motivations. The change in boredom (coefficient is 1.405, p-value is 0.441), worry (coefficient is 1.009, p-value is 0.978), and control variables are insignificant. The predictors do not explain shifts to more competitive profiles well, as indicated by the low pseudo R^2 value (0.017). This suggests that upward shifts may depend on other unmeasured factors, such as intrinsic motivation, course content, or external influences.

Panel B of Table 5 analyses the predictors of transitions from adaptive profiles (e.g., Success-Seeking or Well-Adjusted) to less adaptive ones (e.g., Non-Competitive or Somewhat Competitive). Changes in Enjoyment (coefficient is 0.603, p-value is 0.256) and Boredom (coefficient is 2.073, p-value is 0.108) are insignificant. Increased worry strongly predicts downward shifts, with a coefficient of 1.975 and a p-value of 0.032. This aligns with findings from earlier parts of the empirical analysis, emphasising that heightened worry triggers students' shifts towards less adaptive goal orientations. Control variables are insignificant.

Table 5. The effect of achievement emotions on a shift to another profile (n = 98)

Panel A The effect of achievement emotions on a more competitive profile

SHIFT TO A MORE COMPETITIVE PROFILE	COEF.	ST.ERR.	*t*-VALUE	*p*-VALUE	[95% CONF	INTERVAL]	SIG
Incr. in enjoyment	0.971	0.441	-0.06	0.949	.399	2.367	
Incr. in boredom	1.405	0.620	0.77	0.441	.592	3.334	
Incr. in worry	1.009	0.338	0.03	0.978	.523	1.947	
Female	1.357	0.842	0.49	0.623	.402	4.581	
HSGPA	0.987	0.034	-0.38	0.705	.922	1.057	
Constant	0.208	0.213	-1.53	0.126	.028	1.556	

Mean dependent var	0.143	SD dependent var	0.352
Pseudo r-squared	0.017	Number of obs	98
Chi-square	1.380	Prob > chi2	0.927
Akaike crit. (AIC)	91.003	Bayesian crit. (BIC)	106.513

*** p<.01, ** p<.05, * p<.1

Panel B The effect of achievement emotions on a less competitive profile

SHIFT TO A LESS COMPETITIVE PROFILE	COEF.	ST.ERR.	*t*-VALUE	*p*-VALUE	[95% CONF	INTERVAL]	SIG
Incr. in enjoyment	0.603	0.268	-1.14	0.256	0.252	1.442	
Incr. in boredom	2.073	0.940	1.61	0.108	0.853	5.041	
Incr. in worry	1.975	0.628	2.14	0.032	1.059	3.684	**
Female	0.723	0.467	-0.50	0.615	0.204	2.564	
HSGPA	0.970	0.033	-0.89	0.376	0.907	1.037	
Constant	0.262	0.254	-1.38	0.167	0.039	1.752	

Mean dependent var	0.163	SD dependent var	0.372
Pseudo r-squared	0.134	Number of obs	98
Chi-square	11.712	Prob > chi2	0.039
Akaike crit. (AIC)	87.517	Bayesian crit. (BIC)	103.027

*** p<.01, ** p<.05, * p<.1

5. Discussion and Conclusions

5.1. Discussion

This study examined the short-term stability and transformation of achievement goal orientations, as well as their relationship with achievement emotions, in the context of an introductory accounting course. The results offer nuanced support for most of the proposed hypotheses.

First, the achievement goal profiles exhibited a stable four-profile structure throughout the course, with consistent trends in goal orientations: performance-avoidance decreased, performance-approach orientation increased, and mastery-approach orientation rose moderately from Profile 1 to Profile 4. This pattern supports Hypothesis 1, confirming the stability of the latent profile structure over time.

Second, we found moderate stability in students' achievement goal profiles over the six-week course. Approximately two-thirds of students retained their initial profiles, with the latent profile structure remaining largely consistent throughout. These findings partially support H2, suggesting that a meaningful proportion (about 31%) of students experienced profile transitions. This aligns with prior research that acknowledges stability and change in achievement goals over time (e.g., Niemivirta et al., 2019; Pulkka & Niemivirta, 2013).

Third, the hypothesis that students who shifted profiles would be more likely to move toward less adaptive (less competitive) profiles (H3) was not supported. Although descriptively there were more downward shifts (17.2%) than upward ones (14.1%), the binomial test indicated that this difference was not statistically significant ($p = 0.36$). Likewise, a chi-squared test of the distribution of students across profiles from beginning to end did not show a significant change ($p = 0.758$). These findings suggest that while motivational instability exists, it is not systematically skewed toward negative adaptation at a student level.

Fourth, hypothesis H4a was not supported. Neither enjoyment nor boredom significantly predicted transitions into more adaptive profiles, as indicated by logistic regression results (p-values > .25). These findings suggest that positive or neutral emotional changes alone may not be sufficient to initiate shifts in students' goal orientations during a short-term academic intervention. However, hypothesis H4b was partially supported. Among students who shifted profiles, increased worry significantly predicted transitions into less adaptive profiles ($p = 0.032$). This finding supports the theoretical framework of Control-Value Theory (Pekrun,

2006), which posits that anxiety stemming from low perceived control and high task value can undermine adaptive motivation. It is also consistent with prior research linking worry to performance-avoidance goals (e.g., Möcklinghoff et al., 2023; Putwain & Symes, 2012).

Gender differences in goal orientation profiles were observed descriptively. Female students were more likely to be found in less competitive profiles, while male students dominated the Success-Seeking group. However, in logistic regression analyses, gender did not significantly predict profile transitions. This suggests that while gender may influence the initial adoption of motivational profiles, it does not appear to drive changes in those profiles over time. Similarly, high school GPA, though included as a control, did not significantly explain profile movement, indicating that academic background may shape entry-level motivations more than their evolution.

These findings contribute several insights to the literature. First, they demonstrate that even in high-pressure and quantitatively demanding environments, such as accounting education, motivational profiles can remain relatively stable. Second, the study underscores the destabilising role of worry, suggesting that emotional regulation interventions may be more effective than efforts targeting engagement or enjoyment alone. Third, it nuances the gender literature by distinguishing between static motivational differences and dynamic motivational shifts.

5.2. Conclusions

This study demonstrated that achievement goal profiles in an introductory accounting course remained structurally stable, while roughly one-third of students shifted profiles. Worry emerged as the most consistent emotional predictor of downward shifts. These results highlight the importance of monitoring students' affective experiences in demanding courses.

Overall, this research extends Achievement Goal Theory by demonstrating its applicability in a short, high-stakes business education context. It provides new evidence that achievement emotions, especially worry, can serve as a critical driver in shaping or destabilising students' motivational orientations. These findings have practical implications for instructors and program designers seeking to create more emotionally supportive learning environments in accounting and related disciplines.

5.3. Limitations, future directions, and practical implications

While this study offers novel insights into the interplay between achievement emotions and goal profile stability in accounting education, several limitations should be acknowledged.

First, the sample size (n = 98) and single-institution setting limit the generalizability of the findings. Replicating the study with larger and more diverse cohorts—across disciplines, cultural contexts, and academic levels—would enhance external validity. Second, the short time frame (six weeks) restricts our ability to capture longer-term motivational development. Future research should adopt longitudinal designs spanning multiple semesters or academic years to explore whether the observed emotional effects persist or intensify over time.

Second, although this study was conducted in an Introduction to Accounting course within a business school, the course was open to students across different intended majors. Motivational tendencies, such as competitiveness, may differ by field (e.g., finance versus human resource management). Unfortunately, we did not have access to data on students' selected

majors at the time of the course, which limits our ability to examine whether achievement goal orientations and emotional dynamics varied across disciplinary trajectories. Future research should therefore investigate how students' chosen majors shape their achievement goal profiles and emotional experiences in introductory courses.

Third, it would be valuable to replicate this study at the Master's level, where disciplinary specialisation is clearer and students may face different motivational and emotional pressures than in first-year studies. Comparative analyses across majors (e.g., accounting, finance, management, and human resources) and across academic levels (Bachelor's versus Master's) would provide deeper insight into how achievement goals and emotions interact in diverse educational contexts.

Fourth, although we focused on three central emotions, enjoyment, boredom, and worry, other achievement emotions (e.g., pride, shame, hopelessness) may also influence students' motivational pathways. Expanding the emotional framework could provide a more comprehensive understanding of the affective mechanisms driving shifts in goal orientation.

Fifth, while we included gender and high school GPA as control variables, other individual difference factors, such as self-efficacy, resilience, or personality traits, may moderate the relationship between emotions and goal profiles. Exploring such moderators could clarify why some students remain stable while others change.

From a practical standpoint, our findings underscore the importance of supporting students' emotional well-being in business education. The strong link between worry and shifts toward less adaptive goal profiles highlights the need for psychologically safe learning environments, particularly in demanding introductory accounting courses. This concern is timely given recent evidence of declining mental health among business students; for example, a 2023 survey by Suomen Ekonomit reported that 36% of Finnish business students are dissatisfied with their mental well-being.

Instructors can respond in several ways. One possibility is to try to reduce students' worry by paying attention to students' stress, especially before examinations, and using low-stakes quizzes or practice tests to help manage anxiety. Second, instructors can promote a mastery-focused climate by balancing the emphasis on performance with encouragement of understanding and long-term learning to sustain more adaptive goal orientations. Third, instructors can provide formative feedback by complementing high-stakes exams with ongoing assessment to strengthen confidence and motivation. Fourth, instructors can acknowledge emotions more openly by discussing coping strategies and by encouraging peer support to help students regulate their emotions.

Future research should further explore the connections between academic emotions, goal orientations, and mental health, potentially drawing on interdisciplinary frameworks such as those presented by Juntunen et al. (2022).

References

Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: testing multiple goal models. *Journal of Personality and Social Psychology* 80:5, 706–722.

Bouffard, T., Boisvert, J., Vezeau, C., & Larouche, C. (1995). The impact of goal orientation on self regulation and performance among college students. *British Journal of Educational Psychology* 65:3, 317–329.

Brodish, A. B., & Devine, P. G. (2009). The role of performance–avoidance goals and worry in mediating the relationship between stereotype threat and performance. *Journal of Experimental Social Psychology* 45:1, 180–185.

Burnham, K. P., & Anderson, D. R. (2004). Multimodel inference: understanding AIC and BIC in model selection. *Sociological Methods & Research* 33:2, 261–304.

D'Lima, G. M., Winsler, A., & Kitsantas, A. (2014). Ethnic and gender differences in first-year college students' goal orientation, self-efficacy, and extrinsic and intrinsic motivation. *The Journal of Educational Research* 107:5, 341–356.

Diseth, Å. (2007) Approaches to learning, course experience and examination grade among undergraduate psychology students: testing of mediator effects and construct validity. *Studies in Higher Education* 32:3, 373–388,

Duff, A., & Mladenovic, R. (2015). Antecedents and consequences of accounting students' approaches to learning: A cluster analytic approach. *The British Accounting Review* 47:4, 321–338.

Dweck, C. (1986). Motivational processes affecting learning. *American Psychologist* 41, 1040–1048.

Dweck, C., & Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review* 95:2, 256–273.

Elliot, A. J., & McGregor, H. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology* 80:3, 501–519.

Elliot, A. J., & Murayama, K. (2008). On the measurement of achievement goals: critique, illustration, and application. *Journal of Educational Psychology* 100:3, 613–628.

Fryer, J. W., & Elliot, A. J. (2007). Stability and change in achievement goals. Journal of Educational Psychology 99:4, 700–714.

Goetz, T., Frenzel, A. C., Hall, N. C., & Pekrun, R. (2006). The domain specificity of academic emotional experiences. *Journal of Experimental Education* 75:1, 5–29.

Gonçalves, T., Niemivirta, M., & Lemos, M. S. (2017). Identification of students' multiple achievement and social goal profiles and analysis of their stability and adaptability. *Learning and Individual Differences* 54, 149–59.

Harackiewicz, J. M., Barron, K. E., Carter, S. M., Lehto, A. T., & Elliot, A. J. (1997). Predictors and consequences of achievement goals in the college classroom: Maintaining interest and making the grade. *Journal of Personality and Social Psychology* 73:6, 1284–1295.

Harackiewicz, J. M., Barron, K. E., & Elliot, A. J. (1998). Rethinking achievement goals: When are they adaptive for college students and why? *Educational Psychologist* 33:1, 1–21.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology* 94, 562–575.

Huikku, J., Myllymäki, E. R., & Ojala, H. (2022). Gender differences in the first course in accounting: An achievement goal approach. *The British Accounting Review* 54:3, 101081, 1–18.

Huikku, J., Ojala, H., & Mättö, M. (2025). Understanding the shift: exploring motivational and contextual factors affecting the adoption of a learning approach. *Accounting Education*, forthcoming.

Hulleman, C. S., Schrager, S. M., Bodmann, S. M., & Harackiewicz, J. M. (2010). A meta-analytic review of achievement goal measures: Different labels for the same constructs or different constructs with similar labels? *Psychological Bulletin* 136:3, 422–449.

Juntunen, H., Tuominen, H., Viljaranta, J., Hirvonen, R., Toom, A., & Niemivirta, M. (2022). Feeling exhausted and isolated? The connections between university students' remote teaching and learning experiences, motivation, and psychological well-being during the COVID-19 pandemic. *Educational Psychology* 42:10, 1241–1262.

Li, Q., Cho, H., Cosso, J., & Maeda, Y. (2021). Relations between students' mathematics anxiety and motivation to learn mathematics: A meta-analysis. *Educational Psychology Review* 33:3, 1017–1049.

Lubke, G., & Muthén, B. O. (2007). Performance of factor mixture models as a function of model size, covariate effects, and class-specific parameters. *Structural Equation Modeling: A Multidisciplinary Journal* 14:1, 26–47.

Lucas, U. (2000). Worlds apart: Students' experiences of learning introductory accounting. *Critical Perspectives on Accounting* 11:4, 479–504.

Lucas, U., & Meyer, J. H. F. (2005). Towards a mapping of the student world: The identification of variation in students' conceptions of, and motivations to learn, introductory accounting. *The British Accounting Review* 37:2, 177–204.

Meece, J. L., Glienke, B. B., & Burg, S. (2006). Gender and motivation. *Journal of School Psychology* 44, 351–373.

Miller, A. L. (2015). The role of goal orientation in student participation in high-impact practices. *Mid-Western Educational Researcher* 27:1, 49–72.

Mladenovic, R. (2000). An investigation into ways of challenging introductory accounting students' negative perceptions of accounting. *Accounting Education* 9:2, 135–155.

Möcklinghoff, S., Rapoport, O., Heckel, C., Messerschmidt-Grandi, C., & Ringeisen, T. (2023). Relationships between achievement goal orientations, multidimensional test anxiety, and performance – In conclusion, every facet counts. *Learning and Individual Differences* 102, 102269, 1–14.

Nicholls, J. (1984). Achievement motivation: conceptions of ability, subjective experience, task choice, and performance. *Psychological Review* 91, 328–346.

Niemivirta, M., Pulkka, A. T., Tapola, A., & Tuominen, H. (2019). *Achievement goal orientations: A person-oriented approach.* The Cambridge Handbook of Motivation and Learning, 566–616.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal* 14:4, 535–569.

Pekrun, R. (2006). The control–value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review* 18:4, 315–341.

Pekrun, R. (2019). Inquiry on emotions in higher education: progress and open problems. *Studies in Higher Education* 44:10, 1806–1811.

Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. *Journal of Educational Psychology* 101:1, 115–135.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist* 37:2, 91–105.

Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology* 92:3, 544–555.

Pulkka, A-T, & Niemivirta, M. (2013). Adult students' achievement goal orientations and evaluations of the learning environment: A person-centred longitudinal analysis. *Educational Research and Evaluation* 19:4, 297–322.

Putwain, D. W., & Symes, W. (2012). Achievement goals as mediators of the relationship between competence beliefs and test anxiety. *British Journal of Educational Psychology* 82:2, 207–224.

Senko, C., & Harackiewicz, J. M. (2005). Regulation of achievement goals: The role of competence feedback. *Journal of Educational Psychology* 97:3, 320 –336.

Senko, C., Hulleman, C. S., & Harackiewicz, J. M. (2011). Achievement goal theory at the crossroads: old controversies, current challenges, and new directions. *Educational Psychologists* 46:1, 26–47.

Stan, A., & Oprea, C. (2015). Test anxiety and achievement goal orientations of students at a Romanian university. *Procedia - Social and Behavioral Sciences* 180, 1673–1679.

Suomen Ekonomit (2023). Mental Wealth Warning: The economic effects of the crisis of poor well-being. https://www.ekonomit.fi/en/press-release/mental-wealth-warning-the-economic-effects-of-the-crisis-of-poor-well-being/#e9bb8fe5

Schwarz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics* 6:2, 461–464.

Tuominen-Soini, H., Salmela-Aro, K., & Niemivirta, M. (2012). Achievement goal orientations and academic well-being across the transition to upper secondary education. *Learning and Individual Differences* 22:3, 290–305.

Vermunt, J. K., & Magidson, J. (2005). Factor analysis with categorical indicators: A comparison between traditional and latent class approaches. In A. van der Ark (Ed.), *New Developments in Categorical Data Analysis for the Social and Behavioral Sciences* (pp. 41–62). Psychology Press.