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

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 a person-centred approach building on the Achievement Goal Theory, we surveyed 98 first-year business students at the start and end of a six-week course. Latent-profile analysis uncovered four recurring goal-orientation configurations, Non-Competitive, Somewhat Competitive, Well-Adjusted and Success-Seeking, that remained structurally stable across 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. This study enriches the motivation literature by documenting within-course dynamism and positions achievement emotions, particularly worry, as critical drivers for sustaining adaptive motivation in quantitatively intensive business contexts.

Key words. Accounting, Achievement goals, education, achievement emotions, latent profile analysis.

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 strongly influence 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, 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.

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?

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). Initially conceptualised to explain students' motivations and behaviours in educational settings (Dweck, 1986; Nicholls, 1984), the AGT underscores the importance of students' reasons for selecting courses, performing tasks, and persisting 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; Hulleman et al., 2010). 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 (Harackiewicz et al., 1997; Elliot & McGregor, 2001).

Conversely, performance-approach goals typically entail a desire to outperform peers, often manifested in exam performance (Nicholls, 1984; 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).

Recent research 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 and performance-approach). These profiles offer a more nuanced understanding of students' motivational configurations (Wormington et al., 2012; Tuominen-Soini et al., 2012). In this vein, the stability of these profiles 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. Senko and Harackiewicz (2005) identified two forms of achievement goal regulation across tasks: goal switching and goal intensification. 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 goal type. 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).

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, 2000, 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.

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. Research suggests that achievement goals can evolve, even within a single academic year. In higher education, studies have shown that undergraduates' achievement goal profiles can change over relatively short periods. For example, Luo et al. (2011) found, in a Chinese context, that university students' achievement goal orientations displayed both stability and change across a semester, with shifts linked to variations in academic performance and psychological well-being. Similarly, 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 time, 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 some students maintained consistent achievement goal orientations, others exhibited changes associated with how students evaluated their learning environment. Studies from other disciplines suggest that goal orientation profiles remain reasonably stable, even during educational transitions (Niemivirta et al., 2019; Gonçalves et al., 2017; Tuominen-Soini et al., 2012). On the other hand, opposing views have also been presented. Fryer and Elliot (2007) suggest that 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 in a business school context has not been extensively 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) examined the effect of competence feedback on goal stability among US introductory psychology course students during a university semester. They found that pursuit of mastery, performance and performance-avoidance goals were generally stable throughout the semester. However, goals were also adjusted, reflecting the competence feedback in exam performance. Students seemed to switch between the two performance goals, particularly from approach to avoidance in the case of negative feedback. Senko and Harackiewicz (2005) also found that mastery goals predicted interest in the course, performance goals predicted success, and performance-avoidance goals predicted lack of success.

Huikku et al. (2025) examined students' shifts between approaches to learning profiles in an Introduction to accounting course. While 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). 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 most students belonged to the deep-dominated profile at the beginning of the course. Over a third of initially deep-dominated profile students adopted a surface-dominated profile during the course. Therefore, by the end of the course, most students had adopted a surface-dominated profile.

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 (cf. Senko & Harackiewicz, 2005). Such transitions often correspond to less adaptive motivational patterns, as they may reduce intrinsic interest, increase anxiety, and promote surface learning strategies (Tuominen-Soini et al., 2012; Pulkka & Niemivirta, 2013). Furthermore, 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 students' assessment gets 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 (Mladenovic, 2000; 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 (Meece et al., 2006; Lucas & Meyer, 2005). If such emotions occur during the course, we expect

that they trigger shifts towards less adaptive profiles. Following the above discussion, we set the following hypotheses.

H3: *When 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).

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 (Goetz et al., 2006; Pekrun et al., 2009). In contrast, worry, anxiety, and boredom are more frequently associated with performance-avoidance goals, undermining intrinsic motivation and academic resilience (Putwain & Symes, 2011; 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 worry and foster

performance-avoidance goals (Lucas & Meyer, 2005; Brodish & Devine, 2009). At the same time, high-achieving students who enjoy mastering accounting 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 complete 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 Goal	The mean of the raw scores was constructed from the 'Achievement Goal Questionnaire revised' (AGQ-revised) by Elliot and Murayama (2008).
Mastery 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
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)
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
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. Analyses 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 that 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*	*Criteria*	*Decision*	*Cronbach's*
Performance 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 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, mastery approach, and performance-avoidance goal items are based on responses to the inventory AGQ-revised (Elliot & Murayama, 2008).

The above three scales (performance, mastery 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.

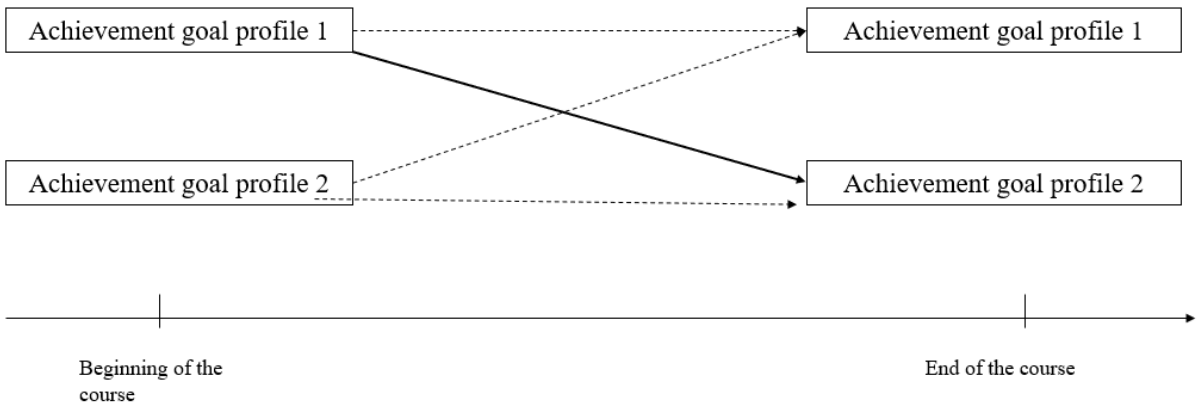

Figure 1. Goal profiles at the beginning and the end of the course

Following H1, we will compare how achievement goal profile structure emerge at the beginning and the end of the course. The comparison includes the number of profiles and the mean scores

of input scales (performance, mastery 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 orientation, while the most adaptive profile exhibits low performance-avoidance and high mastery goal orientations.

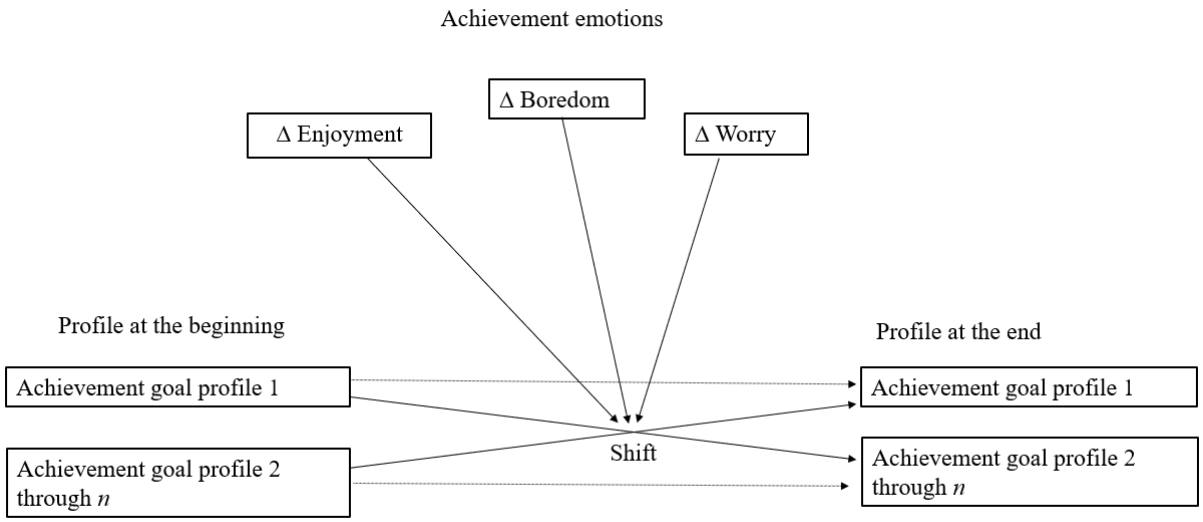

Figure 2. The theoretical model

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 (1).

$$\text{ProfileShift} = \alpha_0 + \alpha_1 \text{Incr.inEnjoyment} + \alpha_2 \text{Incr.inBoredom} + \alpha_3 \text{Incr.inWorry} + \Sigma_1 \text{Controls} + e \quad (1)$$

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; Elliot & McGregor, 2001; Harackiewicz et al., 1997; Harackiewicz et al., 2002). Regarding the association between achievement goals and SALs, Palos (2020) found that female students with a mastery 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.

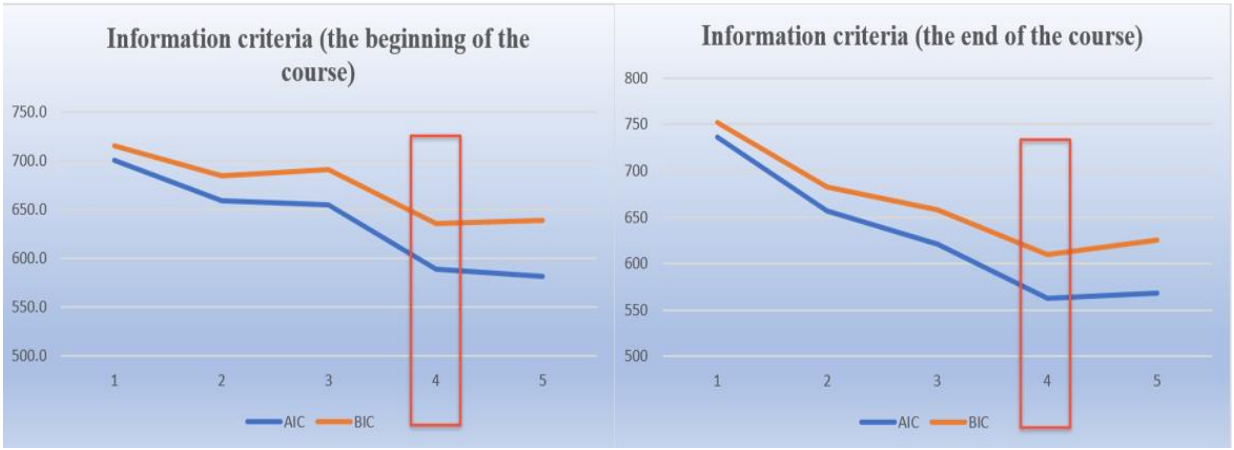

Figure 3. Akaike and Bayesian Information Criteria (n = 98)

In Profile 1, students report low performance orientation and high performance-avoidance, suggesting a disengagement from competitive academic striving. Accordingly, we label this the Non-competitive profile. Profile 2 shows a moderate increase in performance orientation and a reduction in performance-avoidance. Therefore, we label it Somewhat competitive profile.

Profile 3 continues this pattern, with further increases in performance 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 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, mastery, and performance-avoidance) display comparable developmental trends across the profiles at both time points. From Profile 1 to Profile 4, performance-avoidance decreases, performance orientation increases clearly, and mastery 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.

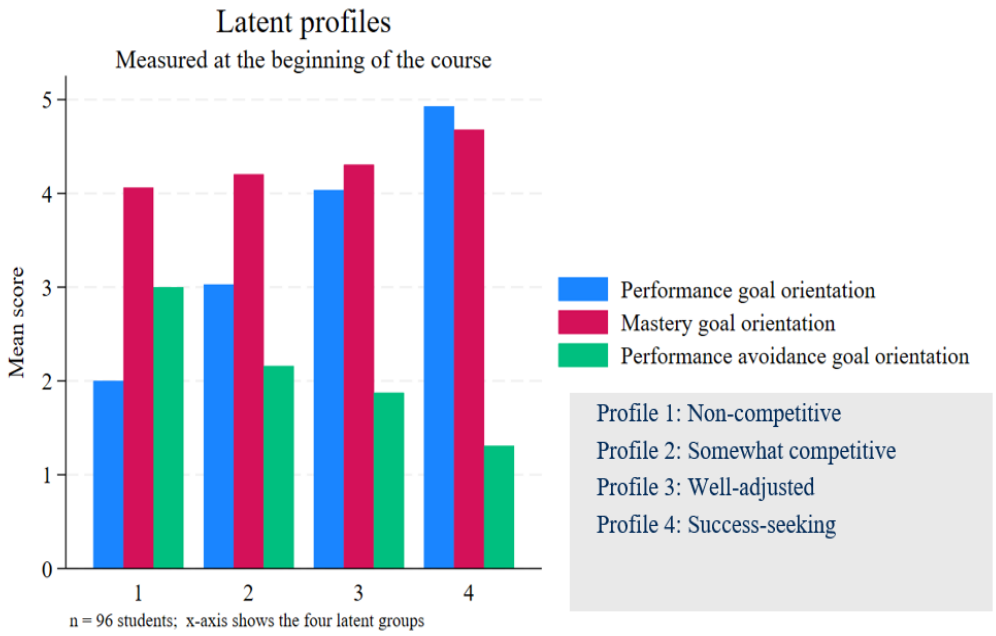

Figure 4a. Latent Profiles at the Beginning of the Course

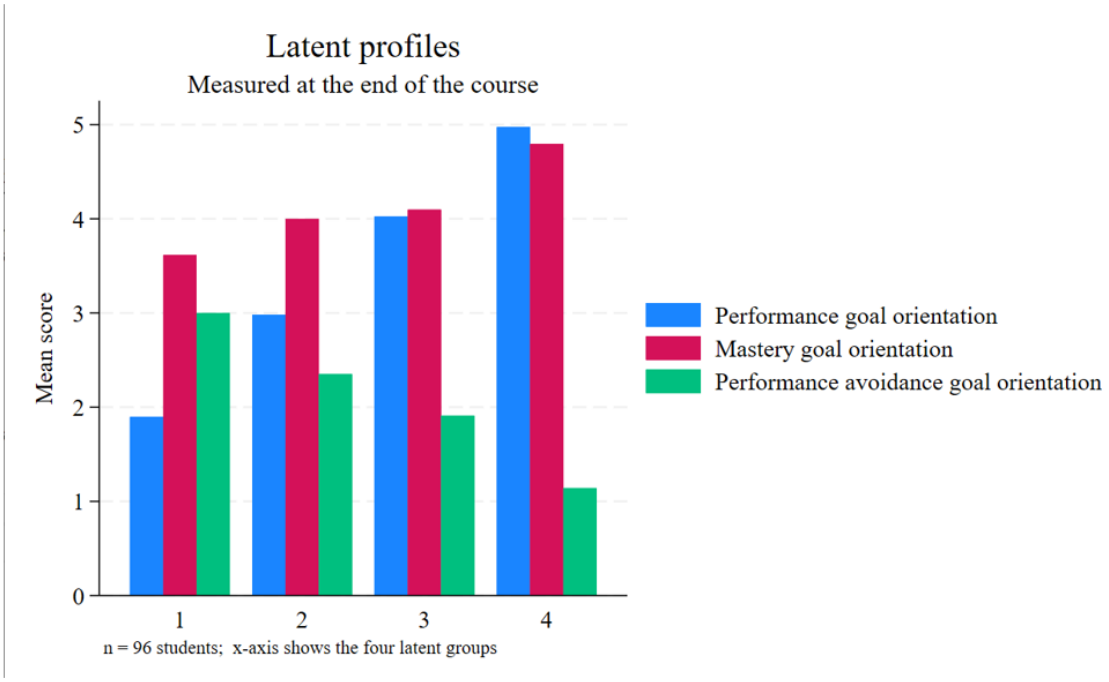

Figure 4b. Latent Profiles at the End of the Course (n = 98)

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 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 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 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 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 stays 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) shows 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 no statistically significant evidence supports 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.

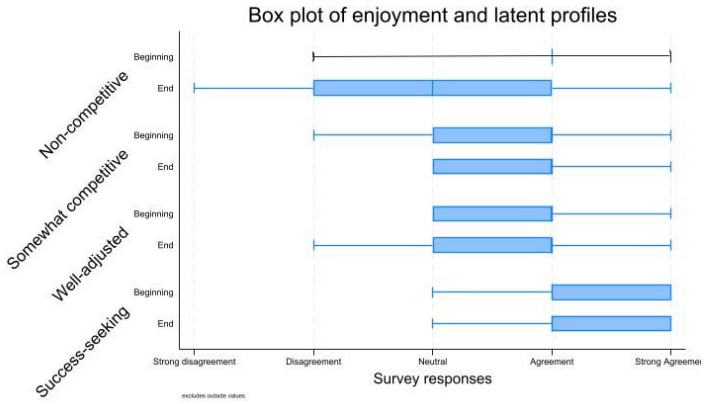

Figure 5a. Box plot of enjoyment and latent profiles (n = 98)

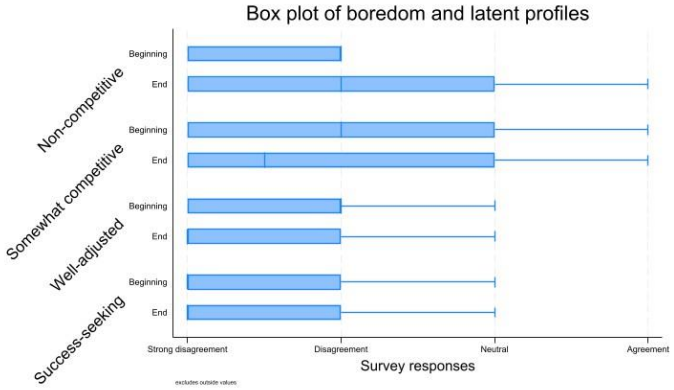

Figure 5b. Box plot of boredom and latent profiles (n = 98)

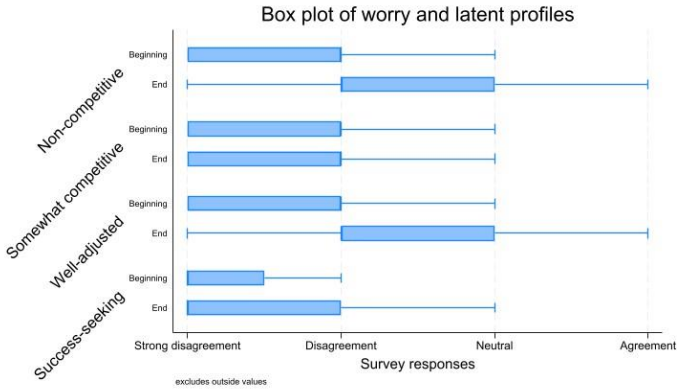

Figure 5c. Box plot of worry and latent profiles (n = 98)

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 stereotype threat strengthens this worry by adopting such goals (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 explored the short-term stability and transformation of achievement goal orientations and their relationship with achievement emotions in the context of an introductory accounting course. The results provide nuanced support for the hypotheses proposed.

First, the achievement goal profiles showed a stable four-profile structure across the course, with consistent trends in goal orientations: performance-avoidance decreased, performance orientation increased, and mastery orientation rose moderately from Profile 1 to 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 from beginning to end. 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 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 shown in logistic regression results (p-values > .25). These results 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 competitive 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 like accounting education, motivational profiles can remain relatively stable. Second, the study underscores the destabilizing 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 separating static motivational differences from dynamic motivational shifts.

5.2. Conclusions

This study examined the short-term stability and transformation of achievement goal profiles and their relationship with achievement emotions in an introductory accounting course. Using latent profile analysis, we identified four distinct goal orientation profiles—Non-Competitive, Somewhat Competitive, Well-Adjusted, and Success-Seeking—present at both the beginning and end of the course. The overall structure of these profiles remained stable, and approximately two-thirds of students maintained their initial profile, supporting moderate stability in achievement goals over a six-week academic period.

Contrary to expectations, we found no significant evidence that students systematically shifted toward less adaptive profiles during the course. While directional changes occurred, upward and downward shifts were nearly balanced, and the hypothesis that downward shifts would dominate was not statistically supported.

The most consistent emotional predictor of profile movement was worry. Increased worry significantly predicted transitions to less competitive profiles, lending support to control-value theory and underscoring the influence of negative affect on motivational stability. In contrast, changes in enjoyment and boredom did not significantly explain profile changes. Thus, while achievement goal orientations may appear stable at a surface level, underlying emotional dynamics, particularly anxiety, can subtly reshape motivational patterns over time.

Importantly, gender and prior academic ability (measured by high school GPA) did not significantly predict profile transitions, even though descriptive trends indicated that female students were more likely to begin in less competitive profiles. These results suggest that while background factors may influence students' starting points, emotional factors are more salient in driving motivational change.

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 critical driver in shaping or destabilising students' motivational orientations. These findings carry practical implications for instructors and program designers aiming to foster 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 generalisability 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.

Third, 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 offer a more comprehensive understanding of the affective mechanisms driving goal orientation shifts.

Fourth, 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, the findings underscore the importance of addressing emotional well-being in business education. The significant link between increased worry and shifts toward less competitive goal profiles highlights the need for instructors to create psychologically safe learning environments. Strategies may include: Offering formative feedback instead of relying solely on high-stakes assessments, promoting a mastery-focused classroom climate, training educators to recognise and respond to signs of emotional distress.

This is particularly urgent given recent evidence of declining mental health among business students. A 2023 survey by Suomen Ekonomit reported that 36% of Finnish business students are dissatisfied with their mental well-being. Future research should explicitly examine the connections between academic emotions, goal orientations, and mental health outcomes, potentially drawing on interdisciplinary frameworks such as those proposed by Juntunen et al. (2022).

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