Asian Journal of Contemporary Education
ISSN(e): 2617-1252
DOI: 10.55493/5052.v8i2.5185
Vol. 8, No. 2, 126-135.

Stability and change in achievement goals during the COVID-19 pandemic: Protective factors contributing to motivational resilience

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Article History
Received: 19 July 2024
Revised: 30 August 2024
Accepted: 17 September 2024
Published: 1 October 2024

Keywords
Achievement goal theory
Stability
Change
College students
Emergency distance education
Protective factors.

ABSTRACT

Motivation is the process by which goal-directed behavior is initiated, energized, and sustained. The type of achievement goals endorsed by students is one of the most significant constructs in motivational research in educational contexts. It is often assumed that achievement goal endorsement is stable over time. However, that may have changed given the outbreak of COVID-19. Data were collected from a sample of undergraduate students in China (n = 300) representing various majors and academic classifications. A 2 x 2 achievement goal framework comprising mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals was then compared before and during emergency distance education. Our study results revealed that only scores on performance-approach goals decreased significantly across the two learning conditions ($t = 11.66$, $p < .001$), suggesting students were less likely to focus on demonstrating competence relative to others during emergency distance education. However, individual differences were detected between high-achievers and low-achievers in terms of performance-approach goal endorsement during emergency distance education. More importantly, scores on mastery-approach goals did not significantly decrease ($t = 1.75$, $p = .08$), suggesting students' intrinsic motivation remained constant during emergency distance education. While technology support did not positively predict mastery-approach goal endorsement during emergency distance education, student-perceived teacher support and physical learning environment were two significant predictors, implying the power of human connection in online learning during COVID-19.

Contribution/ Originality: Past research provides reasons to anticipate change in achievement goal endorsement over time. While researchers have been investigating the effect of emergency distance education on students' motivation change, little research has focused on a more nuanced motivation change in students through the lens of achievement goal theory.

1. INTRODUCTION

The COVID-19 pandemic has profoundly affected student learning, psychological well-being, and academic motivation. Many students struggled to stay motivated to learn as a result of the abrupt shift in the instructional delivery method and feelings of uncertainty about the future (e.g., Cobb et al. (2023)). As a predictor of learning and achievement, motivation stands at the center of the educational enterprise. It is a complex and multidimensional

concept that embodies different elements, such as beliefs, values, desires, needs, emotions, and goals (e.g., (Wentzel & Wigfield, 2009; Xie et al., 2021)). Motivation is the process by which goal-directed behavior is initiated, energized, and sustained. In turn, goal-setting triggers goal-related behaviors, guides people's focus, and sustains the momentum in the pursuit of the goal. It also connects students' ambitions with their learning tasks. Students facing an achievement task (for example, a course) may adopt several different competence-relevant goals. Goal orientations that students endorse in different learning contexts significantly affect students' learning outcomes (Menon, 2015). The type of achievement goals endorsed by students is one of the most significant constructs in motivational research in educational contexts.

1.1. Achievement Goal Theory

Goal orientation theorists have posited that achievement goals may vary along two dimensions: a mastery dimension (Dweck, 1986) and a performance dimension (Elliot, 1999). Mastery goals center on developing personal competence based on intrapersonal standards of learning; for example, a student chooses to pay careful attention in a biology class as they intend to become a doctor in the future. Performance goals center on demonstrating one's competence based on normative or comparative standards of performing; for example, a student wants to have the highest score on an upcoming test among their friends (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). In other words, mastery orientation focuses on learning, and performance orientation focuses on grades. In the contemporary literature, however, researchers typically visualize achievement goals concerning both dimensions using the 2 × 2 achievement goal framework (see Table 1).

Table 1. The 2×2 framework of achievement goal orientation.

	Approach	**Avoidance**
Mastery	Learning	Avoid misunderstanding
Achievement	Out-performing others	Avoid looking incompetent

1.2. The 2 x 2 Achievement Goal Framework

Choosing *mastery-approach* goals suggests that students are motivated to improve their knowledge and abilities, focusing less on outperforming others. They aim to master a task by overcoming challenges and putting in hard work (Braten & Olaussen, 1998). Some researchers liken mastery goals to intrinsic motivation and describe them as the ideal form of competence-based regulation (Elliot & McGregor, 2001). An example of a mastery-approach item is: "I want to learn as much as possible in this class." On the other hand, choosing *mastery-avoidance* goals involves engaging in tasks to avoid losing knowledge or skills that have already been acquired (Elliot & McGregor, 2001). For instance, an athlete concerned about not performing as well as they have in the past may be pursuing a mastery-avoidance goal.

Performance-approach goals are focused on demonstrating competence relative to others. Students with a strong performance-approach orientation are extrinsically motivated, seeking high marks or positive evaluations from others as their primary motivation (Elliot & McGregor, 2001). They strive to show they are more competent than their peers. An example of a performance-approach item is: "I need to do better than other students." Students with *performance-avoidance* goals are concerned with avoiding appearing incompetent. They are extrinsically motivated by a fear of failure (Pintrich, 2000). These students tend to avoid challenging situations and may experience high levels of test anxiety. An example of a performance-avoidance item is: "My goal in this class is to avoid performing poorly."

1.3. The Multiple Goal Perspective

Goal orientation impacts students' learning outcomes. Students endorsing performance goals focus on outperforming others or avoiding appearing incompetent in front of others. In contrast, students endorsing mastery goals focus on true mastery and tend to be more effective in learning the material. However, students' academic

motivation is complex, with varied sets of goals and approaches likely endorsed in different domains, and at various points during a semester. To address this complexity, motivational researchers have proposed a revised mastery goals framework that incorporates a multiple-goal perspective (e.g., (Barron & Harackiewicz, 2001; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). From a multiple-goal perspective, students may endorse multiple achievement-related goals simultaneously and to varying degrees, and the multiple goals can be adaptive in different contexts. For example, when academic competition is intense, performance-approach goals may be required. Past research conducted in East Asia suggests that endorsing a combination of high mastery and performance approach goals *along with* low-performance avoidance goals is ideal for learning in that educational context. However, it remains unclear whether a universally optimal adaptive motivation orientation exists. Nonetheless, motivational orientations that encompass multiple goals may provide a more comprehensive perspective than the ones that treat mastery and performance goals as binary frameworks (Harackiewicz et al., 2002; Kaplan & Middleton, 2002).

1.4. Goal Stability and Change

Students' achievement goal endorsement tends to be stable over time. Achievement goals originate from inborn temperaments (Elliot & Thrash, 2002) and personality traits (Elliot & Church, 1997). Another reason for goal stability relates to the concept of a goal itself. When students face an achievement task (for example, a mid-term exam) they respond by creating a cognitive framework for interpreting this challenge and reacting to competence-related information, for example "this will be a hard test, but I am good in math, so if I study hard I should do well" (e.g., Dweck (1986)). This framework may give rise to "directional" perceptual-cognitive processes that tend to promote continued goal pursuit in a self-fulfilling manner (e.g., Elliot and Harackiewicz (1996)). For example, mastery-approach goals focus on developing competence and understanding through self-improvement and mastering tasks, which means that mastery-approach goal pursuit emerges from intrinsic motivation. Intrinsic and extrinsic motivation are two opposite poles of a continuum ranging from a "poor" (extrinsic) to a "good" (intrinsic) form of motivation. Therefore, shifting an individual's focus from intrinsic motivation (mastery goal) to extrinsic motivation (performance goal) takes time especially given the fact that motivation forms are stable within an individual over time (Bieg, Reindl, & Dresel, 2017).

Setting and pursuing academic goals is a form of self-regulation (Bandura, 1986; Locke & Latham, 1990). Self-regulation is the ability to manage your thoughts, feelings, and behaviors to achieve your goals. It is a cyclical process wherein students set goals, monitor their performance, evaluate goal progress, and then reflect on the outcome. The cycle then repeats as students use the reflection to revise their goals and prepare for the next task. Other factors may also activate goal revision. For example, (a) initial goal endorsement was based on incomplete information about the achievement task or the learning environment ("this class is harder than I thought"), (b) the student received unexpected negative feedback from the professor, and (c) life events beyond the academic context affected individuals' perceptions of competence, ("I got sick and now I am very behind in schoolwork;" (Senko & Harackiewicz, 2005).

1.5. The Current Study

Past research provides reasons to anticipate stability in achievement goal endorsement over time, as well as there are reasons to expect change, especially since the outbreak of COVID-19 forced schools all over the world to pivot to online learning. For example, Daniels, Goegan, and Parker (2021) learned that student's scores on all four achievement goals decreased significantly across the two learning conditions (In-person schooling and emergency remote learning). This decrease was most prominent for *mastery-approach* goals, where for the most part, students decreased by one and a half points on the 5-point Likert scale. Achievement goal endorsement may have changed because school and home are two different environments. Teacher expectations, the presence of fellow learners, and a culture of learning all contribute to motivation to learn and/or perform academically at school. Emergency distance

education requires students to increase their levels of motivation and self-regulation due to the lack of physical contact with teachers and classmates. While researchers have been investigating the effect of emergency distance education on students' motivation change, little research has focused on a more nuanced motivation change in students through the lens of a specific theoretical framework (e.g., achievement goal theory).

Numerous studies have demonstrated associations between achievement goals and academic performance; mastery-approach goals and performance-approach goals are positively correlated with academic performance (e.g., Linnenbrink-Garcia*, Tyson*, and Patall* (2008)). Further, identifying external factors underlying achievement goal stability and change during emergency distance education is equally important given that students experienced learning environment, instructional, social, and future-oriented shifts that impacted their motivation (e.g., Cobb et al. (2023)). For example, first, technology is a powerful tool that can support distance education in many ways. Second, the quality of the physical learning space at home was also identified as a variable affecting the sense of well-being of students engaged in online learning (Lister, Seale, & Douce, 2023). Finally, students who enjoy positive support from teachers also appear to demonstrate academic resilience during emergency distance education (e.g., (Cobb et al., 2023; Wentzel, Battle, Russell, & Looney, 2010)).

Taken together, in the current study, we seek to address this gap, focusing primarily on: (a) students' achievement goal stability and change during emergency distance education; (b) the possible individual differences (e.g., high-achievers vs. low-achievers) in terms of achievement goal stability and change; and (c) identifying the potential environmental or external factors (e.g., physical learning environment, technology support, and student-perceived teacher support) underlying achievement goal stability and change.

2. METHOD

2.1. Participants

The participants were recruited from two mid-size universities in southeast China. A total of 300 students (120 females; 180 males) participated in our survey study. The students ranged across classifications (e.g., sophomore and junior) and majors (e.g., accounting, electronic engineering, and music education).

2.2. Materials and Procedure

The 2 × 2 Achievement Goal Questionnaire-Revised was used to measure students' achievement goal endorsement (Elliot & Murayama, 2008). The scale consists of 12 Likert-type items, three items measuring each goal orientation. An example of a master-approach question is "I am striving to understand the content of my courses as thoroughly as possible." Students responded on a scale of 1 (strongly disagree) to 5 (strongly agree), and the item scores were summed to function as the mastery-approach, performance-approach, mastery-avoidance, and performance-avoidance indexes. The four subscales demonstrated excellent internal consistency: For mastery-approach goals, mastery-avoidance goals, performance-approach goals, and performance-avoidance goals, Cronbach's alpha values were .84, .88, .92, and .94, respectively. We administrated the survey one time to collect students' retrospective and current achievement goal endorsement. Students responded to the items twice to measure their achievement goals before and during emergency distance education.

To categorize students as low or high-achievers, students were asked to report their class rank (top 5%, above average, average, and below average) as demographic information. Among the 300 participants, 26 students self-classified themselves in the top 5%, 96 of them were above average, 121 students were average, and 57 of them were below average in class ranking. The potential environmental protective factors (physical learning environment, technology support, and student-perceived teacher support) underlying achievement goal stability and change were measured by the *Emergency Distance Education during the Pandemic of Covid-19 Questionnaire* (Cobb et al., 2023) see

Appendix 1 for the survey content). The surveys were administered to the students via email. Participation was completely voluntary, and they were assured their responses would remain anonymous.

2.3. Data Analysis

First, to examine students' achievement goals (mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance orientations) stability and change during emergency distance education, four separate paired *t*-tests were performed using the Bonferroni corrected α. Second, since *performance-approach* endorsement was the only dimension that changed significantly, students were categorized based on their achievement levels (top 5%, above average, average, and below average in class). Two separate one-way analyses of variance (ANOVA) tests were then conducted to examine different achievers' performance-approach goals before and during emergency distance education. Third, given that: (a) there was no significant change in terms of students' mastery-approach endorsement; and (b) mastery-approach goals are in line with intrinsic motivation, a multiple regression was performed to identify the potential environmental protective factors underlying the stability of mastery-approach endorsement. The physical learning environment, technology support, and student-perceived teacher support served as predictors, and mastery-approach endorsement during emergency distance education served as the outcome variable.

3. RESULTS

Focus 1: Achievement goal stability and change during emergency distance education. According to the results of the four separate paired *t*-tests, although other dimensions stayed the same, students' *performance-approach* goals decreased significantly during emergency distance education ($M = 12$ vs. $M = 10.14$, $p < .001$), suggesting students were less likely to focus on demonstrating competence relative to others during emergency distance education.

Focus 2: The possible individual differences (e.g., high-achievers vs. low-achievers) in terms of achievement goal stability and change. Based on the two separate one-way ANOVA tests, while students' *performance-approach* goals did not differ significantly by their achievement levels before emergency distance education $F(3, 296) = 1.60$, $p = .19$, they were different during emergency distance education, $F(3, 296) = 3.65$, $p = .01$. Post hoc comparisons using Tukey's HSD indicated that the only significant difference took place between the group of "top 5%" ($M = 11.23$, $SD = 2.79$) and the group of "below average" ($M = 9.32$, $SD = 2.75$).

Focus 3: Identifying the potential environmental factors (physical learning environment, technology support, and student-perceived teacher support) underlying achievement goal stability and change. Despite the abrupt transition to remote learning, students' mastery-approach goals did not change significantly ($M = 12.18$ vs. $M = 11.99$, $p = .08$), suggesting their intrinsic motivation remained unchanged during emergency distance education. Further, while the physical learning environment ($\beta = .14$, $p = .02$) and student-perceived teacher support ($\beta = .14$, $p = .02$) positively predicted mastery-approach goal endorsement, *technology support* was not a significant predictor ($\beta = .06$, $p = .33$). Table 2 presents a summary of the regression analysis,

Table 2. Results of regression analysis of protective environmental factors on master-approach goals.

	B	SEB	β
Constant	9.38**	0.66	
PLE	0.33*	0.14	0.14*
SPTS	0.29*	0.13	0.14*
TS	0.14	0.14	0.06

Note: PLE = Physical learning environment, SPTS = Student-perceived teacher support, technology support = TS, R2 = 0.06, adjusted R2 = 0.05, F (3, 296) = 6.40, *p < 0.05, **p < 0.001.

4. DISCUSSION

Focus 1: Achievement goal stability and change during emergency distance education. There are four dimensions within the 2 × 2 achievement goal framework: mastery-approach, mastery-avoidance, performance-approach, and

performance-avoidance. Among the four goals, students' *performance-approach* endorsement was the only dimension that changed significantly. Fortunately, students' *mastery-approach* endorsement did not decrease significantly. Previous literature suggests the benefit of combined mastery and performance-approach goal profiles. Students simultaneously emphasizing mastery and performance-approach tend to perform well and be highly committed to their academic goals (Luo, Paris, Hogan, & Luo, 2011; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012). However, some researchers argue that these students' greater concerns with performance might also put them in danger of emotional distress, such as anxiety, frustration, and fear of failure (Daniels et al., 2008; Zhang, Watermann, & Daniel, 2016). Recent research shows that emerging adults are vulnerable to depression, anxiety, and loneliness, which has been amplified by the COVID-19 pandemic (e.g., Groarke et al. (2020)). Therefore, the increased number of negative life events during this period may have activated students' coping mechanisms. Coping mechanisms are cognitive and behavioral approaches (e.g., decreased performance-approach goals) that people use to manage internal and external stressors, such as outperforming others during emergency distance education (e.g., (Hyseni & Hoxha, 2018). In other words, sustained mastery-approach goals combined with decreased performance-approach goals may function to protect an individual from anxiety-inducing thoughts and feelings associated with the external stressor of demonstrating competence relative to others.

Another reason contributing to the lowering of performance-approach endorsement may be more logistical. As students learned in their own homes, they did not see their classmates' body language and facial expressions conveying perceived confidence and academic self-efficacy. Therefore, they were less likely to feel they must outperform other students.

Focus 2: The possible individual differences (e.g., high-achievers vs. low-achievers) in terms of achievement goal stability and change. Although *high achievers* were still interested in demonstrating competence relative to others during emergency distance education, low achievers did not show a strong desire to outperform others. The education environment in China is very competitive. A competitive classroom climate tends to result in performance goals instead of mastery goals among students (Ames, 1984). When competition is emphasized, students are forced to focus on the demonstration of their competence relative to others (Lam, Yim, Law, & Cheung, 2004). They tend to seek positive evaluations of their abilities and avoid negative ones. Therefore, before emergency distance education, students of different achievement levels were not significantly different in terms of performance-approach goals. However, public health emergencies such as the COVID-19 pandemic likely generated anxiety and fear in students, thus altering their state of psychological well-being (e.g., Huckins et al. (2020)). These negative emotions may negatively affect student learning, learning beliefs, and the mental health of students, especially for the lowest-performing students (Cobb et al., 2023). Therefore, low-performing students had decreased performance-goal endorsement due to that: (a) motivational goals, learning beliefs (e.g., self-efficacy), performance, and mental health or emotional variables mutually affect each other in a dynamic process; and (b) performance-approach goals are positively associated with grades and self-efficacy (e.g., (Luo et al., 2011; Mouratidis, Michou, Demircioğlu, & Sayil, 2018)).

Focus 3: Identifying the potential environmental factors (physical learning environment, technology support, and student-perceived teacher support) underlying achievement goal stability and change. Performance-approach goals highlight the outcome rather than the process of learning, such as achieving success by any means and being more sensitive to extrinsic sources of motivation. However, when students adopt mastery-approach goals, they are more intrinsically motivated, which tends to be a more desirable and adaptive kind of motivation. Among the three environmental protective factors, *technology support* did not positively predict mastery-approach goals, whereas *physical learning environment* and *student-perceived teacher support* did.

Early in March 2020, the Chinese central government mobilized efforts of all the stakeholders to provide reliable networks for online learning and secured access to digital educational resources and distance education. To support

emergency distance education, local governments, educational institutions, and enterprises worked together to address the most important needs, such as enriching the provision of online learning resources, strengthening the supply of technological infrastructure, and addressing digital inequalities (Jiang, Islam, Gu, Spector, & Chen, 2022). Technology support did not function as a critical factor that protects students' intrinsic motivation, given that reliable networks for online learning were guaranteed.

However, the COVID-19 pandemic has disrupted higher education and the subjective academic experience of college students by causing increased anxiety, struggles to stay motivated, and difficulties understanding course materials (Cao et al., 2020). While students can learn at home during an emergency while supported by reliable technology, they are in a physical learning environment vastly different from the regular classroom. The physical environment can affect individuals' thoughts, emotions, motivations, behaviors, and mental health (e.g., Tanner (2008)). Baticulon et al. (2021) study of barriers to remote learning during emergency distance education showed that limited workspace was among the major barriers to students' online class engagement. Further, once the courses abruptly moved from face-to-face to online, the perceived difficulty of the courses often changed. Students reported higher satisfaction with their online classes when they felt they were adequately trained to use the necessary technology (Cobb et al., 2023; Garris & Fleck, 2022) which was likely perceived as teacher support, not technology support. Therefore, during the COVID-19 era, students needed assistance from teachers more than ever.

5. IMPLICATIONS AND LIMITATIONS

With the worldwide reach of the internet and the ubiquity of smart devices that can connect to it, technological support for emergency distance education is usually secured. It is the power of the human connection in online learning and the physical learning environment that protects students' intrinsic motivation since (a) traditional, in-person learning is a universal human experience; (b) human connection creates a learning community even when students are located a different learning environment; and (c) the physical learning environment might be the only place where students can access the full support from their teachers. Online courses can feel isolating for students; thus, it is up to educators to intentionally foster an online teaching 'presence.' Cultivating a teaching presence is a method of adding social aspects to emergency distance education.

Although our findings shed light on students' achievement goal stability and change during emergency distance education, it is important to consider the following two limitations. First, the data were correlational and retrospective, indicating that students responded in a single sitting for their achievement goal endorsement before and during emergency distance education. Second, past literature has provided a substantial body of evidence that highlights the relationships between academic performance (e.g., Grade Point Average; GPA) and achievement goals. While the current study did provide important insights into the individual differences in terms of performance-approach endorsement change (high-achievers vs. low-achievers), academic performance change during emergency distance education was not taken into consideration. The physical learning environment and student perceptions of teacher support may act as protective factors, but GPA change might be the last straw for motivation change during emergency distance education.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Nanchang Hangkong University, China has granted approval for this study (Ref. No. 20240801).
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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Appendix 1

Emergency Distance Education during the Pandemic of COVID-19

1. What is your class standing?

   Freshman Sophomore Junior Senior

2. What is your gender?

   Male Female Prefer not to say

3. How would you rate your overall physical learning environment for distance education?

   Extremely Poor 1 2 3 4 5 Extremely Good

4. Please rate your internet / technological conditions for distance education (i.e., Wi-Fi, computer).

   Extremely Poor 1 2 3 4 5 Extremely Good

5. Have your professors helped you adjust to distance learning?

   No, not at all 1 2 3 4 5 Yes, absolutely

6. Have your professors made more efforts to communicate, teach, and promote comprehension well?

   No, not at all 1 2 3 4 5 Yes, absolutely

7. What is your general academic rank in your class?

Top 5%	Above average	Average	Below average