Article

The Association between University Students' Achievement Goal Orientation and Academic Engagement: Examining the Mediating Role of Perceived School Climate and Academic Self-Efficacy

Yaqi Zhang [1], Xiangli Guan [2,*], Md Zahir Ahmed [3], Mary C. Jobe [4] and Oli Ahmed [5]

[1] School of Education, Northwest Normal University, Lanzhou 730070, China; 2018103027@nwnu.edu.cn
[2] School of Teacher Education, Yuxi Normal University, Yuxi 653100, China
[3] School of Psychology, Northwest Normal University, Lanzhou 730070, China; ahmedzahirdu@gmail.com
[4] Department of Psychological and Brain Sciences, The George Washington University, Washington, DC 20052, USA; mary.jobe.16@cnu.edu
[5] Department of Psychology, University of Chittagong, Chattogram 4331, Bangladesh; oliahmed_polash131@cu.ac.bd
*   Correspondence: guanxiangli@yxnu.edu.cn

Abstract: Enhancing academic engagement in university students can help enrich students' educational experience. Drawing on the Conservation of Resources Model and the Job Demand-Resources Model, this study aims to explore the links between undergraduates' achievement goal orientation and academic engagement (AE), by examining the mediating functions of perceived school climate (PSC) and academic self-efficacy (ASE). Using whole-group sampling, 571 Chinese undergraduates were selected using a self-reporting method to explore the impacts of mastery-approach goals (MAGs) and performance-avoidance goals (PAGs) on AE, as well as the chain mediating effects of PSC and ASE. The findings show that both MAGs and PAGs have a positive, direct, predictive effect on university students' AE. Additionally, both goal orientations indirectly predict AE through PSC and ASE, separately. The results showed there was also a significant chain mediating effect of PSC and ASE, where for both goal orientations, AE was positively predicted. This study highlights the role of environmental as well as personal factors in facilitating self-regulated learning among university students, and it discusses implications for future research.

Keywords: achievement goal orientation; perceived school climate; academic self-efficacy; academic engagement

1. Introduction

Education is a solid foundation for a country's economic and social sustainability. The report of the 41st UNESCO General Conference on 10 November 2021 explores how to improve the quality of student learning in a challenging future. Improving students' AE is the key to improving their quality of study activities and education experience. AE is a rich, stable and sustained positive psychological state of individuals in learning activities and is divided into three dimensions: vitality, dedication and absorption [1]. Research has found that not only does AE positively correlate with academic performance [2,3] and promote university students' academic achievement [4], but AE can also reduce college dropout rates. The reduction in the dropout rate of university students is an effective way to achieve equity and improve the standard of education [5,6]. Antecedents affecting AE have been of interest to researchers, such as with motivational factors—particularly how they positively [7] and negatively [8] predict the impact of achievement goal orientation on AE. However, the mechanisms by which achievement goal orientation influences AE in university student populations and how university students self-regulate their learning activities have not

received sufficient attention from researchers. To address this gap, this study proposes a mediation model drawing on the Conservation of Resources (COR) Model [9] and the Job Demand-Resources (JD-R) Model [10], aiming to explore the mechanisms by which university students' achievement goal orientation influences AE and explain how PSC and ASE can act as resources to promote self-regulated learning among university students.

1.1. Achievement Goal Orientation and Academic Engagement (AE)

Goal orientation is an important topic in the field of achievement motivation research. The dominant goal influences individual motivation and has a decisive impact on individual achievement behavior. Achievement goal orientation is a central component of student motivation and their ability to self-regulate learning [11,12]. Four dimensions of achievement goals are commonly used in existing research [7,8,13,14]. In this study, we draw on a couple of these four dimensions of achievement goals to verify the effect of different types of goals on AE in university students. The literature demonstrates that the association of mastery-avoidance goals and performance-approach goals with AE is controversial [8,12,15,16]. The present study was designed to verify the consistency of the actual observed phenomena with the results of existing studies and to investigate whether the findings of existing studies could be reproduced. Therefore, only two achievement goal dimensions were selected: MAGs and PAGs, in order to examine the influence of these goal orientations on AE in university students. MAGs are when individuals focus more on developing their skills and abilities, facilitating their own learning, understanding the content and completing or mastering a learning task [17]. PAGs are where individuals are more concerned with avoiding performing worse than others [18,19]. It was found that MAGs were able to positively predict AE [7,20,21]. PAGs often negatively predict AE [8] and academic achievement [20], leading to college dropouts and even depression [13]. It is evident that various kinds of goals can serve different purposes. Individuals who are driven by mastery-oriented goals define and evaluate their abilities as self-oriented or task-oriented, which tend to motivate them intrinsically; individuals who are driven by performance-oriented goals define and evaluate their abilities as more concerned with whether their performance is due to others, which leads to individuals being more susceptible to extrinsic motivation.

1.2. Mediating Effects of Perceived School Climate (PSC)

Extrinsic factors such as relational-based and environmental variables [17] can influence the relations between the two main study variables. For example, PSC has been shown to significantly influence students' AE and academic achievement [22]. Social constructivism suggests that students learn by constructing cognitive schemas and internalizing knowledge into their own cognitive structures through social interactions with others [23]. In particular, school life is the primary place where students construct their own knowledge through interactions; students' school experiences can influence their engagement and achievement—demonstrating the relevance one's environment has on shaping learning experiences [24]. Students' PSC are students' intuitive feelings regarding the school climate expressed as their satisfaction with the living environment (e.g., structures, relationships and culture) [25]. Teachers have a major influence on students' AE, particularly cognitive engagement [26]. Students who perceive teachers' expectations and motivation are more likely to be motivated and develop an interest in learning [27].

However, there are differences in the perception of classroom climates between students which are affected by differences in goals; students in the same class perceived classroom goal structures differently [28]. Students who are performance goal-oriented prefer overt assessment by teachers, while students who are avoidance goal-oriented do not like learning tasks with mastery goals and they do not like challenging learning tasks [29]. The study found that positive PSC enhances students' self-beliefs and contributes to students' AE, which in turn affects their academic achievement [30]. PSC is plastic [31] and students are able to filter, perceive, interpret and translate the school climate through

achievement goal orientation, which promotes the internalization of students' motivation to learn and thus influences their AE.

1.3. Mediating Effects of Self-Efficacy (ASE)

In addition, the impact of goals on AE prediction is compromised if undergraduates are not confident in completing their learning activities [32]. Thus, the study must also consider the mediating role of the ASE, which is the individual's expectation and judgment of being capable of completing the learning activities [33]. For university students, the ASE is a combination of recognition of the quality of their studies and confidence in their studies [34]. The higher the ASE, the more willing students are to engage in their studies [1,35,36]. ASE has also been shown to have a motivational effect on students' AE for overcoming learning difficulties [35,36].

Students regulate their own learning through the interaction of two factors: the learning objectives and the ASE that influences the achievement of those objectives. When students are satisfied with their learning goals, they feel empowered to improve their abilities [36]. Thus, it appears that ASE has a medial role. Overall, achievement goal orientation directly affects university students' ASE [20]. Students who succeed in an academic environment are more likely to effectively regulate the interaction of internal goal orientation and ASE [37]. It is clear that an active learning goal orientation (LGO), as well as a stronger ASE, are important mechanisms and viable ways to promote academic achievement among university students. In particular, positive learning goals can promote students' performance by improving their ASE.

1.4. The Chain Mediating Effect of Perceived School Climate (PSC) and Academic Self-Efficacy (ASE)

The impact of the learning climate on individual students' academic performance [38] is an important factor that can influence the role different types of goals have on AE. Examples of the classroom climate components that can determine ASE are teaching objectives, teacher motivation and expectations [39]. Positive student experiences in the school environment can counteract feelings of incompetence [40] and ameliorates the influence on one's willingness to learn [41]. The learning environment can trigger changes in the ASE; this learning environment creates a sense of belonging to the subject, which is an important cause of change in ASE [42]. The more positive learning experiences teachers bring to students, the higher their ASE and the more actively they are involved in learning [43]. When students are able to help their peers solve problems, they see themselves as someone their peers can rely on, they are more motivated to explore and learn more independently and they find it fun to share solutions to difficult problems with their peers, which leads to an increase in their ASE [44]. This gives students the adaptability and resilience to develop good attitudes towards learning when they perceive teacher support and peer relationships [27]. In general, it appears that the role of PSC as an external factor impacts on ASE—an individual factor—influences the mechanism by which personal goals contribute to AE.

In this study, the following four hypotheses are tested:

Hypothesis 1 (H1). *Students' MAGs will positively predict AE; Students' PAGs will negatively predict AE.*

Hypothesis 2 (H2). *Students' MAGs and PAGs are influenced by the mediating factor PSC, indirectly influencing AE.*

Hypothesis 3 (H3). *Students' MAGs and PAGs are influenced by the mediating factor ASE, indirectly influencing AE.*

Hypothesis 4 (H4). *Students' MAGs and PAGs are influenced by the chained mediator PSC and ASE, indirectly influencing AE.*

Based on the above four hypotheses, the conceptual model is constructed. As shown in Figure 1, this model shows the mechanism of the link between achievement goal orientation and AE. This framework includes five variables that are divided into three systems: students' learning motivation, self-regulated process and the mental state of learning. Students' MAGs and PAGs constitute students' learning motivation. The self-regulated process contains PSC and ASE. The mental state of learning is embodied in AE. MAGs and PAGs are directly associated with AE, it also has a direct effect on PSC and ASE. MAGs, PAGs, PSC and ASE also provide a motivational and self-regulated basis for students' mental activities of learning. Thus, students' AE is promoted.
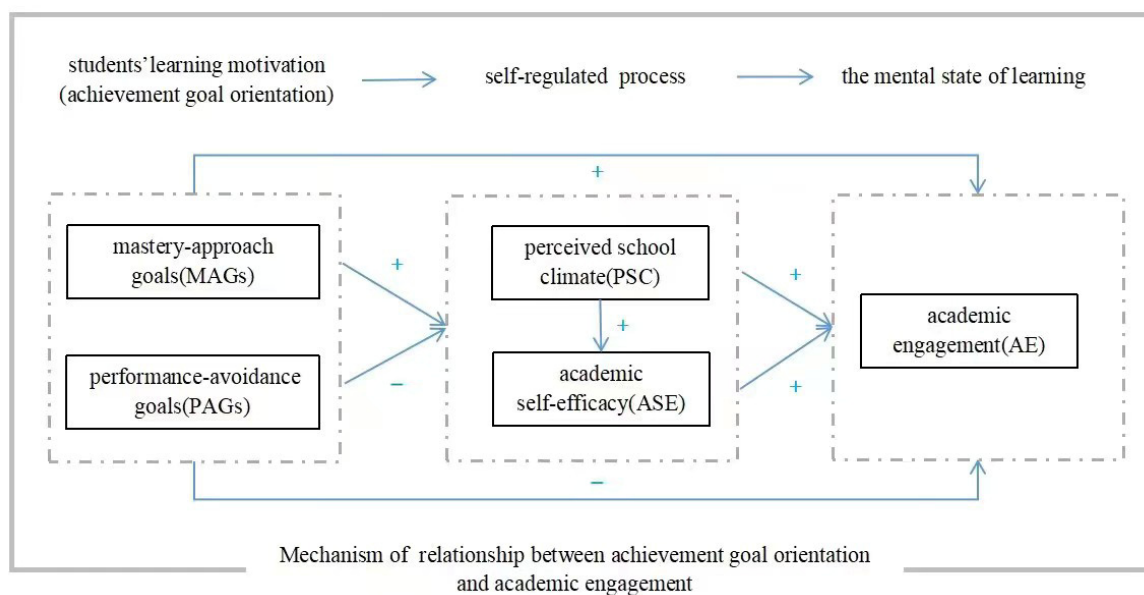
Figure 1. Conceptual model.

2. Method

2.1. Participants

In this cross-sectional study, questionnaires were distributed to 600 undergraduate students at a Chinese university using a survey method. Of these, 207 (36.3%) were freshmen, 197 (34.5%) were sophomores and 167 (29.2%) were juniors; 224 (39.2%) were males and 347 (60.8%) were females. Participants had an age range between 18 years and 24 years (M = 20.16 years, SD = 1.25 years). The socio-demographic qualities of participants are introduced in Table 1.

Table 1. Socio-demographic qualities of the participants.

Variables	Groups	Frequency (%)
Gender	Female	347 (60.8%)
	Male	224 (39.2%)
Academic Year	Freshmen	207 (36.3%)
	Sophomores	197 (34.5%)
	Juniors	167 (29.2%)
Residence	Towns in the province	150 (26.3%)
	Rural areas in the province	253 (44.3%)
	Outlying towns	99 (17.3%)
	Outlying rural areas	69 (12.1%)
Discipline	Liberal arts major	269 (47.1%)
	Science major	302 (52.9%)

2.2. Procedure

The study was conducted in October 2021 at a university in Yuxi, Yunnan Province, China, using an on-site questionnaire to collect data. The review was directed with the assent of the actual understudies and the poll was managed in a homeroom setting. The specialist and a master's student in psychology, who was familiar with the questionnaire, acted as the main testers and asked the students to answer the questionnaire anonymously and independently. Afterward, the questionnaires were verified and 17 questionnaires that were not answered carefully (irregularity of answers and multiple choices of two or more answers) and 12 questionnaires that were missing more than 10% of the questions were deleted, resulting in 571 valid questionnaires with an effective rate of 95.17%. Finally, IBM SPSS 26.0 was used for data entry and analysis, and the relationship between the four variables was verified and confirmed by the Bootstrap mediation test through the SPSS macro program PROCESS, prepared by Hayes in 2012 [45].

2.3. Measures

2.3.1. Achievement Goal Questionnaire (Scale)

In this study, Chinese scholars Liu and Guo (2003) [46] utilized the four layered achievement goals constructed by scholars, such as Elliot (1999) [17] and Pintrich (2000) [47], to design the achievement goal scale utilized in this study based on the Chinese cultural context. The scale consists of 29 questions covering the four layered achievement targets. As required by the research, only two dimensions, MAGs (e.g., "My greatest desire is to learn as much as I can in the classroom") and PAGs (e.g., "During my studies, my biggest worry is that people think I'm stupid"), were analyzed in this study. The scale is a 5-point score from one to five, for strong disliking and strong liking. A relatively high rating shows a greater tendency to adopt this type of achievement goal. The dependability and legitimacy of the scale have been confirmed in existing studies [48]. The Cronbach's α in this study was 0.92.

2.3.2. School Climate Perception Scale

The School Climate Perception Scale was used, designed by Jia et al. (2009) [49]. The scale consists of 29 questions covering the three aspects: support from teachers ("Teachers accept I can get along admirably"), support from peers ("Peers are caring people") and opportunities for autonomy ("Teachers ask understudies what they need to find out about"). The scale is a 4-point score from one to four, for never and always. A relatively high rating demonstrates a better experience of the campus environment. There are seven inquiries on the scale that require reverse scoring (e.g., "Some students bully other students"). The dependability and legitimacy of the scale have been confirmed in existing studies [26]. The Cronbach's α in this study was 0.84.

2.3.3. Academic Efficacy Scale

The Academic Efficacy Scale of Midgley et al. (2000) [50] is made up of five questions (e.g., "Although the task is difficult, I believe I can learn"). The scale is a 5-point score from one to five, for strongly disagree and strongly agree. A relatively high rating demonstrates more elevated levels of ASE. The dependability and legitimacy of the scale have been confirmed in existing studies [51]. The Cronbach's α in this study was 0.83.

2.3.4. Study Engagement Scale

The Study Engagement Scale of Schaufeli et al. (2002) [1] is made up of a 17-item scale covering three aspects: vitality (e.g., "When I wake up in the morning, I like to go to class"), dedication (e.g., "I am pride in my learning") and absorption (e.g., "I get addicted to learning"). The scale is 7-point score from one to seven, for never and always. A relatively high rating indicates more elevated levels of academic engagement. The dependability and legitimacy of the scale have been confirmed in existing studies [52]. The Cronbach's α in this study was 0.95.

3. Ethics

The subjects of this study are human beings so we have followed the Declaration of Helsinki and its modifications. The Ethical Committee of Yuxi Normal University in Yuxi, China, has been informed of and agreed to this study (ERB No. 2021020, dated: 12 October 2021). Prior to the launch of the study, subjects were informed of the purpose of the study, the time required to complete the scale and the confidentiality of the data. To ensure that the nature of this study was clear to the undergraduates, they signed informed consent to participate in the study.

4. Results

4.1. Common Methodological Deviations

This study used a questionnaire in which all variables were self-assessed by the students, potentially creating the issue of common methodological deviations. Therefore, in order to protect the privacy of those researched, during the actual testing process, some topics were reverse-scored so common methodological deviations in the studies were tested using Harman's one-way ANOVA before exploring the relationship between these variables. The outcomes indicate that there were 17 eigenvalues greater than one, 61.53% of the variance was explained and 23.93% of the variance was explained by the first factor, which did not meet the 40% limit, demonstrating that the impact of common methodological deviations is not significant.

4.2. Descriptive Statistical Analysis

As shown in Table 2, this study began with an analysis of the means and standard deviations of MAGs, PAGs, PSC, ASE and AE, and the extent to which they were correlated. All four variables had significant positive correlations ($p < 0.01$).

Table 2. Descriptive statistics ($n = 571$).

Variable	*M*	*SD*	1	2	3	4	5
1. MAGs	3.52	0.58	1				
2. PAGs	3.19	0.70	0.46 **	1			
3. PSC	2.63	0.38	0.37 **	0.32 **	1		
4. ASE	3.37	0.66	0.62 **	0.23 **	0.33 **	1	
5. AE	4.16	0.96	0.64 **	0.32 **	0.35 **	0.61 **	1

Note. MAGs = mastery-approach goals; PAGs = performance-avoidance goals; PSC = perceived school climate; ASE = academic self-efficacy; AE = academic engagement; *M* = mean; *SD* = standard deviation. ** $p < 0.01$.

4.3. The Mediating Effects of Perceived School Climate (PSC) and Academic Self-Efficacy (ASE)

The survey employed the macro program PROCESS in SPSS and used a bias-corrected non-parametric percentage Bootstrap procedure to validate the interceding impacts of MAG and PAG on student AE.

As displayed in Table 3, MAGs, PAGs, PSC and ASE can all predict AE independently. In Model 1, MAGs positively predicted AE ($B = 0.40$, $p < 0.001$), PSC ($B = 0.37$, $p < 0.001$) and ASE ($B = 0.58$, $p < 0.001$). PSC positively predicted AE ($B = 0.10$, $p < 0.01$) and ASE ($B = 0.11$, $p < 0.01$); ASE positively predicted AE ($B = 0.33$, $p < 0.001$). In Model 2, PAGs positively predicted AE ($B = 0.15$, $p < 0.001$), PSC ($B = 0.32$, $p < 0.001$) and ASE ($B = 0.14$, $p < 0.001$). PSC positively predicted AE ($B = 0.13$, $p < 0.001$) and ASE ($B = 0.28$, $p < 0.001$); ASE positively predicted AE ($B = 0.53$, $p < 0.001$). Thus, there was a chain mediating effect of PSC as well as ASE in the effect of MAGs and PAGs on AE (see Figures 2 and 3).

Table 3. Intermediary effect model test (*n* = 571).

Variable	PSC			ASE			AE		
	B	*SE*	R^2	*B*	*SE*	R^2	*B*	*SE*	R^2
Model 1			0.13			0.39			0.49
MAGs	0.37 ***	0.03		0.58 ***	0.04		0.40 **	0.07	
PSC				0.11 **	0.06		0.10 **	0.08	
ASE							0.33 **	0.06	
Model 2			0.10			0.12			0.41
PAGs	0.32 ***	0.02		0.14 **	0.04		0.15 ***	0.05	
PSC				0.28 **	0.07		0.13 ***	0.09	
ASE							0.53 ***	0.05	

Note. MAGs = mastery-approach goals; PAGs = performance-avoidance goals; PSC = perceived school climate; ASE = academic self-efficacy; AE = academic engagement; SE = standard error. ** $p < 0.01$, *** $p < 0.001$.
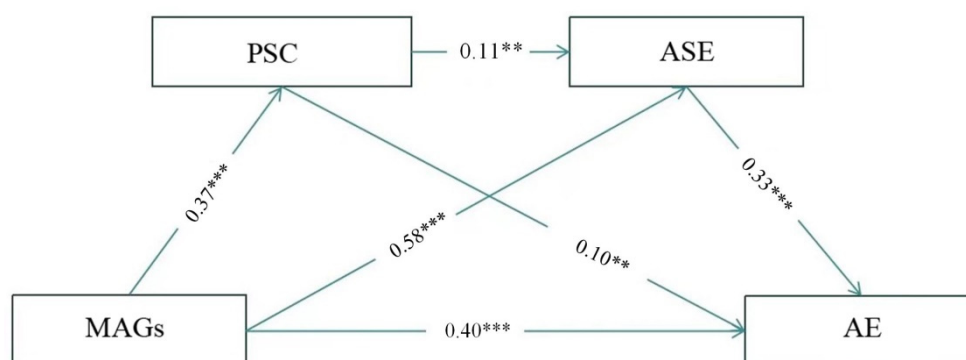
Figure 2. Plot of the MAG model's path coefficients. Note. MAGs = mastery-approach goals; PSC = perceived school climate; ASE = academic self-efficacy; AE = academic engagement; ** $p < 0.01$, *** $p < 0.001$.
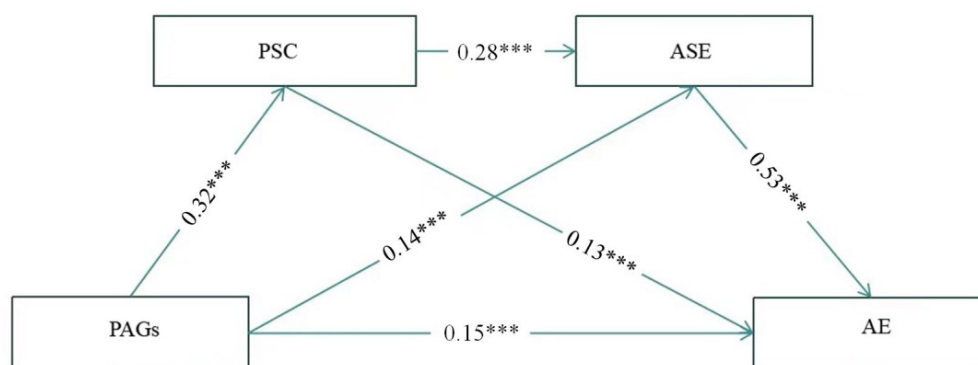
Figure 3. Plot of the PAG model's path coefficients. Note. PAGs = performance-avoidance goals; PSC = perceived school climate; ASE = academic self-efficacy; AE = academic engagement; *** $p < 0.001$.

In order to obtain reliable results for the mediation effect test, the mediation effect was further tested using a bias-corrected non-parametric percentage Bootstrap procedure, with a 95% confidence interval excluding 0 indicating a significant mediation effect. The immediate impact of MAGs on AE is 0.66, representing 62.26% of the absolute impact esteem, with a 95% Bootstrap confidence interval of [0.53, 0.79]. The circuitous impact for PSC and ASE in the effect of MAGs on AE is 0.40, representing 37.74% of the absolute impact esteem, with a 95% Bootstrap confidence interval of [0.29, 0.53]. The mediating effect consisted of three indirect effect pathways: first, the indirect effect of MAGs → PSC → AE, which had an effect value of 0.06; second, the indirect effect of MAGs → ASE → AE, which

had an effect value of 0.32; third, the chain mediating effect of MAGs → PSC → ASE → AE, which had an effect value of 0.02 (see Table 4).

Table 4. Bootstrap analysis of significance tests for intermediate effects (n = 571).

Path	Effect	Effect Size (%)	Boot LLCI	Boot ULCI
Model 1				
MAGs → PSC → AE	0.06	5.66%	0.02	0.11
MAGs → ASE → AE	0.32	30.19%	0.22	0.43
MAGs → PSC → ASE → AE	0.02	1.89%	0.01	0.04
Indirect effect	0.40	37.74%	0.29	0.53
Direct effect (MAG → AE)	0.66	62.26%	0.53	0.79
Total effect	1.06	100%	0.96	1.17
Model 2				
PAGs → PSC → AE	0.06	13.95%	0.02	0.10
PAGs → ASE → AE	0.10	23.26%	0.04	0.18
PAGs → PSC → ASE → AE	0.07	16.28%	0.04	0.10
Indirect effect	0.23	53.49%	0.14	0.32
Direct effect (PAG → AE)	0.20	46.51%	0.11	0.30
Total effect	0.43	100%	0.33	0.54

Note. MAGs = mastery-approach goals; PAGs = performance-avoidance goals; PSC = perceived school climate; ASE = academic self-efficacy; AE = academic engagement; LLCI = lower level confidence interval; ULCI = upper level confidence interval. All Bootstrap confidence intervals were 95%.

In addition, the immediate impact of PAGs on AE is 0.20, representing 46.51% of the absolute impact esteem, with a 95% Bootstrap confidence interval of [0.11, 0.30]. The circuitous impact of PSC and ASE in the effect of PAGs on AE is 0.23, representing 53.49% of the absolute impact esteem, with a 95% Bootstrap confidence interval of [0.14, 0.32]. The mediating effect consisted of three indirect effect pathways: first, an indirect effect consisting of PAGs → PSC → AE with an effect value of 0.06; second, an indirect effect consisting of PAGs → ASE → AE with an effect value of 0.10; third, a chain mediating effect consisting of PAGs → PSC → ASE → AE with an effect value of 0.07 (see Table 4).

5. Discussion

AE is a significant mental component affecting students' scholarly achievement [4] and in relation to the COR [9] and JD-R models [10], it appears that MAGs, PAGs, PSC and ASE are all effective resources for promoting students' self-regulated learning and contributing to AE.

5.1. Mastery-Approach Goals (MAGs) and Performance-Avoidance Goals (PAGs) on Academic Engagement (AE)

Learning in a university environment can be a challenge, as students will often need to self-adjust to keep themselves learning at their best. This process of self-adjusting in learning is influenced by motivation. Motivation to learn is largely influenced by achievement goals, and it is evident that goal orientation is an important influencing factor in student immersion in learning. The results of this study demonstrate this, as MAGs and PAGs positively associated and predicted AE. In the results of the pathway model analysis based on the Bootstrap method, it was found that the immediate impact of MAGs on AE was most prominent. The circuitous impact of PAGs on AE was also significant, though the results show that MAGs were more beneficial to students' AE compared to PAGs.

On the one hand, the positive predictive effect of MAGs on AE is consistent with previous studies [8,53]. MAGs enable students to focus on understanding and mastering the content of the course and developing their own competencies rather than exam results, and as a result, students have a more positive learning experience [12,17,19] and are more likely to be driven by intrinsic motivation, positively predicting AE [21]. This positive learning experience is due to the fact that MAGs help students process more deeply the learning content [30] and evaluate and interpret the results of their own learning activities.

However, the positive predictive impact of PAGs on AE is inconsistent with the results of existing studies [8]. PAGs are positively correlated with students' behavioral engagement, with PAGs demonstrating that students tend to choose tasks that are easy to succeed at in order to avoid appearing dumber than others, though still engaging themselves in the learning process [54]. In the current context of Chinese universities, where academic performance rankings still determine many aspects of students' honor and employment, PAGs become an inevitable prerequisite for students' behavioral engagement.

The difference between MAGs and PAGs is encompassed by one's understanding when learning, which is what makes the direct effect of MAGs on AE greater than the indirect effect; MAGs make students see the learning content, school climate factors and personal factors as valuable resources, and students see the challenging learning task as an activity to improve their abilities and knowledge structure. This prevents students from experiencing burnout, and the positive learning experience makes students more engaged in their learning. In contrast, the circuitous impact of PAGs on AE is more prominent than the immediate impact because students see learning tasks as difficult and often need to use external factors to help them regain motivation and confidence in learning, accumulate learning resources and promote AE.

5.2. The Chain Intermediation of Perceived School Climate (PSC) and Academic Self-Efficacy (ASE)

As a distal factor, PSC can regulate the mechanism by which MAGs and PAGs affect AE. MAGs and PAGs can indirectly affect AE through PSC, which is consistent with previous findings [55]. Students influenced by mastery goals rated the learning environment more positively, indicating that they had a more positive learning experience. Students get along well with their teachers and peers, which helps them become motivated to learn. Students oriented towards performance goals prefer overt assessment by teachers, while those oriented towards avoidance goals do not like challenging learning tasks [29]. MAGs help students retain and construct resources (such as interest and motivation to learn) and a willingness to invest more psychological costs. However, the study also found that PAGs positively predict PSC, which is different from existing research [56]. A possible explanation is that PAGs make students lose internal personal resources, such as interest and motivation to learn, which requires external resources (e.g., a positive school climate) to intervene in the loss of these resources, such as reducing the difficulty of learning tasks to avoid students losing confidence in learning. Only then is it more likely that learning tasks will be identified and valued.

As a proximal factor, ASE similarly regulates the mechanisms by which MAGs and PAGs affect AE. The findings also show that MAGs and PAGs indirectly affect AE through ASE, which is consistent with previous findings [57]. Students influenced by mastery goals are more able to complete tasks, promote engagement in learning and are more likely to achieve if they are confident in their learning [58]. MAGs help students to see challenging learning tasks as activities to refine their knowledge structure, enhance their abilities and believe that they can cope with any learning task. This means that ASE is enhanced, allowing students to demonstrate greater psychological resilience and dynamism, providing the prerequisites for engaging in learning tasks [59]. However, PAGs positively predicted ASE, and thus, indirectly, positively predicted AE through ASE, which is different from existing studies [57]. One possible explanation is that PAGs make students avoid being inferior to others and easily feel pressured to learn, resulting in burnout, which in turn affects their commitment to learning. As a result, they have a greater need to seek help from teachers and peers to rebuild their confidence, which is a useful resource for ASE to get better.

The interaction of distal and proximal factors also affects the mechanisms by which MAGs and PAGs influence AE. It was also found that MAGs and PAGs can predict students' AE through a chain-mediated interaction between PSC and ASE. According to Bandura (1997) [60], students' self-efficacy is influenced by four factors: past capable encounters,

replacement encounters, verbal influence and biological and emotional states. The PSC can provide the basis for ASE enhancement. Specifically, results found that MAGs positively predicted AE through a chain mediation by PSC and ASE, which is consistent with existing research findings. For example, MAGs have been found to help students interpret teachers' intentions to stimulate behavior, develop students' critical thinking and motivate them to challenge themselves, whereby students will work harder at their studies and in turn the success of their learning experience will boost their confidence [61]. The present study also found that PAGs have a positive predictive effect on PSC, which is inconsistent with the existing literature [39]. A possible explanation is that university students understand teacher support, peer support and self-directed support as different types of resources through the filter of MAGs and PAGs, but all contribute to the accumulation of resources for students. Resource accumulation under the influence of MAGs helps students to construct new resources for their personal competence development. That resource accumulation, under the influence of PAGs, reduces the pressure of learning tasks on students and improves their AE.

6. Research Limitations and Outlook

The findings of this study help teachers to focus on the differential needs of students with different goal orientations and to design a variety of learning tasks to ensure that each student gets the most out of their development. In addition, this study also reminds teachers and school administrators that they should be able to pay attention to students with good ASE but who have PAGs and take interventions so that they can guide students to change their PAGs—helping them build their MAGs. This study has the following three shortcomings. Firstly, the sample was selected from undergraduate students at a university in southwest China and it is unclear whether the findings can be generalized to universities in other parts of China, as well as to universities in other countries. Secondly, this study only examined the relationship between MAGs and PAGs with students' AE. Researchers can try to verify the impact of mastery-avoidance goals and performance-approach goals on AE to make this study more comprehensive to the four goal dimensions. Finally, this study lacks information from teachers, parents and others to accurately infer causal relationships between the variables.

In future research, a mixed qualitative and quantitative research method can be used to provide a basis for the interpretation of causality through classroom observations and in-depth interviews which will help to reduce possible measurement bias. Further examination could involve testing whether the connection between achievement goal orientation, PSC, ASE and AE changes across time.

7. Conclusions

In this study, we found that MAGs and PAGs could directly positively predict AE; indirectly positively predict AE via PSC; indirectly positively predict AE via ASE; could predict AE via the chain-mediated interaction of PSC and ASE. Overall, this study demonstrates how these goal orientations can be useful for students—this type of research should be expanded among other student populations and become more nuanced to understand more clearly how these goal orientations operate on AE. The results have implications for guiding students to improve AE levels through self-regulated learning based on achievement goal orientation, as well as implications for teachers and academic institutions on creating ways to better enhance these orientations among students to advance their AE.

References

1. Schaufeli, W.B.; Salanova, M.; González-Romá, V.; Bakker, A.B. The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *J. Happiness Stud.* **2002**, *3*, 71–92. [CrossRef]
2. Carmona-Halty, M.; Salanova, M.; Llorens, S.; Schaufeli, W.B. Linking positive emotions and academic performance: The mediated role of academic psychological capital and academic engagement. *Curr. Psychol.* **2021**, *40*, 2938–2947. [CrossRef]
3. Kuh, G.D.; Cruce, T.M.; Shoup, R.; Kinzie, J.; Gonyea, R.M. Unmasking the effects of student engagement on first-year college grades and persistence. *J. High. Educ.* **2008**, *79*, 540–563. [CrossRef]
4. García-Martínez, I.; Landa, J.M.A.; León, S.P. The mediating role of engagement on the achievement and quality of life of university students. *Int. J. Environ. Res. Public Health* **2021**, *18*, 6586. [CrossRef] [PubMed]
5. Tinto, V. Dropout from higher education: A theoretical synthesis of recent research. *Rev. Educ. Res.* **1975**, *45*, 89–125. [CrossRef]
6. Truta, C.; Parv, L.; Topala, I. Academic engagement and intention to drop out: Levers for sustainability in higher education. *Sustainability* **2018**, *10*, 4637. [CrossRef]
7. Datu, J.A.D.; Park, N. Perceived school kindness and academic engagement: The mediational roles of achievement goal orientations. *Sch. Psychol. Int.* **2019**, *40*, 456–473. [CrossRef]
8. Miller, A.L.; Fassett, K.T.; Palmer, D.L. Achievement goal orientation: A predictor of student engagement in higher education. *Motiv. Emot.* **2021**, *45*, 327–344. [CrossRef]
9. Hobfoll, S.E. Conservation of resources: A new attempt at conceptualizing stress. *Am. Psychol.* **1989**, *44*, 513–524. [CrossRef]
10. Bakker, A.; Demerouti, E.; Schaufeli, W. Dual processes at work in a call centre: An application of the job demands–resources model. *Eur. J. Work Organ. Psychol.* **2003**, *12*, 393–417. [CrossRef]
11. Boekaerts, M.; Niemivirta, M. Self-regulated learning: Finding a balance between learning goals and ego-protective goals. In *Handbook of Self-Regulation*; Boekaerts, M., Pintrich, P.R., Zeidner, M., Eds.; Academic Press: Cambridge, MA, USA, 2000; pp. 417–450. [CrossRef]
12. Pintrich, P.R. An achievement goal theory perspective on issues in motivation terminology, theory, and research. *Contemp. Educ. Psychol.* **2000**, *25*, 92–104. [CrossRef] [PubMed]
13. Sideridis, G.D. Goal orientation, academic achievement, and depression: Evidence in favor of a revised goal theory framework. *J. Educ. Psychol.* **2005**, *97*, 366–375. [CrossRef]
14. Elliot, A.J.; McGregor, H.A. A 2 × 2 achievement goal framework. *J. Personal. Soc. Psychol.* **2001**, *80*, 501–519. [CrossRef] [PubMed]
15. Greene, B.A.; Miller, R.B. Influences on achievement: Goals, perceived ability, and cognitive engagement. *Contemp. Educ. Psychol.* **1996**, *21*, 181–192. [CrossRef]
16. Senko, C.; Hama, H.; Belmonte, K. Achievement goals, study strategies, and achievement: A test of the "learning agenda" framework. *Learn. Individ. Differ.* **2013**, *24*, 1–10. [CrossRef]
17. Elliot, A.J. Approach and avoidance motivation and achievement goals. *Educ. Psychol.* **1999**, *34*, 169–189. [CrossRef]
18. Ames, C. Achievement attributions and self-instructions under competitive and individualistic goal structures. *J. Educ. Psychol.* **1984**, *76*, 478–487. [CrossRef]
19. Ames, C.; Archer, J. Achievement goals in the classroom: Students' learning strategies and motivation processes. *J. Educ. Psychol.* **1988**, *80*, 260–267. [CrossRef]
20. Hsieh, P.; Sullivan, J.R.; Guerra, N.S. A closer look at college students: Self-efficacy and goal orientation. *J. Adv. Acad.* **2007**, *18*, 454–476. [CrossRef]
21. Mädamürk, K.; Tuominen, H.; Hietajärvi, L.; Salmela-Aro, K. Adolescent students' digital engagement and achievement goal orientation profiles. *Comput. Educ.* **2021**, *161*, 104058. [CrossRef]
22. Tschannen-Moran, M.; Parish, J.; Dipaola, M. School climate: The interplay between interpersonal relationships and student achievement. *J. Sch. Leadersh.* **2006**, *16*, 386–415. [CrossRef]

23. Kalina, C.; Powell, K.C. Cognitive and social constructivism: Developing tools for an effective classroom. *Education* **2009**, *130*, 241–250. Available online: https://docdrop.org/static/drop-pdf/Powell-and-Kalina-U6g4p.pdf (accessed on 18 April 2022).

24. Sakız, H. Impact of an inclusive programme on achievement, attendance and perceptions towards the school climate and social-emotional adaptation among students with disabilities. *Educ. Psychol.* **2017**, *37*, 611–631. [CrossRef]

25. Cohen, J.; McCabe, E.M.; Michelli, N.M.; Pickeral, T. School climate: Research, policy, practice, and teacher education. *Teach. Coll. Rec.* **2009**, *111*, 180–213. [CrossRef]

26. Fatou, N.; Kubiszewski, V. Are perceived school climate dimensions predictive of students' engagement? *Soc. Psychol. Educ.* **2018**, *21*, 427–446. [CrossRef]

27. Mateos, N.E.; Fernández-Zabala, A.; Palacios, E.G.; Diaz-de-Cerio, I.I.-D.-L.-F. School climate and perceived academic performance: Direct or resilience-mediated relationship? *Sustainability* **2021**, *13*, 68. [CrossRef]

28. Ames, C. Classrooms: Goals, structures, and student motivation. *J. Educ. Psychol.* **1992**, *84*, 261–271. [CrossRef]

29. Tapola, A.; Niemivirta, M. The role of achievement goal orientations in students' perceptions of and preferences for classroom environment. *Br. J. Educ. Psychol.* **2008**, *78*, 291–312. [CrossRef]

30. Storlie, C.A.; Toomey, R.B. Facets of career development in a new immigrant destination: Exploring the associations among school climate, belief in self, school engagement, and academic achievement. *J. Career Dev.* **2020**, *47*, 44–58. [CrossRef]

31. Del Toro, J.; Wang, M.T. Longitudinal inter-relations between school cultural socialization and school engagement: The mediating role of school climate. *Learn. Instr.* **2021**, *75*, 101482. [CrossRef]

32. Sins, P.H.; Van Joolingen, W.R.; Savelsbergh, E.R.; van Hout-Wolters, B. Motivation and performance within a collaborative computer-based modeling task: Relations between students' achievement goal orientation, self-efficacy, cognitive processing, and achievement. *Contemp. Educ. Psychol.* **2008**, *33*, 58–77. [CrossRef]

33. Bandura, A. The explanatory and predictive scope of self-efficacy theory. *J. Soc. Clin. Psychol.* **1986**, *4*, 359–373. [CrossRef]

34. Kudusheva, N.; Amanova, I.; Abisheva, E.; Sabirova, Z.; Beisenova, Z. The development of individual self-efficiency among university students. *Cypriot J. Educ. Sci.* **2022**, *17*, 615–625. [CrossRef]

35. Lin, T.J. Multi-dimensional explorations into the relationships between high school students' science learning self-efficacy and engagement. *Int. J. Sci. Educ.* **2021**, *43*, 1193–1207. [CrossRef]

36. Schunk, D.H. Goal setting and self-efficacy during self-regulated learning. *Educ. Psychol.* **1990**, *25*, 71–86. [CrossRef]

37. Chyung, S.Y.; Moll, A.J.; Berg, S.A. The role of intrinsic goal orientation, self-efficacy, and e-learning practice in engineering education. *J. Eff. Teach.* **2010**, *10*, 22–37. Available online: https://eric.ed.gov/?id=EJ1092160 (accessed on 14 April 2022).

38. Hood, S.; Barrickman, N.; Djerdjian, N.; Farr, M.; Magner, S.; Roychowdhury, H.; Gerrits, R.; Lawford, H.; Ott, B.; Ross, K.; et al. "I like and prefer to work alone": Social anxiety, academic self-efficacy, and students' perceptions of active learning. *CBE—Life Sci. Educ.* **2021**, *20*, ar12. [CrossRef]

39. Lorsbach, A.; Jinks, J. Self-efficacy theory and learning environment research. *Learn. Environ. Res.* **1999**, *2*, 157–167. [CrossRef]

40. Loukas, A. What is school climate. *Leadersh. Compass* **2007**, *5*, 1–3. Available online: https://www.naesp.org/sites/default/files/resources/2/Leadership_Compass/2007/LC2007v5n1a4.pdf (accessed on 18 April 2022).

41. Abd-Elmotaleb, M.; Saha, S.K. The role of academic self-efficacy as a mediator variable between perceived academic climate and academic performance. *J. Educ. Learn.* **2013**, *2*, 117–129. [CrossRef]

42. Li, Y.; Singh, C. Effect of gender, self-efficacy, and interest on perception of the learning environment and outcomes in calculus-based introductory physics courses. *Phys. Rev. Phys. Educ. Res.* **2021**, *17*, 010143. [CrossRef]

43. Gutiérrez, M.; Tomás, J.M. The role of perceived autonomy support in predicting university students' academic success mediated by academic self-efficacy and school engagement. *Educ. Psychol.* **2019**, *39*, 729–748. [CrossRef]

44. de Vera, J.V.; Peteros, E.D.; Peconcillo, L.B., Jr.; Alcantara, G.A.; Villarin, E.R.; Fulgencio, M.D. Assessing differences on students' attributes in mathematics based on their learning sessions. *Open J. Soc. Sci.* **2022**, *10*, 170–185. [CrossRef]

45. Hayes, A.F. *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling*; White Paper; University of Kansas: Lawrence, KS, USA, 2012. Available online: https://www.afhayes.com/public/process2012.pdf (accessed on 16 April 2022).

46. Liu, H.-J.; Guo, D.-J. A research of the relationship between pretest anxiety, acheivement goal orientation and test performance. *Psychol. Dev. Educ.* **2003**, *18*, 64–68. (In Chinese) [CrossRef]

47. Pintrich, P.R. The role of goal orientation in self-regulated learning. In *Handbook of Self-Regulation*; Boekaerts, M., Pintrich, P.R., Zeidner, M., Eds.; Academic Press: Cambridge, MA, USA, 2000; pp. 451–502. [CrossRef]

48. Bai, X.; Liu, X.; Liu, Z. The mediating effects of social comparison on the relationship between achievement goal and academic self-efficacy: Evidence from the junior high school students. *J. Psychol. Sci.* **2013**, *36*, 1413–1420. (In Chinese) [CrossRef]

49. Jia, Y.; Way, N.; Ling, G.; Yoshikawa, H.; Chen, X.; Hughes, D.; Ke, X.; Lu, Z. The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of Chinese and American adolescents. *Child Dev.* **2009**, *80*, 1514–1530. [CrossRef]

50. Midgley, C.; Maehr, M.L.; Hruda, L.Z.; Anderman, E.; Anderman, L.; Freeman, K.E.; Urdan, T. *Manual for the Patterns of Adaptive Learning Scales*; University of Michigan: Ann Arbor, MI, USA, 2000.

51. Britner, S.L.; Pajares, F. Self-efficacy beliefs, motivation, race, and gender in middle school science. *J. Women Minor. Sci. Eng.* **2001**, *7*, 271–285. [CrossRef]

52. Salmela-Aro, K.; Read, S. Study engagement and burnout profiles among Finnish higher education students. *Burn. Res.* **2017**, *7*, 21–28. [CrossRef]

53. You, J.W. Investigating the effects of achievement goals on team creativity and team achievement in learning communities at a South Korean university. *High. Educ.* **2021**, *81*, 367–383. [CrossRef]

54. Shih, S.S. Factors related to Taiwanese adolescents' academic engagement and achievement goal orientations. *J. Educ. Res.* **2021**, *114*, 1–12. [CrossRef]

55. Baudoin, N.; Galand, B. Do achievement goals mediate the relationship between classroom goal structures and student emotions at school? *Int. J. Sch. Educ. Psychol.* **2022**, *10*, 77–93. [CrossRef]

56. Lombardi, E.; Traficante, D.; Bettoni, R.; Offredi, I.; Vernice, M.; Sarti, D. Comparison on well-being, engagement and perceived school climate in secondary school students with learning difficulties and specific learning disorders: An exploratory study. *Behav. Sci.* **2021**, *11*, 103. [CrossRef] [PubMed]

57. Bell, B.S.; Kozlowski, W.J. Goal orientation and ability: Interactive effects on self-efficacy, performance, and knowledge. *J. Appl. Psychol.* **2002**, *87*, 497–505. [CrossRef] [PubMed]

58. Wu, P.C. *The Effects of Goal Orientation, Self-Efficacy, and Cognitive/Metacognitive Self-Regulatory Strategy Use on EFL College Students' Course Achievement*; University of Southern California: Los Angeles, CA, USA, 2006.

59. Kuo, T.M.; Tsai, C.C.; Wang, J.C. Linking web-based learning self-efficacy and learning engagement in MOOCs: The role of online academic hardiness. *Internet High. Educ.* **2021**, *51*, 100819. [CrossRef]

60. Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychol. Rev.* **1977**, *84*, 191. [CrossRef]

61. Shin, M.; Bolkan, S. Intellectually stimulating students' intrinsic motivation: The mediating influence of student engagement, self-efficacy, and student academic support. *Commun. Educ.* **2021**, *70*, 146–164. [CrossRef]