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SURVEY

The Relationship Between Psychosocial Factors and Student Success in Athletic Training Students

Brittany A. Clason, EdD, ATC; Mariya A. Yukhymenko-Lescroart, PhD; Scott R. Sailor, EdD, ATC; Christian Wandeler, PhD
California State University, Fresno

Context: Many athletic training programs are not meeting accreditation standards involving measures of student success, causing programs to be noncompliant with these standards and showing current and prospective students that their program may not prepare them for a successful career. Studies have shown that psychosocial factors, including psychological needs and measures of student motivation, may be related to student success.

Objective: To examine the relationships between psychological needs (autonomy, competence, and relatedness), measures of student motivation (controlled and autonomous motivation, self-efficacy, and academic and athletic trainer identity), and measures of student success (persistence, intention to leave, perceived academic performance, and grade point average [GPA]) in athletic training students.

Design: Cross-sectional.

Setting: Entry-level master's athletic training programs.

Patients or Other Participants: Ninety-seven current entry-level master's athletic training students who held a noncertified student National Athletic Trainers' Association membership in 2020.

Data Collection and Analysis: Responses to surveys were estimated using a path model, in which 4 measures of student success were specified to be predicted by psychological needs directly and indirectly through measures of student motivation.

Results: Persistence was positively predicted by autonomy and autonomous motivation. Intention to leave was positively predicted by controlled motivation. Perceived academic performance was positively predicted by competence and autonomous motivation. Finally, GPA was predicted positively by academic identity and negatively by athletic trainer identity. Findings also showed an indirect relationship between competence and GPA through academic identity. Overall, findings showed that autonomy, competence, autonomous motivation, and academic identity were important predictors of student success.

Conclusion(s): Athletic training students should be provided opportunities to practice athletic training skills and knowledge and to make choices regarding patient care in real-life situations and regarding their learning environment. These opportunities for independence may result in greater autonomy, competence, autonomous motivation, and academic identity, and, in turn, greater student success.

Key Words: Program outcomes, psychological needs, motivation

Dr Clason is currently the Program Director for the Master of Science in Athletic Training Program in the Department of Kinesiology at California State University, Fresno. Address correspondence to Brittany A. Clason, EdD, ATC, 5275 N. Campus Dr. M/S SG28 Fresno, CA 93740. bclason@mail.fresnostate.edu.

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KEY POINTS

- Psychosocial factors, including psychological needs (autonomy, competence, and relatedness) and measures of student motivation (controlled and autonomous motivation, self-efficacy, academic and athletic trainer identity), may be related to student success.
- Autonomy and autonomous motivation played a positive role in academic persistence of entry-level master's athletic training students.
- Entry-level master's athletic training students with high controlled motivation reported high likelihood to leave their athletic training program.
- Athletic training students who felt competent and reported having autonomous motivation toward their studies reported high perceived academic performance.
- Athletic training students with a strong academic identity and a high feeling of competence, as well as a weak athletic trainer identity, reported high grade point average.

INTRODUCTION

The Commission on Accreditation of Athletic Training Education (CAATE) requires that athletic training programs report program outcomes annually.[1] Program outcomes, including first-time pass rate of the Board of Certification, Inc (BOC), examination; overall BOC examination pass rate, or student pass rate regardless of number of attempts; retention rates, or proportion of students who persist in their athletic training program through graduation; graduation rates; and student employment rates upon graduation are used by the CAATE[1] to determine program accreditation and are similar to measures of student success. The CAATE's most current analytic report (2020–2021)[2] suggests athletic training programs are having difficulties meeting program outcomes, which can lead to noncompliance with CAATE standards.

Measures of student success are typically obtained for the purpose of determining program success, performance, and effectiveness.[3] Programs that cannot provide evidence of student success are deemed ineffective, showing they may not adequately prepare students for a successful future.[3] Therefore, the CAATE[1] requires all athletic training programs to report program outcomes to current and prospective students so students can make informed decisions during their application process.[4] Students who are applying to professional programs may be less encouraged to apply for and attend programs that cannot show their effectiveness at creating successful athletic trainers (ATs). Thus, researching factors that contribute to student success in athletic training programs is important. Yet there is little research on student success within athletic training, with most studies focusing on strength of curriculum and diversity in clinical experiences rather than the psychosocial aspects that may be relevant to student motivation. Studies have shown psychosocial factors are associated with measures of student success, such as academic performance and retention and graduation rates.[5–9] Therefore, it is important to examine which psychosocial factors may contribute to students' academic persistence and performance.

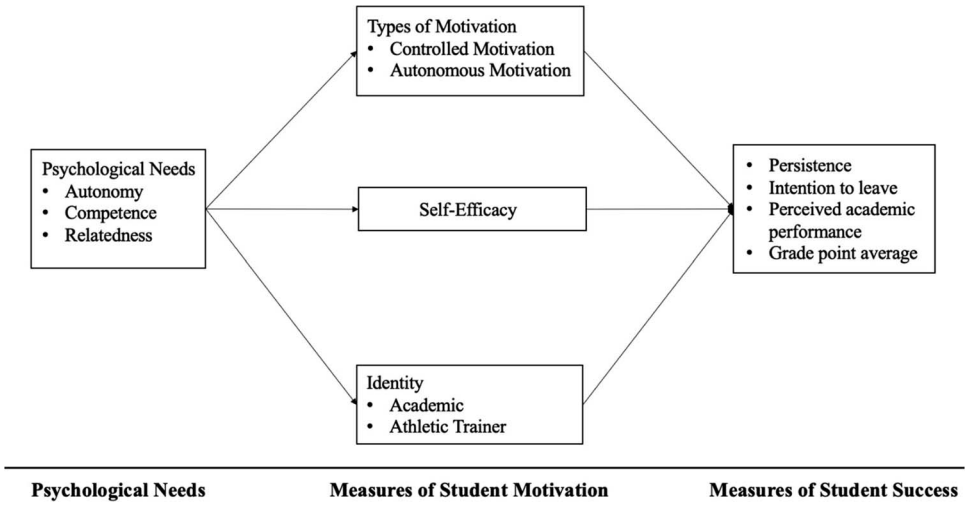
THEORETICAL AND CONCEPTUAL FRAMEWORK

Variables in this study were identified using self-determination theory, social cognitive theory, and social identity theory. According to self-determination theory, the basis for self-motivation is the following 3 psychological needs: (1) autonomy, or one's perceptions of their environment and their ability to be independent, to make their own decisions, and to have their own opinions[10]; (2) competence, or the ability to successfully and effectively complete tasks[10]; and (3) relatedness, or the desire to feel connected to others or a sense of belonging within a community.[10,11] When these 3 psychological needs are met, autonomous motivation—motivation that is internalized—increases.[11,12] Lack of satisfaction of these 3 basic needs, however, may be detrimental to a student's motivation, resulting in decreased motivation or amotivation and lack of persistence during difficult times.[11] Amotivation and other forms of motivation based on external rewards are considered forms of controlled motivation.[13] Studies have shown that those who have higher levels of autonomous motivation and lower levels of controlled motivation are more likely to persist and achieve greater academic performance.[5,6] This is because as one's motives align more with autonomous or internal rewards, they feel less pressure to perform for others.[5] Thus, meeting the psychological needs (autonomy, competence, and relatedness) of athletic training students may increase levels of autonomous motivation, causing greater student success.

According to social cognitive theory, self-efficacy is a belief in one's capability to perform a given task successfully,[14] and has been correlated with the amount of effort one puts into activities and how long one will persist when facing difficulties.[15] Previous studies have shown that self-efficacy is correlated with academic success,[7,14] showing that students with a strong sense of academic self-efficacy perform better academically,[7] are more motivated to persist to complete their goals, and perform at higher levels.[7,14,15] Meeting the basic psychological needs of autonomy, competence, and relatedness has been shown to shape and enhance self-efficacy in students, which was then positively related to academic performance.[16] Therefore, athletic training students who feel their psychological needs are being met may have higher levels of self-efficacy and be more motivated to persist in and complete their athletic training programs with greater academic performance.

Finally, identity is also an important measure of student motivation, which can result in greater persistence and academic performance.[8,17,18] According to social identity theory, one's social identities define who one is in terms of characteristics, attitudes, and beliefs,[19] and influence what activities an individual chooses to do and perceive as important.[17] When an activity is interpreted as congruent with one's identity, one tends to see value in the activity and persist even when the

Figure 1. Conceptual framework for the study. The conceptual framework was developed using self-determination theory, social cognitive theory, and social identity theory. The framework shows the hypothesized directional relationships between each of the variables in the study.



activity becomes difficult or stressful,[17] suggesting that identity may be correlated with persistence.[20] Indeed, studies have shown that university students with a strong academic identity have higher academic persistence[8] and report higher grade point averages [GPAs].[8,18] Notably, because social identity is formed through social interactions,[19] people may identify with multiple social identities.[18] Therefore, it is plausible that athletic training students view both identities as central to who they are: academic and AT. Thus, both identities may be relevant to their success as students. Meeting basic psychological needs, such as feelings of competence and relatedness to classmates, has been shown to enhance academic identity of university students.[20,21]

In sum, studies have shown that measures of student success are predicted by controlled and autonomous motivation, self-efficacy, and identity.[5–8,14–18,20] Studies have also shown that students whose psychological needs are met are more motivated[11,12] and show better academic outcomes.[7,14,15,20] Therefore, the purpose of this study was to examine the relationships between psychological needs (autonomy, competence, and relatedness), measures of student motivation (controlled and autonomous motivation, self-efficacy, and academic and AT identity), and measures of student success (persistence, intention to leave, perceived academic performance, and GPA). The conceptual framework for the study is provided in Figure 1. The research questions for the study were as follows:

Research question 1: To what extent were measures of student motivation predicted by psychological needs?

Research question 2: To what extent were measures of student success predicted by measures of student motivation?

Research question 3: To what extent were measures of student success predicted by psychological needs directly and indirectly via measures of student motivation?

METHODS

This study used a quantitative approach with a cross-sectional design to examine the predictive relationships between the variables. For transparency, the American Psychological Association's Journal Article Reporting Standards for Quantitative Research in Psychology[22] were used.

Participants

Participants consisted of 97 current entry-level master's athletic training students, 22 men (22.7%) and 75 women (77.3%). Figure 2 describes information regarding inclusion criteria, participant enrollment, and exclusions. Table 1 provides information regarding participant demographics. A power analysis was conducted for path analysis based on χ^2 test[23] in WebPower.[24] With a sample size of 97, 4 degrees of freedom,[25] significance level of .05, and power of 0.80, the minimum detectable effect size was 0.124.

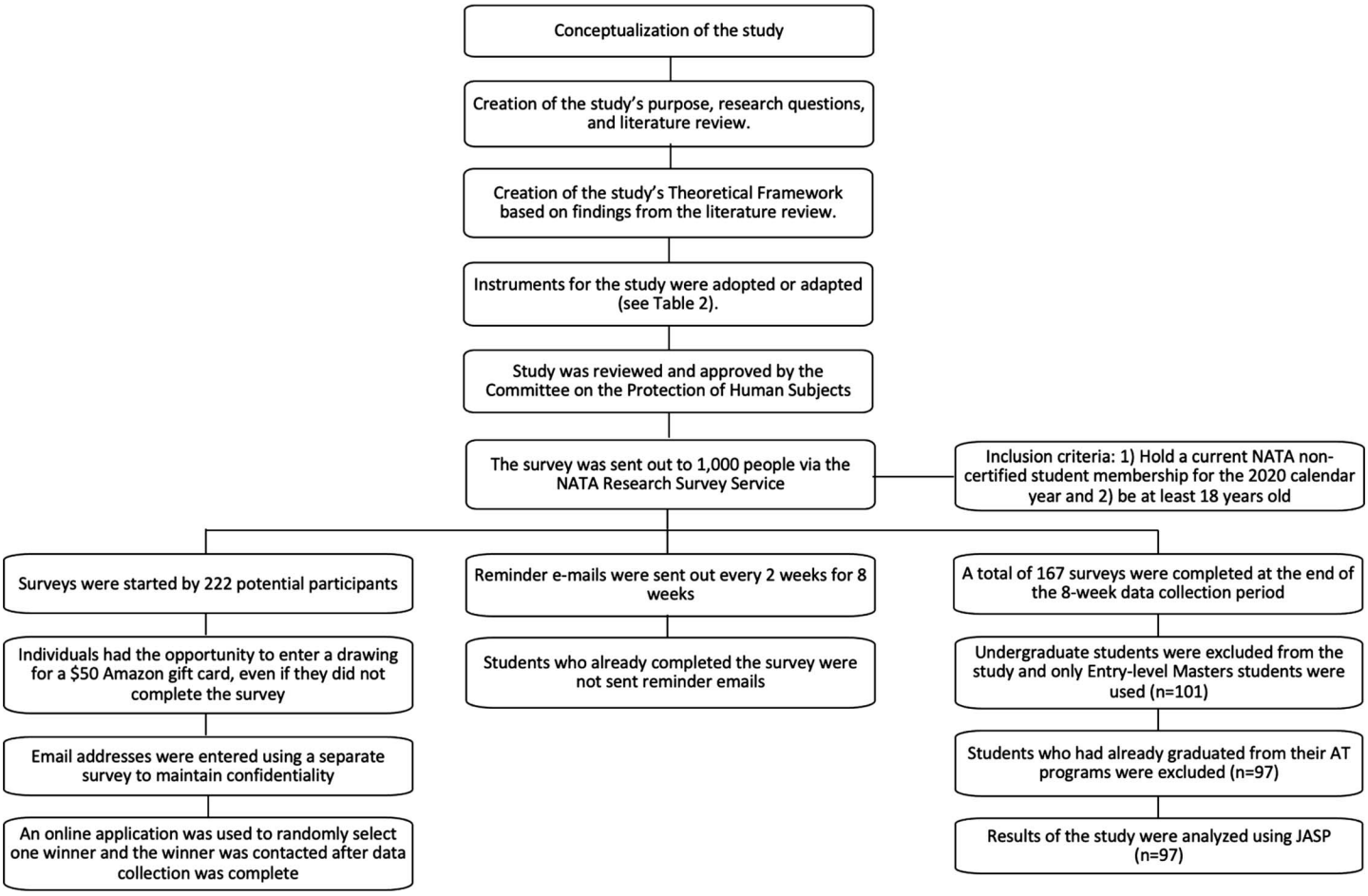
Data Collection

Table 2 summarizes information for the measures used in this study, which were either adopted or adapted from previously developed and validated scales. Questions from all instruments and the informed consent form were compiled and sent out using the National Athletic Trainers' Association Research Survey Service. All information collected during the data collection process was kept confidential. Figure 2 describes information regarding the data collection process.

Data Analysis

Preliminary data analysis procedures included exploratory factor analyses to determine factorial validity of the measures and reliability analyses to check internal consistency. Items that were dropped during the exploratory factor analyses were not used in the reliability analyses, and a reliability analysis was conducted for each factor that was identified; Cronbach α scores were used as the reliability coefficient. A path analysis was conducted to answer the research questions, testing the conceptual model (Figure 1). In JASP,[33] a lavaan syntax was created to identify the direct and indirect relationships between the measures. All measures were allowed to freely correlate. Paths were created between independent variables, mediating variables, and dependent

Figure 2. Methods flow diagram. The methods flow diagram provides information regarding data collection for the study, including participant inclusion and exclusion criteria, enrollment, follow-up, and analysis.



variables. These paths were defined and added to the syntax for the path analysis.

RESULTS

A preliminary analysis was conducted, which included exploratory factor analyses for each scale and reliability analyses for each identified factor. Descriptive statistics and Pearson correlations were then calculated, and a path analysis was completed.

Table 1. Participant Demographics

	No.	Percentage
Ethnicity		
White	72	74.2
Black or African American	9	9.3
Hispanic or Latino	4	4.1
Asian	4	4.1
Multiracial	8	8.3
Year in program		
First	49	50.5
Second	41	42.3
Third	1	1.0
Fourth	3	3.1
Declined to answer	3	3.1

Preliminary Analyses

During the exploratory factor analysis of the perceived choice subscale, factor loading for 1 item was 0.28; therefore, this item was removed because of insufficient loading and the exploratory factor analysis was rerun. Additionally, the Learning Motivation Scale's exploratory factor analysis revealed a strong cross loading on the unintended factor for 1 item. Therefore, this item was removed, and the exploratory factor analysis was rerun. All other items from all other scales were retained. Analyses showed good factorial validity for each scale. Variance, factor loading ranges, and reliability estimates are shown in Table 3. Reliability analyses with the retained items showed that except for intentions to leave, Cronbach α scores ranged from .82 to .91, indicating adequate levels of reliability (Table 3). Cronbach α for intentions to leave was .66. After the preliminary analyses, means and standard deviations were calculated for each of the measured variables in the study, and are presented in Table 4 along with Pearson correlations. All measures of student success were correlated in the expected directions, except for the negative correlation between GPA and AT identity.

Main Results

The path model was specified as indicated in Figure 1. The measured variables were allowed to freely correlate, thus, the path model was fully identified. The model explained 25% of

Table 2. Summary of Instruments

Scale and Subscale Name	Adopted or Adapted	Variable Measured	Reliability Estimates	No. of Items	Scale Range	Sample Item
Intrinsic Motivation Inventory[26]						
Perceived Choice Subscale	Adopted	Autonomy	$\alpha = .83$	7	1 (*strongly disagree*) to 7 (*strongly agree*)	"I did what is required of me in the athletic training program because I wanted to."
Perceived Competence Subscale	Adopted	Competence	$\alpha = .83$	6	1 (*strongly disagree*) to 7 (*strongly agree*)	"I think I am pretty good at the required components of the athletic training program."
Relatedness Subscale	Adopted	Relatedness	$\alpha = .83$	8	1 (*strongly disagree*) to 7 (*strongly agree*)	"I feel close to a majority of my athletic training program faculty and clinical preceptors."
Learning Motivation Scale[27]						
Amotivation	Adopted	Controlled Motivation	$\alpha = .77$	11	1 (*strongly disagree*) to 7 (*strongly agree*)	"I am in my athletic training program because others (parents, mentors, etc) want me to."
Extrinsic Regulation			$\alpha = .88$			
Introjected Regulation			$\alpha = .68$			
Identified Regulation	Adopted	Autonomous Motivation	$\alpha = .86$	8	1 (*strongly disagree*) to 7 (*strongly agree*)	"I am in my athletic training program because I find it useful for myself."
Intrinsic Regulation			$\alpha = .88$			
Perceived Competence for Learning Scale[28]	Adapted	Self-efficacy	$\alpha = .80$	4	1 (*strongly disagree*) to 7 (*strongly agree*)	"I am capable of learning the material in my athletic training program."
Academic and Athletic Identity Scale[18]	Adopted	Academic identity	$\omega = .93–.94$	5	1 (*not central to who I really am*) to 7 (*the central core to who I really am*)	"Doing well in school."
Athletic Trainer Identity Scale[29]	Adapted	Athletic trainer identity	NA[a]	4	1 (*not central to who I really am*) to 7 (*the central core to who I really am*)	"Being a capable athletic trainer."
Academic Persistence[30]	Adapted	Persistence	$\alpha = .78$	4	1 (*strongly disagree*) to 7 (*strongly agree*)	"I try to learn all of the material in the AT program "inside and out," even if it's boring."
Intentions to Leave[31]	Adopted	Intention to leave	$\alpha = .63$	3	1 (*strongly disagree*) to 7 (*strongly agree*)	"I have seriously considered dropping out of college."
Perceived Academic Performance Scale[32]	Adapted	Perceived academic performance	$\alpha = .83$	5	1 (*strongly disagree*) to 7 (*strongly agree*)	"My performance in the classroom and in the clinic are beyond demands."

Abbreviation: NA, not available.

[a] The Athletic Trainer Identity Scale was adapted from the Academic and Athletic Identity Scale; therefore, reliability estimates for this scale are not available.

Table 3. Variance and Factor Loading Ranges by Scale

	Variance	Factor Loading Range	α
Autonomy	0.39	0.43 to 0.80	0.80
Autonomy (revised)	0.44	0.44 to 0.81	0.82
Competence	0.49	0.65 to 0.79	0.85
Relatedness	0.52	0.56 to 0.85	0.90
Controlled motivation	0.24	0.46 to 0.83	0.84
Controlled motivation (revised)	0.24	0.45 to 0.83	0.84
Autonomous motivation	0.28	−0.53 to 0.80	0.91
Autonomous motivation (revised)	0.27	0.67 to 0.81	0.91
Self-efficacy	0.64	0.73 to 0.87	0.87
Academic identity	0.60	0.57 to 0.92	0.87
Athletic trainer identity	0.59	0.51 to 0.89	0.84
Persistence	0.57	0.51 to 0.90	0.82
Intention to Leave	0.45	0.43 to 0.90	0.66
Perceived academic performance	0.51	0.58 to 0.78	0.82

the variance in controlled motivation, 13% in autonomous motivation, 34% in self-efficacy, 14% in academic identity, 24% in AT identity, 31% in persistence, 23% in intention to leave, 39% in perceived academic performance, and 25% in GPA. Parameter estimates for the path model are shown in Table 5 and displayed graphically in Figure 3. The results for indirect relationships are shown in Table 6.

Relationships Between Psychological Needs and Measures of Student Motivation. As shown in Table 5 and Figure 3, controlled motivation was negatively predicted by autonomy ($P < .001$). Self-efficacy was positively predicted by autonomy ($P = .030$), competence ($P < .001$), and relatedness ($P = .021$). Academic identity was positively predicted by competence ($P = .009$). Finally, AT identity was positively predicted by competence ($P = .006$) and relatedness ($P = .006$). Autonomous motivation was not predicted by any of the psychological needs.

Relationships Between Measures of Student Motivation and Measures of Student Success. As seen in Table 5 and Figure 3, persistence was predicted positively by autonomous motivation ($P = .015$). Intention to leave was positively predicted by controlled motivation ($P = .037$). Perceived academic performance was positively predicted by autonomous motivation ($P < .001$). Finally, GPA was predicted positively by academic identity ($P < .001$) and negatively by AT identity ($P = .008$).

Relationships Between Psychological Needs and Measures of Student Success. As shown in Table 5 and Figure 3, persistence was positively predicted by autonomy ($P = .026$). Perceived academic performance was positively predicted by competence ($P = .029$). In contrast, intention to leave and GPA were not directly predicted by psychological needs. Additionally, as shown in Table 6, the only statistically significant indirect relationship was between competence and GPA, which was through academic identity ($P = .035$).

DISCUSSION

This study examined the relationships between psychological needs (autonomy, competence, and relatedness), measures of student motivation (controlled and autonomous motivation, self-efficacy, and academic and AT identity), and measures of student success (persistence, intention to leave, perceived academic performance, and GPA). Overall, findings showed that autonomy, competence, autonomous motivation, and academic identity were important predictors of student success.

Relationships Between Psychological Needs and Measures of Student Motivation

Findings showed that controlled motivation was negatively predicted by autonomy, suggesting that athletic training students may be motivated by external factors, or experience lack of motivation, when they perceive they do not have control over or have the ability to make choices within their learning environment. Previous studies have shown that allowing athletic training students to practice making decisions regarding patient care may increase perceptions of autonomy.[34] Therefore, as athletic training faculty and preceptors encourage independence and have athletic training students practice making decisions regarding patient care during their learning experiences, they may be able to decrease controlled motivation. In contrast, autonomous motivation was not predicted by any of the psychological needs. Although several studies have shown that autonomous motivation increases when psychological needs are being met,[5,6] it is possible that athletic training students are autonomously motivated for reasons other than psychological needs.

Findings also showed that self-efficacy was predicted positively by all psychological needs, suggesting that when students feel autonomous, competent, and related to their faculty and preceptors, they also report feeling capable of learning the material in their athletic training program. This finding is aligned with previous studies.[15,34] Therefore, supporting athletic training students' independence and ability to make decisions regularly in the classroom and in their clinical experiences, allowing them to practice and successfully complete skills, and building positive relationships may all increase self-efficacy.

Additionally, academic identity was positively predicted by competence, whereas AT identity was positively predicted by both competence and relatedness. These findings suggest that as athletic training students feel competent both as students

Table 4. Pearson Correlations, Descriptive Statistics, and Cronbach Reliability Estimates for the Variables (N = 97)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Persistence	—											
2. Intention to leave	−0.16	—										
3. Perceived academic performance	0.26[a]	−0.22[b]	—									
4. GPA	0.23[b]	−0.09	0.34[c]	—								
5. Autonomy	0.27[a]	−0.16	0.04	0.003	—							
6. Competence	0.27[a]	−0.15	0.42[c]	0.19	−0.07	—						
7. Relatedness	0.33[a]	−0.25[b]	0.18	0.06	0.26[b]	0.33[a]	—					
8. Controlled motivation	−0.28[a]	0.43[c]	−0.14	−0.10	−0.46[c]	−0.06	−0.31[a]	—				
9. Autonomous motivation	0.41[c]	−0.35[c]	0.49[c]	0.16	0.14	0.24[b]	0.29[a]	−0.47[c]	—			
10. Self-efficacy	0.31[a]	−0.26[b]	0.33[c]	0.13	0.29[a]	0.46[c]	0.42[c]	−0.35[c]	0.27[a]	—		
11. Academic identity	0.18	−0.11	0.17	0.39[c]	−0.14	0.31[a]	0.20	−0.13	0.08	0.17	—	
12. Athletic trainer identity	0.17	−0.15	0.17	−0.06	0.04	0.38[c]	0.40[c]	−0.14	0.32[a]	0.26[a]	0.32[a]	—
Mean ± SD	5.82 ± 0.81	2.24 ± 1.23	5.07 ± 0.61	3.58 ± 0.34	3.99 ± 1.04	5.43 ± 0.70	5.60 ± 1.02	1.74 ± 0.74	6.43 ± 0.60	5.98 ± 0.70	5.00 ± 0.99	6.00 ± 0.89

[a] $P < .01$.
[b] $P < .05$.
[c] $P < .001$.

and as ATs through the practice of clinical skills, they are able to internalize these roles,[21] thus developing strong academic and AT identities. This is aligned with previous studies that have suggested that identity is attributed to feelings of competence.[21] Also, because relatedness was operationalized in this study as feelings of trust and friendship toward athletic training faculty and preceptors, findings suggest that the stronger these feelings are, the more students are able to internalize their role as ATs. Research has shown that interconnectedness is important for the formation of identity.[20]

Relationships Between Measures of Student Motivation and Measures of Student Success

Persistence was positively predicted only by autonomous motivation, suggesting that students are likely to persist in their athletic training programs when they have a strong autonomous motivation that is characterized by self-directed reasons for engaging in activities without being pressured or forced into participation. Overall, this finding is consistent with previous research showing that autonomous motivation is a likely predictor of persistence: the higher the autonomous motivation, the more likely one is to persist.[10,13] Therefore, those who participate in activities for reasons that align with autonomous, self-directed motives are more likely to continue.[5,10,13] Notably, even when the learning environment becomes difficult or stressful, students are more likely to persist when they are more intrinsically motivated.[5]

In contrast, intention to leave was positively predicted by controlled motivation, suggesting that when athletic training students choose to pursue a degree in athletic training for reasons other than seeing personal value, usefulness, and being inherently interested, they are more likely to drop out. Research on motivation shows that people often have both controlled and autonomous motives for participating.[13] However, those who participate in activities for reasons that align more with autonomous, self-directed motives are more likely to continue,[5,6,12,13,34] and those whose motives for participation align more with external rewards or factors are more likely to drop out,[13] supporting the findings from the current study. Therefore, athletic training program faculty and preceptors may be able to increase persistence and decrease intention to leave in athletic training students by helping students find personal enjoyment and satisfaction in athletic training, thus increasing their autonomous motivation[13] and decreasing their controlled motivation.[11,12]

Perceived academic performance was positively predicted by autonomous motivation only, indicating that students with a strong autonomous motivation feel they are meeting the performance requirements, assigned academic and clinical duties, and responsibilities in the classroom and in the clinic. This is consistent with literature that has shown that autonomous motivation is correlated with performance.[10] The current study operationalized autonomous motivation through personal enjoyment, personal interest, and importance to oneself. Therefore, these findings are aligned with what has been found in previous studies,[12,13] showing that as one finds more personal enjoyment, interest, and value in an activity, the more likely they are to feel that they are meeting the performance requirements of the activity. It is also plausible that when students' motivation is more internalized and they are

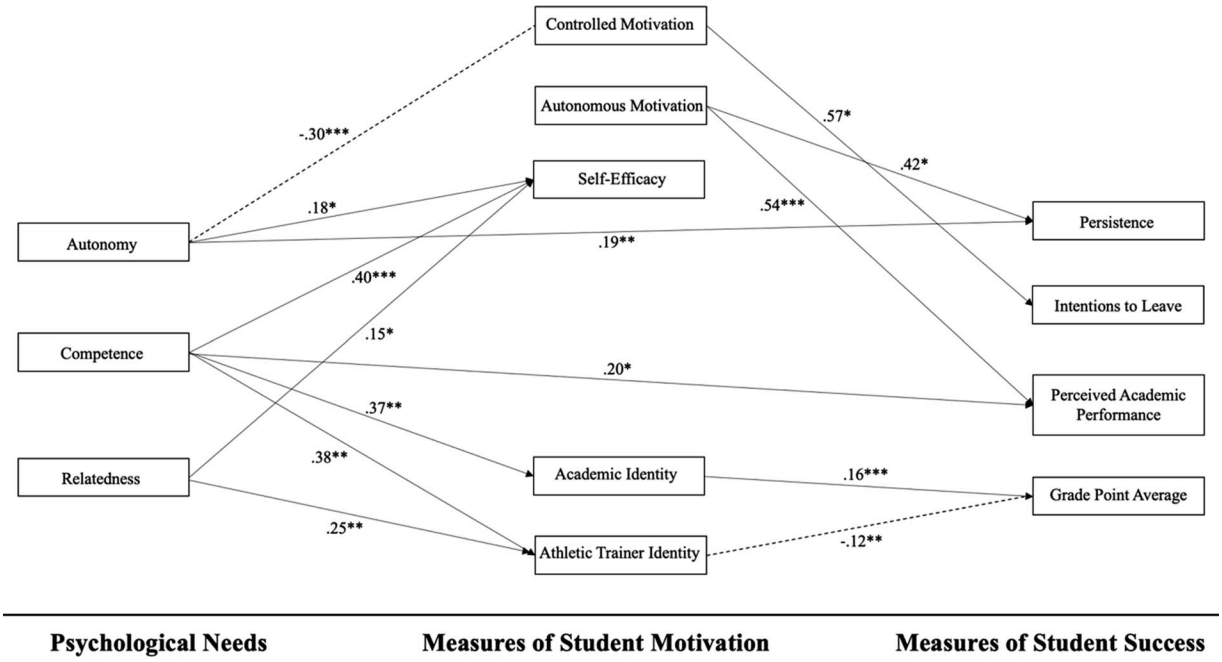
Table 5. Parameter Estimates for the Direct Relationships

Path	*B* (SE)	95% CI	*P*	β
Autonomy → persistence	0.19 (.07)	0.05, 0.32	.006	.24
Competence → persistence	0.18 (.17)	−0.05, 0.41	.116	.16
Relatedness → persistence	0.10 (0.15)	−0.19, 0.39	.493	.13
Autonomous motivation → persistence	0.42 (0.18)	0.08, 0.77	.015	.32
Controlled motivation → persistence	0.05 (0.14)	−0.24, 0.33	.741	.04
Self-efficacy → persistence	0.10 (0.12)	−0.15, 0.34	.434	.08
Academic identity → persistence	0.11 (0.09)	−0.06, 0.28	.212	.13
Athletic trainer identity → persistence	−0.13 (0.08)	−0.29, 0.04	.129	−.14
Autonomy → intention to leave	0.08 (0.13)	−0.17, 0.33	.528	.07
Competence → intention to leave	−0.05 (0.25)	−0.53, 0.44	.857	−.03
Relatedness → intention to leave	−0.10 (0.15)	−0.39, 0.19	.487	−.08
Autonomous motivation → intention to leave	−0.29 (0.25)	−0.78, 0.20	.253	−.14
Controlled motivation → intention to leave	0.57 (0.27)	0.03, 1.10	.037	.34
Self-efficacy → intention to leave	−0.15 (0.24)	−0.62, 0.32	.540	−.08
Academic identity → intention to leave	−0.02 (0.12)	−0.25, 0.21	.880	−.01
Athletic trainer identity → intention to leave	0.02 (0.13)	−0.24, 0.28	.878	.01
Autonomy → perceived academic performance	0.01 (0.05)	−0.09, 0.11	.846	.02
Competence → perceived academic performance	0.20 (0.10)	0.002, 0.39	.048	.23
Relatedness → perceived academic performance	−0.01 (0.06)	−0.13, 0.12	.894	−.01
Autonomous motivation → perceived academic performance	0.54 (0.12)	0.30, 0.79	<.001	.54
Controlled motivation → perceived academic performance	0.15 (0.08)	−0.02, 0.31	.076	.19
Self-efficacy → perceived academic performance	0.12 (0.09)	−0.06, 0.30	.195	.14
Academic identity → perceived academic performance	0.05 (0.05)	−0.04, 0.15	.284	.09
Athletic trainer identity → perceived academic performance	−0.06 (0.07)	−0.20, 0.08	.387	−.09
Autonomy → GPA	0.03 (0.04)	−0.05, 0.11	.441	.09
Competence → GPA	0.06 (0.06)	−0.05, 0.18	.289	.13
Relatedness → GPA	−0.01 (0.03)	−0.08, 0.06	.760	−.03
Autonomous motivation → GPA	0.10 (0.07)	−0.04, 0.25	.168	.18
Controlled motivation → GPA	0.02 (0.06)	−0.09, 0.13	.691	.05
Self-efficacy → GPA	0.01 (0.06)	−0.11, 0.13	.858	.02
Academic identity → GPA	0.16 (0.04)	0.09, 0.23	<.001	.46
Athletic trainer identity → GPA	−0.12 (0.05)	−0.21, −0.03	.008	−.31
Autonomy → autonomous motivation	0.08 (0.08)	−0.08, 0.24	.332	.14
Competence → autonomous motivation	0.18 (0.10)	−0.02, 0.38	.078	.21
Relatedness → autonomous motivation	0.10 (0.08)	−0.05, 0.25	.191	.17
Autonomy → controlled motivation	−0.30 (0.07)	−0.45, −0.15	<.001	−.42
Competence → controlled motivation	−0.02 (0.11)	−0.23, 0.19	.842	−.02
Relatedness → controlled motivation	−0.14 (0.10)	−0.33, 0.05	.140	−.19
Autonomy → self-efficacy	0.18 (0.08)	0.02, 0.34	.030	.26
Competence → self-efficacy	0.40 (0.09)	0.23, 0.57	<.001	.39
Relatedness → self-efficacy	0.15 (0.07)	0.02, 0.28	.021	.22
Autonomy → academic identity	−0.15 (0.12)	−0.39, 0.09	.213	−.16
Competence → academic identity	0.37 (0.14)	0.09, 0.65	.009	.26
Relatedness → academic identity	0.16 (0.11)	−0.04, 0.37	.119	.17
Autonomy → athletic trainer identity	0.01 (0.09)	−0.15, 0.18	.868	.02
Competence → athletic trainer identity	0.38 (0.14)	0.11, 0.64	.006	.30
Relatedness → athletic trainer identity	0.25 (0.09)	0.07, 0.43	.006	.29

working to meet their personal goals, they feel less pressure to perform for others, facilitating successful academic performance.[7] Athletic training program faculty and preceptors may be able to increase autonomous motivation and perception of performance by encouraging personal enjoyment and value in athletic training activities.

Finally, GPA was positively predicted by academic identity and negatively predicted by AT identity. For athletic training students with a strong academic identity, having a high GPA and doing well in school is important; thus, the relationship between academic identity and GPA was expected and aligned with previous literature.[18] In contrast, students who viewed being an AT as central to their sense of self reported a low GPA. Previous studies have shown that students in these types of programs (eg, athletic training, nursing) often place more importance on what they are learning during their clinical experiences than what they are learning in their academic coursework and feel that their clinical experiences are more beneficial for their future careers than what they learn in the classroom.[35] Therefore, as athletic training students form and internalize the role of AT, being high achievers in the

Figure 3. Predictive relationships between variables in the study. Statistically significant relationships for all variables in the study. Positive relationships are presented using a solid line; negative relationships are presented using a dashed line. Nonsignificant relationships are not shown for readability purposes. * $P < .05$, ** $P < .01$, *** $P < .001$.



classroom becomes less important for them. The emphasis on clinical experiences and the development of professional identity may be associated with deemphasizing grades and academic performance.[35] Therefore, athletic training program faculty and preceptors should encourage students to see the importance in both academic coursework and clinical skills by drawing connections between the two. This may prevent students from placing more of an emphasis on what they are learning in their clinical experiences, possibly increasing their desire to perform well in the classroom.

An unexpected finding was the lack of relationships between self-efficacy and measures of student success. Previous literature on self-efficacy showed relationships with measures of student success;[7,14–16] however, it is possible that athletic training students persist or perform well for reasons other than self-efficacy. For example, in previous research, athletic training students who persisted have identified relationships with peers, types of experiences in their clinical rotations, and personal enjoyment as reasons for their persistence.[34]

Relationships Between Psychological Needs and Measures of Student Success

The current study revealed 2 direct predictors between psychological needs and measures of student success. First, findings showed that persistence was positively predicted by autonomy, suggesting that athletic training students persist in their athletic training programs when they perceive they are able to make their own decisions and be independent.[10] Previous studies have suggested that athletic training program faculty and preceptors may increase perceptions of autonomy through experiential learning, where students can practice their athletic training skills and knowledge in real-life experiences, be independent, and make decisions regarding patient care.[34] Therefore, as athletic training faculty and preceptors

Table 6. Parameter Estimates for the Indirect Relationships

Path	*B* (SE)	95% CI	*P*	β
Indirect path 1: competence → autonomous motivation → persistence	0.08 (0.06)	−0.01, 0.19	.157	.07
Indirect path 2a: autonomy → controlled motivation → intention to leave	−0.17 (0.09)	−0.36, 0.000	.070	−.14
Indirect path 2b: competence → autonomous motivation → intention to leave	−0.05 (0.07)	−0.22, 0.05	.455	−.03
Indirect path 2c: relatedness → controlled motivation → intention to leave	−0.08 (0.07)	−0.24, 0.03	.247	−.07
Indirect path 3: competence → autonomous motivation → perceived academic performance	0.10 (0.07)	−0.01, 0.26	.157	.11
Indirect path 4a: competence → academic identity → GPA	0.06 (0.03)	0.01, 0.12	.035	.12
Indirect path 4b: competence → athletic trainer identity → GPA	−0.05 (0.03)	−0.10, −0.002	.086	−.09
Indirect path 4c: relatedness → athletic trainer identity → GPA	−0.03 (0.02)	−0.07, −0.001	.111	−.09

encourage independence and create opportunities for athletic training students to make decisions regarding patient care, perceptions of autonomy may increase, increasing persistence. This supposition has been validated by previous studies.[12,34] The second direct predictive relationship was between competence and perceived academic performance. Aligned with previous studies,[6,10,12,34–36] this finding indicates that athletic training students who have higher perceived competence in their athletic training skills and knowledge also report positive feelings about their performance. Therefore, there is evidence to suggest that increasing competence in athletic training students also increases perceived performance.[34]

An unexpected finding was that measures of student success were not predicted by the psychological need of relatedness. In the current study, the relatedness subscale focused on the relationships with athletic training faculty and preceptors only. There may be other relationships, such as relationships with peers, that might encourage athletic training students to continue in their athletic training programs,[34] which should be examined in future studies.

Finally, findings showed that intention to leave and GPA were not predicted by psychological needs directly. However, competence emerged as an indirect predictor of GPA through academic identity, suggesting that students with a high perception of competence have a strong academic identity, and in turn a high GPA. Therefore, athletic training faculty and preceptors may be able to increase academic performance and GPA by increasing athletic training student's perceptions of competence.

Practical Implications

Athletic training program faculty and preceptors may be able to increase measures of student success by increasing perceptions of autonomy and competence. To increase these perceptions, it would be beneficial for athletic training program faculty and preceptors to (1) encourage independence and allow athletic training students to practice making decisions regarding patient care, (2) allow athletic training students to have more control of and make decisions regarding their learning experiences, and (3) allow athletic training students to practice and successfully complete the skills they are learning in the classroom and in their clinical experiences. Through independent learning experiences and greater control over didactic and clinical opportunities, athletic training students may have increased perceptions of autonomy and competence, see progress toward their personal goals, and find more personal enjoyment and value in these activities, increasing their academic performance and desire to persist.[10,12,34] Additionally, athletic training program faculty and preceptors should regularly encourage students to recognize their progress toward their personal goals and encourage personal enjoyment in athletic training activities. As this occurs, controlled motivation may decrease and autonomous motivation may increase, thus increasing persistence and perceived academic performance. Finally, it would also be beneficial for athletic training program faculty and preceptors to show students the importance of both their academic coursework and their clinical experiences. Drawing connections between the two may eliminate the emphasis students place on clinical experiences, increasing GPA while also allowing students to have a high academic and AT identity.

Limitations and Future Directions

The conclusions of this study should be taken cautiously because the cross-sectional nature of the data prevents making causal inferences. Future studies may build on the results from the current study to test whether the predictive relationships can be confirmed in experimental studies. Additionally, it may be beneficial for future researchers to use a mixed-methods approach that would incorporate interviews, focus groups, and field observations. This approach may reduce the risk of memory bias, response bias, and social desirability bias, and allow future researchers to fully conceptualize the athletic training student experience. A longitudinal study following a cohort of participants may also be beneficial as it would allow future researchers to see how these variables would affect participants over time and collect data that more closely align with CAATE program outcomes (eg, BOC pass rates and postgraduation employment rates). Additionally, the intentions to leave measure had a relatively low reliability estimate; thus, results should be interpreted cautiously. Notably, Cronbach α is a function of the number of items in a scale, and the intentions to leave measure consisted of only 3 items. Another limitation is the relatively small sample size; therefore, some relationships that were found to be nonsignificant may be significant. Finally, COVID-19 may have affected the educational experiences of some participants. Changes in educational experiences were dependent on the decisions of individual universities and based on state or country guidelines. Because participants in this study were from all over the world, it is difficult to say how COVID-19 affected these experiences and therefore participant responses. Completing the study in a more typical academic year might be helpful.

CONCLUSIONS

If athletic training program faculty and preceptors are able to increase measures of student success in athletic training students, they may be able to maintain their CAATE accreditation and persuade students that their athletic training program will adequately prepare them for their long-awaited futures as ATs. This study examined several measures of student success, including persistence, intention to leave, perceived academic performance, and GPA, by considering the role of psychological needs (autonomy, competence, and relatedness), types of motivation (controlled and autonomous), self-efficacy, and identity (academic and AT). Taken together, findings pointed to the salient roles of autonomy, competence, autonomous motivation, and academic identity for academic success, suggesting that efforts should be aimed at increasing perceptions of autonomy and competence, levels of autonomous motivation, and academic identity in athletic training students.

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