THE RELATIONSHIP BETWEEN PSYCHOSOCIAL FACTORS
AND STUDENT SUCCESS IN ATHLETIC TRAINING
STUDENTS

by

Brittany A. Clason
B.S. (California State University, Fresno) 2010
M.A. (California State University, Fresno) 2012

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Abstract

Many athletic training (AT) programs are not meeting accreditation standards that involve measures of student success, causing programs to lose their accreditation and showing students that their program may not adequately prepare them for a successful career. Studies have shown that psychosocial factors, including psychological needs (autonomy, competence, and relatedness), and motivational factors such as self-efficacy, types of motivation, and identity may increase measures of student success, including persistence and academic performance.

The purpose of this quantitative, cross-sectional study was to examine the relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and grade point average) in AT students.

Participants included 167 National Athletic Trainers’ Association members who held a non-certified student membership for the 2020 calendar year, who completed self-reported scales through Qualtrics in fall 2020. Preliminary analyses included exploratory factor and reliability analyses. The main analyses for the
study estimated a path model in which student success was specified to be predicted by psychological needs directly and indirectly through measures of motivation (self-efficacy, types of motivation, and identity).

Results showed that competence was one of the most significant predictors of measures of student success, directly and indirectly predicting all measures of student success. Indirectly, competence predicted measures of student success through autonomous motivation and identity (academic and athletic trainer). Results also showed that types of motivation (controlled and autonomous) and identity (academic and athletic trainer) were direct predictors of student success as well. Additionally, autonomy was a significant direct predictor of persistence and predicted intentions to leave indirectly through controlled motivation.

AT students should be provided opportunities to practice their AT skills and knowledge and make choices regarding patient care in real-life situations. Additionally, AT students should be provided opportunities to make choices regarding their learning environment, deciding how they research and study material outside of class, using time in class to practice AT skills and knowledge. Through these opportunities, increased competence, autonomy, autonomous motivation, and academic identity may positively influence measures of student success.
This dissertation was presented
by

Brittany A. Clason

It was defended on
April 20, 2021
and approved by:

__________________________
Mariya Yukhymenko, Chair
Curriculum and Instruction

__________________________
Christian Wandeler
Curriculum and Instruction

__________________________
Scott Sailor
Kinesiology
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CHAPTER 1: INTRODUCTION

Athletic Trainers are certified and/or licensed healthcare professionals who specialize in the prevention, recognition, assessment, diagnosis, immediate care, treatment, and rehabilitation of athletic injuries (Prentice, 2017). Currently, to become an athletic trainer, students must successfully complete all requirements of an accredited athletic training (AT) program, graduate with a bachelor’s or master’s degree, and pass the Board of Certification (BOC) examination (National Athletic Trainers’ Association [NATA], n.d.-d). Beginning 2022, all AT programs must have completed a program transition from a bachelor’s degree to a master’s degree (AT Strategic Alliance, 2015). These AT standards are determined and enforced by the AT Strategic Alliance. The AT Strategic Alliance is made up of four organizations, 1) the Board of Certification, Inc., 2) the Committee on Accreditation of Athletic Training Education (CAATE), 3) the NATA, and 4) the NATA Research and Education Foundation (NATA Foundation; NATA, n.d.-e). Although all four organizations collaborate to advance the AT profession, the CAATE is the organization responsible for the assessment and accreditation of professional AT programs.

During their education, AT students complete a rigorous 2-year program of academic coursework while also participating in clinical practicum or clinical internship experiences (NATA, n.d.-c). Although the number of practicum or internship hours is subject to each AT program’s discretion, most AT programs have AT students completing an average of more than 20 hours per week in addition to their academic course load (CAATE, 2009). This rigorous combination of didactic and clinical experiences has been known to create stress for AT students and often plays a role in the decrease of motivation to complete and
graduate from an AT program (Bowman & Dodge, 2013). AT students have also stated that relationships and interactions with faculty and preceptors are sources of stress, fear, anxiety, and frustration during their AT program and that this may also affect their success in their AT program (Bowman & Dodge, 2013). Although all AT programs are required to have their AT students complete similar requirements for graduation, some programs have been seen as more successful at completing program outcomes than others. These program outcomes are based on educational measures of student success such as retention and graduation rates, first-time pass rates on the BOC examination, overall pass rates on the BOC examination, and post-graduation employment. Measures of program outcomes and student success are looked at by the CAATE to determine program accreditation (CAATE, n.d.-e).

**Program Outcomes and Student Success**

Each year, AT programs are required to report certain program outcomes to the CAATE (CAATE, n.d.-e). These program outcomes are similar to college and university measures of student success. An ambiguous term, there are multiple definitions of student success along with multiple aspects of what measurements should be used to calculate it (Kuh et al., 2006). Some of the more traditional measures of student success include freshman retention rates, or students who successfully progress through their freshman to sophomore years; progress toward a degree, such as semester grades; overall grade point average (GPA); and graduation rates (Kuh et al., 2006). More challenging measurements of student success include post-graduation employment rates as well as overall satisfaction with the college experience (Kuh et al., 2006). For professional AT programs, the CAATE has determined that appropriate measures of student success should include first time pass rate of the BOC examination; overall BOC examination pass rate, which is the student pass rate regardless of number of attempts; retention
rates, or students who persist in their AT program through graduation; program graduation rates; and student employment rates upon graduation (CAATE, n.d.-e).

The CAATE requires that all professional AT programs provide this information to current and prospective students, so students can make informed decisions about which programs they should apply to and which university they should attend (CAATE, n.d.-b). These controversial measures of student success are obtained for the purpose of determining program success, performance, and effectiveness. Programs that cannot provide evidence of student success are deemed ineffective, showing they may not adequately prepare students for a successful future (CAATE, n.d.-b; McCormick & Lucas, 2014). If programs cannot guarantee their effectiveness at creating successful athletic trainers, students will be less encouraged to apply for and attend their programs. In addition to a lack of student enrollment, if programs cannot meet CAATE requirements of student success, the CAATE will be forced to withdraw the AT program’s accreditation (CAATE, n.d.-b).

**Athletic Training Student Success Statistics**

There are currently 352 professional AT programs, 213 bachelors and 139 masters (CAATE, n.d.-e). For the 2018-2019 academic year, the CAATE reported that retention and graduation rates were only 74%, meaning that only 74% of AT students completed their AT program and graduated with either a bachelor’s or a master’s degree (CAATE, n.d.-e). Of students who have graduated with a bachelor’s degree in AT, only 65% are employed as athletic trainers with the remaining students either not employed at all or employed as something other than athletic trainers. Of the students who received a master’s degree, only 75% are employed as athletic trainers. CAATE reported student retention rates, graduation
rates, and employment rates show that these numbers have steadily declined over the last 3 years (CAATE, n.d.-e).

Although AT programs are determined successful and attractive to students based on all of the above listed measures of success, the CAATE arguably places the most importance on the first-time pass rate of the BOC examination. This measure of student success is currently the only program outcome that determines whether an AT program is eligible for accreditation (CAATE, n.d.-d). This measure of student and program success is reflected in CAATE’s Standard 6 in the CAATE 2020 standards, previously known as Standard 11 in the 2015 standards, showing that programs must “meet or exceed a three-year aggregate of 70% first-time pass rate on the BOC examination” (CAATE, n.d.-d, p. 5). Currently, 88 or 25% of the established 352 professional programs are not compliant with this standard (CAATE, n.d.-e). Between 2019 and 2022, 81 programs will be voluntarily withdrawing their CAATE accreditation, many due to their lack of compliance with this standard and inability to increase their first-time BOC examination pass rate to the required 70% (CAATE, n.d.-e).

**Problem Statement**

High program outcomes and student success are not only important for student enrollment and program accreditation, they are also important for AT students to feel confident that their AT program of choice will adequately prepare them for their long-awaited future as an athletic trainer (CAATE, n.d.-b). AT students invest time and money in order to pass their BOC examination and receive employment in their desired career field (CAATE, n.d.-b). Yet, as stated above only 65% to 75% of students who graduate with a degree in AT are actually being employed as athletic trainers following graduation (CAATE, n.d.-e). Some students who graduate with a degree in AT are not successfully passing the BOC
examination regardless of the number of attempts, meaning they will never be able to receive a position as an athletic trainer (CAATE, n.d.-e, n.d.-b).

Low measures of student success reflect program ineffectiveness (McCormick & Lucas, 2014). If students do choose to attend despite the low measures of student success, students are placing themselves at risk for possibly leading themselves into a career they are unprepared for, delaying the time they enter the career due to the inability to pass the BOC examination, or not being employed following graduation (CAATE, n.d.-b). Students need to feel confident that when they attend a university for a specific AT program, they will ultimately be successful in their practicum and academic courses, they will graduate in a timely manner, they will pass the BOC examination, and their degree will lead them toward a successful career.

There is little research on the topic of student success within the AT profession and most studies focus on the strength of curriculum and diversity in clinical experiences rather than the psychosocial aspects that may also affect a student’s motivation to persist in AT and be considered successful based on the above listed measures of student and program success. Studies have shown that measures of program and student success, such as retention and graduation rates, are associated with psychosocial factors, such as motivation and self-efficacy (e.g., Bowman et al., 2015; Davidson & Beck, 2006; Dodge et al., 2009) and that positive interactions between students, faculty, and preceptors should be encouraged to increase confidence in skills and knowledge and reduce stress, fear, anxiety, and frustration (Bowman & Dodge, 2011, 2013). If AT program faculty and preceptors are able to increase an AT student’s self-efficacy and motivation to persist through difficulties, they may ultimately be able to increase the student’s and program’s success (Bandura, 1997; Herrmann et al., 2017). Increasing
retention and graduation rates, first-time and overall BOC examination pass rates, and post-graduation employment rates will not only help AT students meet their post-graduate goals, but will also minimize the number of programs that are non-compliant with CAATE standards and are facing a loss of program accreditation.

**Theoretical Frameworks**

The theoretical frameworks guiding this study were self-determination theory, social cognitive theory, and social identity theory. Evidence from the literature has shown connections between the constructs and tenets of these theories. Therefore, the combination of these three theories determined the concepts that were studied. A description of the theoretical frameworks and the concepts of the study are below.

**Self-Determination Theory**

Self-determination theory is one of the most commonly accepted theories of motivational research that explains the behavior change process (Sweet et al., 2012). A broad framework, self-determination theory addresses intrinsic and extrinsic motivation, relationship satisfaction, personal goals, and wellness (Ryan & Deci, 2019). Self-determination theory research has identified three psychological needs that are the basis for self-motivation: 1) autonomy, 2) competence, and 3) relatedness (Sweet et al., 2012). First, autonomy is based on one’s perceptions of their environment and their ability to be independent, to make their own decisions, and to have their own opinions. Therefore, when one feels autonomous, they believe their behavior and actions are a result of their own decisions (Sweet et al., 2012). Competence in self-determination theory is defined as the ability to successfully and effectively complete tasks (Sweet et al., 2012). This psychological need is dependent on experiencing opportunities that would
allow one to demonstrate their competence or their ability to successfully complete a task (Sweet et al., 2012). Therefore, one must have the opportunity to practice in order to know that they can effectively and successfully complete their required tasks. Lastly, relatedness is the desire to feel connected to others or a sense of belonging within a community (Sweet et al., 2012). When one feels a sense of belonging within their environment, their motivation, confidence, and ability to be competent increase (Sweet et al., 2012). Ryan and Deci (2019) showed that when these three psychological needs are met, motivation will increase.

Deci and Ryan (2008) differentiated between two types of motivation, autonomous motivation and controlled motivation, stating that the type of motivation is more important than the total amount of motivation. Autonomous motivation includes intrinsic motivation, or motivation that is internalized, and some forms of extrinsic motivation that depend on “sense of self” including identified regulation and integrated regulation (Deci & Ryan, 2008; see Figure 1). Controlled motivation includes amotivation, or the lack of motivation, and the forms of extrinsic motivation that are regulated by external rewards or people other than oneself including external regulation and introjected regulation (Ryan & Deci, 2000; see Figure 1).

Research has shown that adequate feelings of autonomy, competence, and relatedness have led to increased autonomous motivation (Ryan & Deci, 2019). Dissatisfaction of these three basic needs, however, may be detrimental to a student’s motivation, resulting in decreased motivation or amotivation, causing one to not persist during difficult times (Ryan & Deci, 2019).
**Motivation Continuum in Self-Determination Theory**

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**Motivation and Persistence**

Wentzel (1999) defined motivation as a set of beliefs and emotions that cause one to behave a certain way. The beliefs studied most include, but are not limited to, personal goals and one’s beliefs about their abilities (Wentzel, 1999). Research has shown that personal goals determine why people choose to do things, and that the higher one’s self-efficacy and competence is, the more likely they are to persist toward their personal goals (Wentzel, 1999). Therefore, it can be argued that if a student’s goals reflect academic success, they would be more likely to persist toward these goals. Additionally, high levels of self-efficacy and competence would assist in their persistence toward their personal goal of academic success (Wentzel, 1999). It is also believed that social experiences, such as relationships between students and their peers and students and their teachers, affect motivation and that motivation would increase academic achievement (Wentzel, 1999).
Although both autonomous and controlled motivation have been shown to affect behaviors, research has shown that autonomous motivation leads to greater long-term persistence and academic performance (Deci & Ryan, 2008). Therefore, academic achievement may depend on autonomous motivation to persist through difficulties to meet academic and personal goals and this type of motivation may be affected by relationships and level of self-efficacy (Deci & Ryan, 2008; Wentzel, 1999). Therefore, if AT program faculty and preceptors can build positive relationships with AT students, AT students may be more motivated to persist toward graduation and meet their personal goals of academic success.

**Positive Interactions with Faculty**

One of the psychological needs in self-determination theory is relatedness, or the feeling of connectedness to a person or a community. Research has shown that students may perform better in a classroom when they have a personal, informal relationship with the teacher, when the teacher is someone they can trust, and when the teacher shows they care for the student and their education (Komarraju et al., 2010). Komarraju et al. (2010) showed that teachers should focus on the relationships they build with their students, creating a student-centered type of setting where the student and their needs come first. Positive interactions with faculty encourage positive academic behaviors, make students feel successful, and ultimately lead to greater academic success (Bickerstaff et al., 2017). Applying self-determination theory to education has shown that positive social interactions with faculty and preceptors may increase AT student motivation, increasing their persistence and academic achievements (Wentzel, 1999). Additionally, increasing AT students’ feelings of community and relatedness in their learning environments may also increase their self-efficacy, increasing their ability to succeed (Bickerstaff et al, 2017).
While self-determination theory provides the theoretical guidelines for most of the study, researchers have recommended that this theory be integrated with other theories to fully explain human behavior and motivation (e.g., Sweet et al., 2012). Additional constructs of this study include self-efficacy, which is included in Bandura’s (1986) social cognitive theory.

Social Cognitive Theory

Bandura (1986) proposed the social cognitive theory, which suggests that a person can make changes to their level of motivation depending on their personal factors such as beliefs and attitude, environmental factors such as social influences, and behavioral factors such as self-efficacy. Although there are many determinants to level of motivation, researchers believe that none is more important than one’s belief about their capabilities, called self-efficacy (Bandura, 1989). Self-efficacy is defined as one’s belief about what they can successfully perform or accomplish with the skills they possess (Bandura, 1997). It has been argued that self-efficacy is one of the most important determinants for motivation (Bandura, 1989) and that self-efficacy might affect how much effort one puts into activities, the types of activities one participates in, and how long one will persist when facing difficulties during these activities (Bandura & Adams, 1977). Wentzel (1999) showed that self-efficacy is a commonly measured factor of motivation and that the higher one’s self-efficacy is, the more likely that person would persist toward their personal goals.

Bandura et al. (1977) suggested that there are four ways to adjust or change level of self-efficacy: 1) performance accomplishments, 2) vicarious experiences, 3) verbal persuasion, and 4) emotional arousal. Together, these are referred to as the sources of self-efficacy. These four sources of self-efficacy are described below.
**Performance Accomplishments**

Performance accomplishments, sometimes referred to as “Mastery Experiences,” are past successful or failed attempts at completing a task (Fong & Krause, 2014). Bandura (1997) stated that successful attempts at completing a task would provide increased confidence when completing the same task in the future.

**Vicarious Experiences**

Vicarious experiences are observations of others’ performance accomplishments (Fong & Krause, 2014). These observations allow one to compare themselves and their skills to those around them. For this to occur, there has to be some similarity between the two subjects that are being compared (Fong & Krause, 2014).

**Verbal Persuasion**

Verbal persuasion, sometimes called “Social Persuasion,” relies on feedback and other messages received from others (Bandura, 1986). To affect one’s confidence, feedback would need to come from a reliable and credible source (Bandura, 1997; Won et al., 2017).

**Emotional Arousal**

Sometimes referred to as “Physiological and Affective States,” this source of self-efficacy is dependent on emotional feelings and physiological changes that occur before or during a task (Fong & Krause, 2014). For example, sweaty palms, shaking hands, and feelings of anxiety may make one feel inadequate when completing a skill (Fong & Krause, 2014).

Although it has been argued that some sources of self-efficacy are more salient than others, Bandura et al. (1977) provided significant evidence for all four sources and showed that participants relied on some sources more than others in
different situations. Further research has shown that self-efficacy may also be dependent on the relationship they have with the person who is attempting to increase their self-efficacy (Komarraju et al., 2010). Komarraju et al. (2010) places importance on the relationship, stating that trust is an important aspect to increasing self-efficacy.

Applying Bandura’s (1997) research on self-efficacy to education allows inferences to be made that if students can increase their self-efficacy, they may perform better academically (Bickerstaff et al., 2017), have less fear and anxiety, and be more motivated to complete their goals and perform at higher levels, even when facing difficulties (Bandura & Adams, 1977). Bandura and Adam’s (1977) ideas on self-efficacy may be particularly crucial for AT students due to the difficulty and stress of their academic and clinical course loads. Increases in self-efficacy may allow AT students to persist through this type of environment and significantly improve measures of student success (Wentzel, 1999). Utilizing AT program faculty and preceptors as resources to increase AT student’s self-efficacy may be an effective way to increase student success and meet program outcome requirements.

**Social Identity Theory**

In social identity theory, one is able to create an identity through self-categorization and self-comparison (Stets & Burke, 2000). Through this process, if an individual determines they are similar to other individuals, they will form a group category. Knowledge that they belong to this group category is known as a social identity (Stets & Burke, 2000). This process of self-comparison and connection to a group or community draws similarities to Sweet et al.’s (2012) definition of relatedness, showing that social identity theory may be related to constructs of self-determination theory.
Yukhymenko-Lescroart (2014) showed that because social identity is formed by various social interactions, one may have multiple identities or categories they identify with. These social identities and categories to which one belongs would then define who one is in terms of characteristics, attitudes, beliefs, values, and behavioral norms (Hogg et al., 1995; Stets & Burke, 2000). Additionally, identities are sets of characteristics that influence what activities one chooses to do, what one pays attention to, and what one perceives is important (Oyserman & Destin, 2010). Oyserman and Destin (2010) showed that when an activity is interpreted as congruent with their identity, people tend to see more value in the activity. Even when the activity becomes difficult or stressful, people are more willing to engage in the activity because they believe it is important and meaningful (Oyserman & Destin, 2010), suggesting that identity may be correlated with persistence (Hernandez et al., 2017). Additionally, students who have a strong student identity may place more importance and value in school-based activities, increasing their motivation to persist and complete those activities, even when they become difficult (Oyserman & Destin, 2010). Therefore, if AT students can develop a strong identity either as a student or as an AT, they may be more motivated to persist in the rigorous AT program environment.

**Conceptual Framework**

The following concepts used in the current study, presented in Figure 2, were derived from self-determination theory, social cognitive theory, and social identity theory. The independent variables for this study were: 1) psychological needs (autonomy, competence, and relatedness), 2) self-efficacy, 3) types of motivation (controlled and autonomous), and 4) identity (academic and athletic trainer). The dependent variables for the study were: 1) self-efficacy, 2) types of motivation (controlled and autonomous), 3) identity (academic and athletic...
trainer), and 4) measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Due to previous research such as Bandura and Adams (1977), Deci and Ryan (2008), Hernandez et al. (2017), Komarraju et al. (2010), and Oyserman and Destin (2010), it was expected that psychological needs (autonomy, competence, and relatedness) would be positively related to measures of motivation, including self-efficacy, autonomous motivation, and identity (academic and athletic trainer). It was also expected that psychological needs (autonomy, competence, and relatedness) would be negatively related to controlled motivation. Additionally, it was expected that measures of motivation, self-efficacy, autonomous motivation, and identity (academic and athletic trainer), would be positively related to persistence, perceived academic performance, and GPA and controlled motivation would be negatively related to persistence, perceived academic performance, and GPA. Finally, because persistence and intentions to leave are opposites, persistence meaning the desire to continue towards one’s goals (Wentzel, 1999) and intentions to leave meaning the desire to drop out (Xu, 2018), it was expected that measures of motivation, self-efficacy, autonomous motivation, and identity (academic and athletic trainer), would be negatively related to intentions to leave and controlled motivation would be positively related to intentions to leave (see Figure 2).

**Purpose Statement**

The purpose of this study was to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).
Figure 2

*Conceptual Framework for the Study*

**Research Questions**

RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3: What are the predictive relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?

RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?
RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?

**Hypotheses**

**H1:** Because RQ1 was based on descriptive statistics, there was no hypothesis associated with this research question.

**H2:** Psychological needs, self-efficacy, autonomous motivation, identity, persistence, perceived academic performance, and GPA will be significantly and positively related. These variables will have significant negative relationships with controlled motivation and intentions to leave and controlled motivation and intentions to leave will be significantly and positively related.

**H3a:** Psychological needs will be significant positive predictors of self-efficacy (Hypothesis 3a.1), autonomous motivation (Hypothesis 3a.2), academic identity (Hypothesis 3a.3) athletic trainer identity (Hypothesis 3a.4) and significant negative predictors of controlled motivation (Hypothesis 3a.5) in AT students (Komarraju et al., 2010; Oyserman & Destin, 2010; Ryan & Deci, 2019; Wentzel, 1999).

**H3b:** Self-efficacy, autonomous motivation, and identity will be significant positive predictors and controlled motivation will be a significant negative predictor of persistence (Hypothesis 3b.1), perceived academic performance (Hypothesis 3b.2), and GPA (Hypothesis 3b.3) in AT students. Self-efficacy, autonomous motivation, and identity will be significant negative predictors and controlled motivation will be a significant positive predictor of intentions to leave (Hypothesis 3b.4) in AT
students (Bandura & Adams, 1977; Deci & Ryan, 2008; Hernandez et al., 2017; Oyserman & Destin, 2010; Wentzel, 1999).

**H3c:** Psychological needs will be significant positive predictors of persistence (Hypothesis 3c.1), perceived academic performance (Hypothesis 3c.2), and GPA (Hypothesis 3c.3) and significant negative predictors of intentions to leave (Hypothesis 3c.4) in AT students, directly and indirectly through self-efficacy, types of motivation, and identity (Bandura & Adams, 1977; Deci & Ryan, 2008; Hernandez et al., 2017; Komarraju et al., 2010; Oyserman & Destin, 2010; Wentzel, 1999).

**Significance**

AT programs are at risk of losing CAATE accreditation if they do not raise measures of student success and AT students are being placed in programs that may not be able to provide them with opportunities that will lead them toward graduation, certification, and ultimately employment upon graduation. The experiences of AT students while they are enrolled in their AT programs may significantly affect their ability to persist and graduate from an AT program and pass the BOC examination on the first attempt. Important measures of student success dictated by the CAATE may be predicted by psychosocial factors such as autonomy, competence, relatedness, self-efficacy, types of motivation, and identity (Oyserman & Destin, 2010; Pritchard & Wilson, 2003; Ryan & Deci, 2019). Investigating these psychosocial factors that contribute to motivation, persistence, and increased academic performance may reveal simple techniques that can be utilized by AT faculty and preceptors to increase measures of student and program success, saving their program accreditation and assuring students they will be successful when they enter their AT program.
Delimitations

Emails provided by the NATA were utilized to recruit participants. Emails from the NATA included everyone who held a NATA membership with the status of “non-certified student” for the 2020 calendar year. Because NATA memberships are renewed in January, some participants were athletic trainers who had already graduated within the last academic year and had taken the BOC examination while others were current students in an AT program. This information was collected using a demographic questionnaire. However, this meant that some participants answered survey questions retrospectively.

Definition of Terms

Athletic Training (AT) – A healthcare profession that encompasses prevention, examination/assessment, diagnosis, treatment, and rehabilitation of emergent, acute, and chronic injuries and other medical conditions (NATA, n.d.-b).

Athletic Trainer – A healthcare professional who, under the direction of or in collaboration with a licensed physician, provides services that include: primary care, injury and illness prevention, wellness promotion and education, emergency care, examination/assessment and diagnosis, therapeutic intervention, and rehabilitation of injuries and other medical conditions (NATA, n.d.-b).

Athletic Training Program – An accredited program that includes formal instruction in injury/illness prevention, first aid and emergency care, examination/assessment of injury/illness, human anatomy and physiology, therapeutic modalities, and nutrition. Formal instruction is enhanced through clinical education experiences. Soon all AT programs will result in a master’s degree (CAATE, n.d.-a).
Autonomous Motivation – motivation that is derived from intrinsic motivational factors as well as some forms of extrinsic motivational factors that are internalized and guided by the value of the activity and how it relates to the sense of self (Ryan & Deci, 2019). Examples of autonomous motivation include, completing a task because it will be useful or important to a future career or because it is enjoyable.

Board of Certification (BOC) Examination – An examination administered by the Board of Certification to assess competence in the discipline of AT (BOC, n.d.).

Committee on Accreditation of Athletic Training Education (CAATE) – An organization responsible for the accreditation of AT programs (CAATE, n.d.-c).

Controlled Motivation – Includes amotivation and the forms of extrinsic motivation that are regulated by external rewards or people other than oneself (Ryan & Deci, 2000). For example, completing a task because someone is forcing one to or because one wants others to see them in a positive manner.

Identity – Categorization of self, influenced by self-comparison and social interactions, determining values, beliefs, attitudes, and behaviors (Hogg et al., 1995; Stets & Burke, 2000; Yukhymenko-Lescroart, 2014).

Intention to Leave – A student’s level of consideration of dropping out of college or changing their major (Xu, 2018).

National Athletic Trainers Association (NATA) – The professional membership organization for athletic trainers and others who support the profession (NATA, n.d.-a).
Perceived Academic Performance – Student perceptions of their own academic performance, including their ability to meet requirements and complete tasks that are required of them (Verner-Filion & Vallerand, 2016).

Persistence – The desire to engage in activities that would lead one to pursue their future goals (Wentzel, 1999).

Preceptor – Healthcare providers who supervise, instruct, and mentor AT students during their clinical education (CAATE, n.d.–d).

Psychological Needs – Self-determination theory researchers have identified three psychological needs that are the basis of self-motivation. The three psychosocial needs are autonomy, competence, and relatedness. Autonomy is one’s perception of their ability to be independent, have an opinion, and make their own decisions in their social environment. Competence is one’s ability to feel like they can effectively perform and demonstrate their capabilities. Relatedness is the desire to feel connected to others and have a sense of belonging within a social environment (Sweet et al., 2012).

Self-Efficacy – A belief about what one can do or accomplish under different sets of conditions with the skills they possess (Bandura, 1997).

Student Success – Student attainment measures, including: retention and graduation rates, college grades and overall GPA, and satisfaction with program experiences (Kuh et al., 2006). For the purpose of this study, student success included persistence, intentions to leave, perceived academic performance, and GPA.

Summary

If AT programs cannot show their effectiveness through retention rates, graduation rates, and first-time BOC examination pass rates, students will be less likely to attend. If students do choose to attend, low program outcomes and
decreased student success will ultimately affect the student, possibly keeping them from completing the degree they hoped for or causing them to not be employed following graduation (CAATE, n.d.-b). Psychosocial factors such as motivation and persistence have been shown to increase traditional measures of student success (Deci & Ryan, 2008). Through self-determination theory, social cognitive theory, and social identity theory, psychosocial factors including psychological needs (autonomy, competence, and relatedness) and measures of motivation (self-efficacy, types of motivation, and identity) were identified as variables that may correlate with measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

Results of this study may be able to show that if AT program faculty and preceptors are be able to effectively utilize techniques to increase autonomy, competence, relatedness, self-efficacy, types of motivation, and identity, they may be able to increase measures of student success (Oyserman & Destin, 2010; Pritchard & Wilson, 2003; Ryan & Deci, 2019). The following review of literature will show that psychosocial factors may have a strong influence on student motivation and persistence, ultimately increasing student success.
CHAPTER 2: REVIEW OF THE LITERATURE

The purpose of this study was to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

Studying the relationships between these variables may determine how AT faculty and preceptors can positively influence AT student success, and therefore increase program outcomes. The following review of literature will 1) define the psychosocial factors that may predict measures of student success, including autonomy, competence, and relatedness, 2) explore the effects of teacher-student relationships on academic achievement, 3) examine the literature and research on self-efficacy, motivation, and identity, and 4) explore the definition of student success in higher education and the relationships between psychosocial factors and measures of student success. This literature review assisted in developing the hypotheses for this study.

**Autonomy, Competence, and Relatedness**

Autonomy, competence, and relatedness have been described by Ryan and Deci (2019) as basic psychological needs. Throughout the literature, autonomy refers to one’s perception of independence and ability to make their own choices and decisions. Competence has been defined as the feeling that one is able to effectively perform and demonstrate their capabilities (Sweet et al., 2012). Lastly, relatedness has been described as the feeling of connectedness (Sweet et al., 2012). In education research, relatedness has often been studied by examining the relationship and interactions between teachers and students (Zainuddin & Perera,
Research has shown that classroom environments that incorporate and develop autonomy, competence, and relatedness allow students to be more successful than traditional classroom environments (e.g., Zainuddin & Perera, 2019).

Zainuddin and Perera (2019) studied the differences between a flipped classroom approach to instruction and a traditional instructional model. Their study was grounded in self-determination theory and researchers argued that a flipped classroom approach utilized more autonomy of learning, further developed skills and competence, and allowed for more collaboration, discussion, and interaction between students and their peers and students and their instructors. This mixed methods study included 61 participants from higher education institutions in Indonesia. Participants of the study were between the ages of 18-21 years old, 30 of the participants were enrolled in non-flipped classes and 31 participants were enrolled in a flipped class. Courses met once per week over a 12-week period. Questionnaires were used to measure intrinsic and extrinsic motivation, as well as competence in three areas over time. Competence over time was measured using three post-tests where students were formally assessed on vocabulary and writing, listening comprehension, and oral presentation. Qualitative data were only collected from the participants who were enrolled in flipped classrooms. The purpose of collecting data qualitatively was to gain more information about the student’s experiences in the course.

Results of the study showed that the flipped classroom participants scored higher on their post-test formal assessments than the participants in the traditional classes (Zainuddin & Perera, 2019). These results were particularly significant in the second and third post-tests. Qualitative methods also revealed that the flipped classroom students felt competent in the material they were learning, leading them
to feel more motivated to engage in autonomous, self-directed learning. As students took more control of their learning, their competence grew, and they felt even more motivated to be autonomous. Findings also showed that the flipped classroom design encouraged more positive classroom interactions (Zainuddin & Perera, 2019). Additionally, Zainuddin and Perera (2019) showed that students in the flipped classrooms had higher intrinsic motivation and students in the traditional classrooms had higher extrinsic motivation.

Results from Zainuddin and Perera (2019) showed that autonomy, competence, and relatedness were related to student self-efficacy and motivation. This study implies that if faculty, staff, and preceptors were to develop and utilize autonomy, competence, and relatedness in their teaching strategies, AT students may be more successful. Additionally, results also showed that students enrolled in the flipped classrooms put forth more effort in their own learning, possibly showing greater amounts of academic persistence (Zainuddin & Perera, 2019). Although it was not measured in the study, Zainuddin and Perera mentioned that the flipped classroom approach not only allowed more positive interactions between peers, but with instructors as well. Several studies have shown positive correlations between measures of student success and teacher-student relationships (Fong & Krause, 2014; Hassel and Ridout, 2018; Klem & Connell, 2004; Komarraju et al., 2010; Lundberg & Schreiner, 2004), these studies are examined below.

Teacher-Student Relationships

Fong and Krause (2014) studied the confidence levels of university college students using the Nelson-Denny Reading Test (NDRT), GPA, the Academic Efficacy Scale, the Sources of Academic Self-Efficacy Scale (SASES), and weekly journal entries. Participants of this mixed-methods study consisted of 49
undergraduate students, 34 women and 15 men. A qualitative analysis was conducted using the weekly journal articles for each participant. Researchers reported that student journal entries contained all four sources of self-efficacy (i.e., performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal), showing that different students have varying sources of self-efficacy. A quantitative analysis was conducted using the various scales listed above. Results from this quantitative analysis showed that students who were known as “underachievers” reported that they received less feedback than students who were considered “achievers.” Essentially, the students who did not perform as well in the classroom did not get as much feedback or compliments on their work as students who did well in the classroom. It can be argued that through these experiences with their instructors, the self-efficacy of the “underachieving” student decreased, causing them to continue to not perform well in the classroom.

Lundberg and Schreiner (2004) studied how teacher-student relationships affect measures of student success. Their sample consisted of 4,501 undergraduate students from doctoral, master, and baccalaureate level institutions. All students completed the College Student Experience Questionnaire (CSEQ), a valid and reliable instrument as reported in Kuh et al. (1997), over a 3-year period. The CSEQ is a 166-item measurement designed to test a college student’s overall experiences. Along with demographic information, the CSEQ asked students about their interactions with campus faculty and their perceived quality of relationships with faculty. Interactions with campus faculty were measured on a 4-point Likert scale ranging from 1 (never) to 4 (very often) and asked questions, such as “talked with an instructor about a course you’re taking” and “worked harder as a result of feedback from an instructor.” Quality of relationships with faculty was measured using a 7-point Likert scale that ranged from 1 (remote,
discouraging, unsympathetic) to 7 (approachable, helpful, understanding, encouraging). A linear regression was performed to examine whether these variables predicted the dependent variable, learning. Results from the study showed that the largest predictor of learning for all racial/ethnic groups was the perceived quality of the relationship between the student and their teacher. Working harder due to instructor feedback and working to meet faculty expectations also emerged as strong predictions of learning. Both of these variables may be related to the construct of teacher-student relationships.

It can be argued that teachers should build positive teacher-student relationships that allow students to receive positive feedback (Lundberg & Schreiner, 2004). Verbal persuasion through consistent feedback is a salient source of self-efficacy and may increase student success (Komarraju et al., 2010). Lundberg and Schreiner (2004) showed that if students perceive their relationship with their teacher as positive, they work harder on their learning. Focusing on the underachieving students, creating positive relationships with them, and building confidence through regular feedback may increase student self-efficacy and, therefore, increase their success (Fong & Krause, 2014). Thus, teachers should focus on all students and not just the students who are already performing well.

Hassel and Ridout (2018) studied postsecondary student expectations of college faculty compared to faculty expectations of their students. Their quantitative study consisted of 20 lecturers, 10 who taught first-year freshman, six who taught second year students, and four who taught third or final year students. Each lecturer had an average of 14.5 years of experience, ranging from less than 1 year to 40 years. The student sample consisted of 77 students between the ages of 18 and 39 years old, averaging 19.1 years old. The student sample included 15
men and 62 women from one university who were enrolled in an honors psychology degree program.

Student participants were given a valid and reliable questionnaire (Lowe & Cook, 2003) that assessed the following three constructs: (a) reasons for attending the university, (b) academic aptitude, and (c) teaching expectation (Hassel & Ridout, 2018). Each question was answered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Faculty participants completed a 16-item questionnaire that asked them to assess their individual teaching style. Each item measured whether the faculty focused on delivering content to their students (teacher-focused) or if they were more focused on helping students understand content (student-focused). Items for this questionnaire were scored using a 5-point Likert-type scale ranging from 1 (rarely) to 5 (almost always).

Results from Hassel and Ridout (2018) showed that 50% of students reported their expectations of teaching were different than what they were experiencing or had experienced in the past. Students reported expecting postsecondary teachers would be more informal and would give students extensive notes and feedback on class assignments compared to their secondary school teachers. Results also showed that faculty who teach younger students use more teacher-focused techniques and do not begin to use student-focused approaches until later in the student’s education. Hassel and Ridout showed that college students want informal relationships with and more support from their faculty, but that they are not necessarily receiving it during their early years of college. This study also showed that students had an expectation of regular feedback provided by the teacher. This regular feedback requires more consistent communication and positive relationships between faculty and students.
Klem and Connell (2004) showed similar findings to Hassel and Ridout’s (2018) findings, showing that students prefer teachers who are caring and supportive. During this study, researchers quantitatively measured teacher support and student engagement and achievement (Klem & Connell, 2004). Data were collected from elementary and middle school students, parents, and teachers at a single school district over a 5-year period. Surveys were sent to all participants at the end of each school year. The most relevant results to the current dissertation from Klem and Connell showed that student engagement and achievement were positively correlated with perceived teacher support. Students who had unsupportive teachers showed difficulty with student engagement and had attendance issues. In contrast, students, who perceived their teachers to be supportive and caring, were more likely to be engaged and receive higher test scores (Klem & Connell, 2004).

Although participants from Klem and Connell’s (2004) study were not postsecondary students, it can be inferred that incoming postsecondary students may feel the same as students who are in the K-12 school system. Results from Klem and Connell and Hassel and Ridout (2018) both suggested that students prefer teachers they can have personal, informal relationships with. These relationships make students feel cared for and supported, creating a positive teacher-student relationship and environment where regular feedback can be provided.

Komarraju et al. (2010) further supported these concepts by studying the types of interactions students preferred to have with teachers and the characteristics they expected their teachers to possess. Participants from this quantitative study included 242 undergraduate students from a public university. Participants completed three scales, the Student-Professor Interaction Scale, the
Academic Self-Concept Scale, and the Academic Motivation Scale. Subscales for the Student-Professor Interaction Scale included: career guidance, off-campus interactions, approachability, accessibility, negative experiences, respectful interactions, caring attitude, and connectedness. Results from this study showed that students who perceived their teachers as being approachable and willing to meet outside of the classroom were more confident in their classroom capabilities. Results also showed that students preferred to speak informally with their teachers and perceived their learning experience as more enjoyable when this was accomplished. Students who did not have these informal relationships with teachers perceived their teachers as disconnected and uncaring.

Komarraju et al. (2010) provided further evidence for teachers to create informal relationships. These relationships not only provide a platform for regular feedback (Hassel & Ridout, 2018), but also may increase student success by increasing the student’s confidence in their academic abilities (Komarraju et al., 2010). However, these informal relationships must be based on trust (Won et al., 2017). Without trust and a positive relationship, the student will not listen to the feedback being provided by the teacher (Won et al., 2017). If the student does not believe the teacher’s positive feedback, their self-efficacy will decrease and they will ultimately perform poorly in class (Won et al., 2017).

Results from Hassel and Ridout (2018), Klem and Connell (2004), and Komarraju et al. (2010) all showed that students expect their teachers to be approachable, caring, and available for some type of informal meeting to create informal relationships. Creating these positive relationships may directly affect student success and engagement (Komarraju et al., 2010). If AT program faculty and preceptors are successful in creating positive, informal relationships, they may
be able to increase AT student’s self-efficacy, thus increasing student success (Bickerstaff et al., 2017).

**Self-Efficacy**

Self-efficacy is a belief about what one can accomplish with the skills they possess (Bandura, 1997). Bandura et al. (1977) suggested that there are four ways to adjust human behavior: performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal, and they are called the four sources of self-efficacy. For their quantitative study, Bandura et al. chose a sample of 33 participants, seven males and 26 females, who were dramatically affected by snake phobias. During this study, all 33 participants were placed in positions to interact with a non-venomous snake. Pre-test surveys were given prior to the snake interactions and participants were asked to rate their level of perceived efficacy to complete several tasks during the snake interactions. One week following the snake interactions, participants completed a post-test survey and were again asked to rate their perceived level of efficacy to complete several tasks during a snake interaction. Results of this study showed a negative correlation between level of self-efficacy and anticipated fear. Participants who reported high levels of self-efficacy reported lower levels of fear and participants who reported low levels of self-efficacy reported higher levels of fear. Participants also reported higher levels of self-efficacy after the snake interactions, at the time of post-test, than at the time at pre-test.

It can be argued that because participants had accomplished these tasks and had seen other participants accomplish these tasks, their self-efficacy increased; they believed in themselves more and were less fearful (Bandura et al., 1977). Following the study, participants reported lower levels of anxiety when entering situations where they may interact with snakes (e.g., camping). Bandura (1997)
later stated that self-efficacy correlates with academic success and achievement. Applying Bandura’s research on self-efficacy to education allows inferences to be made that if students have higher levels of self-efficacy, they may perform better academically.

Bickerstaff et al. (2017) qualitatively studied community college students’ levels of confidence over the first several months of college course enrollment. Researchers interviewed 97 community college students from three different colleges in one state. Questions from the interview did not directly ask about levels of confidence. Instead, levels of confidence emerged as a common theme during student interviews. Results from interviews showed that students reported an initial apprehension and low levels of confidence early on in college courses due to previous academic experiences and the understanding that academic coursework would be more rigorous than in the secondary school setting. During the interview, all students reported a shift toward increased levels of confidence, including students who did not report an initial apprehension. Researchers concluded that these shifts in confidence might have been influenced by positive interactions with professors and staff members. Positive interactions with professors and college staff encouraged positive academic behaviors that further increase student academic success. Participants reported that positive feedback from professors made them feel successful, despite any previous negative academic experiences.

Results from Bickerstaff et al. (2017) showed that positive teacher-student relationships may increase student self-efficacy and positively affect academic success. Additionally, Bickerstaff et al. suggested that if students are more motivated to work harder in their classes, they are most likely performing better in those classes. In other words, in order to increase AT student success, AT program
faculty and preceptors may want to focus on creating positive relationships with their AT students.

**Types of Motivation**

Previous literature has shown that autonomy, competence, relatedness, and self-efficacy may affect types of motivation and overall student success. Studies have shown there to be three categories of motivation: amotivation, extrinsic motivation, and intrinsic motivation (Sweet et al., 2012). While it was once believed that intrinsic motivation and extrinsic motivation were antagonists, research has revealed that there are multiple types of extrinsic motivation and that some of these types may complement or increase intrinsic motivation rather than detract from it (Hayamizu, 1997). Hayamizu (1997) showed that some forms of extrinsic motivation are actually more closely related to intrinsic motivation. This research led to two types of motivation: controlled motivation and autonomous motivation. Controlled motivation included the forms of extrinsic motivation controlled by outside influences, whereas autonomous motivation can be perceived as motivation that comes from a person themselves. The autonomous motivation may be referred to as self-determined motivation (Sweet et al., 2012). Studies have also shown that autonomy, competence, and relatedness are positively correlated with autonomous motivation, and that due to the enjoyment and value that comes from the activity, autonomous motivation may be correlated with measures of student success, including engagement, performance, and persistence (e.g., Wang et al., 2019).

Wang et al. (2019) studied the relationships between autonomy, competence, and relatedness and autonomous and controlled motivation. Participants in Wang et al. (2019) included 1,549 students, 757 boys and 775 girls, from secondary schools in Singapore. Participants were asked to complete three
questionnaires, the Students’ Need Satisfaction, Students’ Motivational Regulation, and Intrinsic Motivation Inventory (IMI). The Student’s Needs Satisfaction included 16-items, six items referred to student need for autonomy, five items referred to student need for competence, and five items referred to student need for relatedness. Examples of questions included, “I think I am pretty good in this class” and “In this class, I feel supported.” All responses were answered using a 7-point Likert-type scale, ranging from 1 (not true at all) to 7 (very true). The Students’ Motivational Regulation included 14 items that included questions pertaining to all types of motivation except amotivation. Students again answered questions using a 7-point Likert-type scale, ranging from 1 (not true at all) to 7 (very true). The IMI was used to measure enjoyment, value, and pressure. This 12-item inventory was scored using a 7-point Likert-type scale, ranging from 1 (not at all true) to 7 (completely true).

Results of the study showed that autonomy, competence, and relatedness were positively correlated with autonomous motivation and negatively correlated with controlled motivation (Wang et al., 2019). Additionally, autonomous motivation was positively correlated with enjoyment and value and negatively correlated with pressure, while controlled motivation was negatively correlated with value and enjoyment and positively correlated with pressure. Not only did Wang et al. (2019) conclude that autonomy, competence, and relatedness were correlated with autonomous motivation, they also concluded that relatedness was the strongest predictor of autonomous motivation. This provides further evidence for building positive relationships and suggests that if AT program faculty and preceptors were to construct positive relationships, AT students would have more autonomous motivation.
Similar to Wang et al. (2019), Davidson and Beck (2006) studied variables that may affect a student’s motivation. Davidson and Beck six different variables to examine which variables correlated most with a freshman college student’s motivation to persist. Variables in the study included but were not limited to 1) academic efficacy, or the belief in one’s capability to achieve academic goals, 2) academic apathy, or the lack of interest in academic work, and 3) mistrust of instructors, or the perception that instructors enjoy student distress and therefore place unreasonable expectations on students (Davidson & Beck, 2006).

Participants of the study included 603 college freshmen from a university in the Southwest region of the United States. Of these participants, 222 completed the survey during a freshman orientation course in their first semester and 381 completed the survey as part of a university-wide assessment program in the third week of their second semester. Participants were between the ages of 18-21 years old; 55% were women and 45% were men (Davidson & Beck, 2006). To measure the six variables in the study, researchers used the Survey of Academic Orientations (SAO), a valid and reliable tool that consisted of 36 questions with six questions per variable. Each question was scored on a 5-point Likert-type scale, ranging from strongly agree to strongly disagree. Researchers also collected data on precollege ability that included scores on various standardized examinations such as the American College Testing (ACT) and Scholastic Assessment Test (SAT) (Davidson & Beck, 2006).

Researchers used a multiple regression analysis to identify relationships and prediction values between the six variables and a logistic regression to see which of the six variables best predict student retention (Davidson & Beck, 2006). Results of the analysis showed that academic efficacy and academic apathy were strong predictors of student retention (Davidson & Beck, 2006). Because studies
have shown that academic efficacy also has a strong relationship with academic performance and semester GPA, researchers believe it was the combination of academic efficacy, academic performance, and GPA that created motivation for students to continue in school (Davidson & Beck, 2006). The study by Davidson and Beck (2006) suggested that motivation and self-efficacy have a relationship and together may affect student academic performance and retention.

Results from Davidson and Beck (2006) and Wang et al. (2019) provided strong evidence for correlations between autonomy, competence, relatedness, and self-efficacy, and motivation. In addition to these relationships, research also showed that motivation and self-efficacy may affect student success, including academic performance and persistence (Davidson & Beck, 2006; Wang et al., 2019). Additionally, because persistence and intentions to leave are opposites by definition, it can be inferred that as persistence increases through increased motivation and self-efficacy, intentions to leave would decrease.

**Identity**

In addition to autonomy, competence, relatedness, and self-efficacy, identity has been shown to increase determinants of student success, particularly persistence. In an effort to increase female participation in the science, technology, engineering, and mathematics (STEM) careers, researchers have determined that identity increased motivation and persistence (Hernandez et al., 2017). Although the participants of the current study are not STEM students, it can be inferred that the relationships between these variables would be similar for AT students as well.

Hernandez et al. (2017) studied 240 STEM majors from universities in the Colorado/Wyoming region as well as in the Carolinas. The purpose of this study was to examine the benefits of mentorship as their female participants progressed through their STEM programs. After participating in a small workshop where
participants were trained in building relationships with their mentors and introduced to other female role models, participants were carefully matched with their mentors. Researchers quantitatively measured identity, motivation, and persistence using three scales, totaling in seven items. The first scale was a science identity scale that included questions, such as “I have come to think of myself as a scientist.” Students scored themselves on this 3-item scale using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The second scale was a 2-item scale that measured student motivation toward STEM careers. Students scored themselves on these two items using a 7-point Likert-type scale, ranging from 1 (not at all interested) to 7 (very interested). The last scale for this study was a 2-item scale that measured persistence. Questions from the scale included, “To what extent do you plan to pursue a science-related research career?” Students scored themselves on these items using a 7-point Likert-type scale ranging from 1 (definitely will not) to 7 (definitely will).

Results of the study showed that faculty mentorship had a significant effect on identity and motivation, but not persistence (Hernandez et al., 2017). Rather, identity had a significant effect on persistence. Meaning that faculty mentorship was predicting persistence indirectly through motivation and identity. This study provides further evidence for the creation of positive teacher-student relationships. In addition, results from Hernandez et al. (2017) showed that identity may be a predictor of motivation and persistence. It can therefore be inferred that if AT program faculty and preceptors create positive relationships centered on mentorship, AT students may have increased motivation and be more likely to persist in their AT programs.
Student Success

There are multiple definitions of student success along with multiple aspects of what measurements should be used to calculate it (Kuh et al., 2006). Some of the more traditional measures of student success, although controversial indicators themselves, include enrollment in postsecondary education; freshman retention rates, or students who successfully progress from their freshman to sophomore years; progress toward a degree, such as semester grades and overall grade point average (GPA); and graduation rates (Kuh et al., 2006). More challenging measures include post-graduation employment rates as well as the overall satisfaction of the student with their college experience (Kuh et al., 2006). Overall satisfaction includes how comfortable students were with the college learning environment, how satisfied they were with the outcome of their college experience, and their impressions of the quality of the institution (Kuh et al., 2006). As higher education has evolved to incorporate more inclusive and diverse populations of students, the determinants of success have also evolved (Kuh et al., 2006). New definitions of student success have included factors such as persistence, student engagement, and performance on discipline-specific examinations (Kuh et al., 2006).

Although every university is required to collect and report their statistics on student success, unless these numbers threaten accreditation, they are not always creating action plans to increase program outcomes and determinants of student success. In fact, some universities have difficulty finding ways to increase student success without spending a lot of money. They often employ campus-wide strategies that reach out to students with disabilities and students with low socioeconomic backgrounds, but research has shown there are plenty of students who struggle with success in the classroom and do not fall into either of these
categories (Gonzalez, 2009). Instead of focusing on the students who universities feel are underachieving students or students with disabilities, university and program administrators may be able to increase student success by focusing on all students on campus (Fong & Krause, 2014).

For the purpose of the current study, student success was based on the AT student’s ability to persist through their AT program, level of intention to leave their AT programs, their perceived academic performance, and their GPA. Persistence was defined as the patient’s desire to engage in activities that would lead toward future goals (Wentzel, 1999) and Xu (2018) defined intentions to leave as a student’s consideration of dropping out of their academic program. Therefore, it was expected that results for persistence and intentions to leave would be opposite. For example, if one variable increased persistence, it was expected that the same variable would decrease intentions to leave.

Results from both Krumrei-Mancuso et al. (2013) and Pritchard and Wilson (2003) showed that psychosocial factors may significantly influence these measures of student success. Although participants from the described studies do not include AT students, it can be inferred that results from these studies are also likely to apply to AT students. Psychosocial factors included in the current study include constructs of self-determination theory, such as competence, autonomy, and relatedness, as well as types of motivation, self-efficacy, and identity. Literature showing the relationships between these psychosocial factors and student success will be explored below.

**Psychosocial Factors and Student Success**

Studies have shown that low retention and graduation rates may be a result of emotional factors (e.g., stress, anxiety, fear) and social experiences (e.g., lack of social support) rather than academic factors, and that students, who are
emotionally and socially healthy, may have greater success in college (Pritchard & Wilson, 2003). Additionally, Pritchard and Wilson (2003) stated that self-confidence is also associated with academic performance. Therefore, it can be inferred that students who have poor social health and lack of social support may have a more difficult time succeeding in college (Pritchard & Wilson, 2003). Pritchard and Wilson suggested that since it is difficult to predict student success from demographic factors, it may be beneficial for colleges and universities to address social and emotional factors in their student populations to increase overall student success.

Studies have shown that students who are more intrinsically motivated are more likely to persist, especially when they are in stressful or difficult environments (e.g., Joesaar et al., 2011). As a measure of student success, persistence is a particularly important characteristic and has been shown to be directly correlated with psychosocial factors such as autonomous motivation and identity, and indirectly correlated with psychosocial factors such as self-efficacy (Davidson & Beck, 2006; Hernandez et al., 2017; Wang et al., 2019). This implies that in order to increase measures of student success, AT program faculty and staff should be focusing on these correlated psychosocial factors.

In a study done on 424 athletes, Joesaar et al. (2011) sought to examine the relationships between intrinsic and extrinsic motivation and perceived autonomy, competence, and relatedness. Additionally, the study showed positive relationships between motivation and persistence. Quantitative self-report data were collected at the beginning of the study and behavioral data were collected over a 1-year time period. To collect behavioral data, researchers utilized attendance records from sport events. Questionnaires collected data on motivational climate, basic
psychological needs (autonomy, competence, and relatedness), intrinsic motivation, and persistence (Joesaar et al., 2011).

Results of the study showed positive correlations between autonomy, competence, and relatedness and intrinsic motivation (Joesaar et al., 2011). Additionally, intrinsic motivation also predicted persistence (Joesaar et al., 2011). Results of Joesaar et al. (2011) corroborated those already discussed, showing value in focusing on increasing feelings of autonomy, competence, and relatedness to increase motivation. Joesaar et al. (2011) provided further evidence to support that motivation increases student success, particularly persistence.

AT students have identified that persistence to graduation is significantly affected by their environment in their AT program. Bowman and Dodge (2011) studied 14 AT students who were enrolled in an accredited AT program. One-on-one structured interviews were conducted and analyzed for common themes. During the coding process, interactions with faculty and preceptors and overall AT program environment became common themes in a student’s decision to persist to graduation. Results from Bowman and Dodge showed that AT student persistence to graduation may be influenced by their feelings of connectedness and relatedness to faculty and preceptors. As a measure of student success and CAATE program outcomes, it is important for AT program faculty and preceptors to increase AT student persistence and decrease intentions to leave. Bowman and Dodge and others in this review of literature have suggested that AT student persistence may be increased by increasing motivation and building positive relationships.

Similarly, Krumrei-Mancuso et al. (2013) studied psychosocial variables, such as academic self-efficacy and stress, and their influence on measures of student success, such as GPA and retention. Participants from the study included 579 first-year college students between the ages of 18 and 23 years old.
Researchers used the College Learning Effectiveness Inventory (CLEI) to quantitatively measure six attitudes and behaviors related to academic success, including: 1) academic self-efficacy, 2) organization and attention to study, 3) stress and time management, 4) involvement with college activity, 5) emotional satisfaction with academics, and 6) class communication. All items were rated on a 5-point Likert-type scale ranging from 1 (always) to 5 (never) (Krumrei-Mancuso et al., 2013). Results of the study showed that, although all six constructs were significantly correlated with GPA, the strongest correlation was between academic self-efficacy and GPA, showing that psychosocial factors may have strong relationships with academic performance (Krumrei-Mancuso et al., 2013).

**Summary**

Studies in the literature review have provided evidence for relationships between the constructs of self-determination theory (autonomy, competence, and relatedness), measures of motivation, including self-efficacy, motivation, and identity, and measures of student success. Although student success has been defined in multiple ways, in this study student success is defined as persistence, retention, academic performance, and performance on discipline-specific examinations such as the BOC examination (Kuh et al., 2006). In this study, measures of student success will primarily be operationalized through persistence, intentions to leave, perceived academic performance, and GPA.

Evidence has been provided for relationships between psychological needs (autonomy, competence, and relatedness), measures of motivation, including self-efficacy, types of motivation (controlled and autonomous), and identity, and measures of student success (e.g., Zainuddin & Perera, 2019), suggesting that if AT program faculty and preceptors can develop these traits, AT students may be more successful. Therefore, if AT program faculty and preceptors focused on
creating environments where students felt autonomous and competent, where they were encouraged to develop positive relationships, high self-efficacy, and identity, AT students may have increased motivation, leading to increased persistence and academic performance. Therefore, there is enough evidence to support the hypotheses for the current study.
CHAPTER 3: METHODOLOGY

This quantitative study utilized a quantitative approach with a cross-sectional design to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

Descriptions of participants, instruments, and data collection and analysis procedures are described below.

Research questions for the study were:

RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3: What are the predictive relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?

RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?

RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?
Participants

Participants of the study consisted of NATA members with “non-certified student” status for the 2020 calendar year. A power analysis for multiple regression was used to determine the appropriate number of participants for the study, indicating that for an anticipated effect size of .15, a statistical power level of .80, and a probability level of .05. The calculated a-priori sample size for the study was 97. The survey was sent to a random sample of 1,000 people who met this criterion; 222 surveys were started, and 167 complete responses were received (16.7% response rate).

Because the NATA membership is renewed annually, participants included NATA members who were current AT students enrolled in an AT program ($n = 153$) and graduates from AT programs ($n = 14$) who graduated in the 2020 academic year and still held a non-certified student membership. Participants included 39 males (23.4%) and 128 females (76.6%). Of the participants, 74.4% self-identified as White ($n = 125$), 7.7% as Black or African American ($n = 13$), 4.8% as Hispanic or Latino ($n = 8$), 3.0% as Asian ($n = 5$), 1.2% as Native American or American Indian ($n = 2$), and the remaining 8.9% of participants as multiracial ($n = 14$).

Participants included 54 undergraduate students (32.3%), 101 entry-level master’s students (60.5%), 8 post-professional master’s students (4.8%), and 4 people who were not current students in an AT program (2.4%). Participants ranged from first year AT students ($n = 54$), second year AT students ($n = 46$), third year AT students ($n = 12$), and fourth year AT students ($n = 28$). The additional 27 participants had either graduated ($n = 14$), declined to answer ($n = 2$), or answered as other ($n = 11$). Three of the participants were enrolled in
programs outside of the United States (1.8%) while the other 164 participants were enrolled in programs within the United States (98.2%).

**Instruments**

The following instruments were used to measure the participant’s perceived autonomy (see Appendix A), perceived competence (see Appendix B), relatedness (see Appendix C), self-efficacy (see Appendix D), motivation (see Appendix E), identity (see Appendix F), persistence (see Appendix G), intentions to leave (see Appendix H), and perceived academic performance (see Appendix I). Demographic and program information was also collected using a separate instrument (see Appendix J).

**Autonomy**

The perceived choice subscale from the IMI ($\alpha = .826$; McAuley et al., 1987) was used to measure participant’s perceived autonomy. This subscale was a 7-item scale that was adapted for AT students (see Appendix A). Participants were directed to think of their academic learning experiences and responsibilities for their clinical rotations as they answered the subscale questions. Examples of subscale questions included “I believe I had some choice about doing what is required of me in the athletic training program” and “I did what is required of me in the athletic training program because I had no choice.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). For this subscale, questions 2, 3, 4, 5, and 7 were reverse scored, because they were negatively worded questions.

**Competence**

The perceived competence subscale was a 6-item scale from the IMI ($\alpha = .826$; McAuley et al., 1987) that was adapted for AT students to measure
participant competence (see Appendix B). Prior to answering the questions, participants were directed to think about their academic and clinical experiences, including coursework, written examinations, practical examinations, clinical proficiencies and competencies, and patient encounters such as treatments, injury/illness evaluations, and rehabilitations. Examples of subscale questions included “I think I complete the required components of the athletic training program pretty well, compared to other students” and “After working on the required components of the athletic training program for a while, I feel pretty competent.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

**Relatedness**

The relatedness subscale of the IMI (α = .826; McAuley et al., 1987) was used to measure relatedness and teacher-student relationships, with teachers including both academic faculty and clinical preceptors. This subscale consisted of eight questions that were adapted for AT students (see Appendix C). Students were directed to think about their experiences in the AT program and answer questions regarding the majority of their AT program faculty and clinical preceptors. Questions in the subscale included “I felt like I could really trust the majority of my athletic training program faculty and clinical preceptors” and “I feel close to a majority of my athletic training program faculty and clinical preceptors.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

**Self-Efficacy**

To measure self-efficacy, questions from the Perceived Competence for Learning Scale (see Appendix D; Williams & Deci, 1996) were utilized. This was
a 4-item scale that was adapted for AT students for this study. Prior to answering questions, students were directed to think about their educational experiences in both their academic courses and their clinical rotations. Examples of questions included “I feel confident in my ability to learn material in the athletic training program” and “I feel able to meet the challenge of performing well in the athletic training program.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

**Types of Motivation**

To measure types of motivation (controlled and autonomous), questions from the Learning Motivation Scale (Aesaert et al., 2015), a 19-item scale, were adapted for AT students to fit this study (see Appendix E). This scale had multiple subscales to measure the different types of motivation, with items 1-11 representing controlled motivation (subscales 1 through 3) and items 12-19 representing autonomous motivation (subscales 4 and 5): 1) amotivation ($\alpha = .77$), 2) extrinsic regulation ($\alpha = .88$), 3) introjected regulation ($\alpha = .68$), 4) identified regulation ($\alpha = .86$), and 5) intrinsic regulation ($\alpha = .88$). In the instructions for the scale, participants were asked to identify how strongly they agree with statements regarding why they are in their AT program. For controlled motivation, example questions included “I am in my athletic training program because others want me to” and “I am in my athletic training program because I want others to think I am smart.” For autonomous motivation, example questions included “I am in my athletic training program because I find it very interesting” and “I am in my athletic training program because I want to learn new things pertaining to athletic training.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).
Identity

Identity was measured using the academic identity subscale from the Academic and Athletic Identity Scale (AAIS; $\omega = .93-.94$; Yukhymenko-Lescroart, 2014), and the Athletic Trainer Identity Scale (ATIS; M. Yukhymenko-Lescroart, personal communication, August 4, 2020). The academic identity subscale was a 5-question subscale used to measure academic identity, and the ATIS was a 4-item scale designed to measure athletic trainer identity (see Appendix F). Students were instructed to think about how important each of the characteristics are in determining “who they really are” and whether they feel each characteristic is “central” to who they really are. Questions were scored using a 7-point Likert-type scale, ranging from 1 (not central to who I really am) to 7 (the central core to who I really am). Examples of questions for academic identity included “Being a capable student” and “Doing well in school.” Examples of questions for athletic trainer identity included “Being a capable athletic trainer” and “Being proud to be an athletic trainer.”

Persistence

The Academic Persistence Scale was a 4-item scale that was adapted from Elliot et al.’s (1999) persistence subscale to apply to AT students (see Appendix G). The purpose of this scale was to measure participant persistence and it includes questions, such as “When I become confused about something I am learning in the athletic training program, I go back and try to figure it out.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).
**Intentions to Leave**

The Intentions to Leave Scale was a 3-item scale (see Appendix H) that measured a student’s intention to drop out of college or change their major (Xu, 2018). Participants responded using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Example questions from this scale included “I have seriously considered dropping out of college” and “I have seriously considered changing my major.”

**Perceived Academic Performance**

The Perceived Academic Performance Scale ($\alpha = .83$) was a 5-item scale adapted from Verner-Filion and Vallerand (2016) to apply to AT students (see Appendix I). Example questions from this scale included “My performance in the classroom and in the clinic are beyond demands” and “I meet the official performance requirements expected out of an athletic training student.” Participants responded to questions using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

**Demographic and Program Information Questionnaire**

The demographic and program information questionnaire (see Appendix J) was a 9-item questionnaire that collected information on the participant and their professional AT program. Data collected about the participant included gender, ethnicity, and geographic location. Additional questions collected data on the participant’s AT program status. Questions included the type of program the participant was enrolled in (e.g., undergraduate bachelors, entry-level masters), the student’s year in the program (e.g., first-year, second-year, recently graduated student), the participant’s GPA, if the participant had taken and passed the BOC
examination and the number of attempts it took the participant to successfully pass.

Data Collection Procedures

All instruments, including the informed consent form and demographic questionnaire, were compiled using an electronic survey system known as Qualtrics (www.qualtrics.com). Once the questionnaires were compiled, the survey was sent to a NATA representative using the Researcher Survey Request form. Once accepted, the NATA sent out the survey to 1,000 members who held a non-certified student membership during the 2020 calendar year. Reminder emails were sent out four additional times over the course of an eight-week period during fall 2020. Participants who had already completed the survey were not sent a reminder email. To participate in the study, all individuals must have been at least 18 years of age and hold a NATA non-certified student membership. Individuals who received the survey completed the informed consent form (see Appendix K). Participation in the study was voluntary and participants were in no way obligated to answer the survey questions.

Regardless of the level of participation in the study, individuals had the chance to enter a drawing to receive a $50 Amazon gift card. After submitting the survey, participants were taken to a separate survey where they could voluntarily enter their email address for the drawing. An online application was used to randomly select one email address as the winner. The winner of the drawing was contacted once the data collection process was complete. Following data collection, results were recorded in JASP (JASP Team, 2020) and prepared for statistical analysis. All information collected during the data collection process was kept confidential. This study was reviewed and approved by the Committee on the Protection of Human Subjects prior to the start of data collection.
**Data Analysis**

JASP (JASP Team, 2020) was used for all data analysis procedures. Preliminary data analysis procedures included exploratory factor analyses and reliability analyses. The exploratory factor analyses were used to determine factorial validity of the measures. The principal axis factoring method was used to identify underlying factors within the measures (Huck, 2012). Because of the expected correlation between items, an oblique rotation with an Oblimin method was used (Huck, 2012). Following Kaiser’s criterion, only factors with eigenvalues above 1 were retained (Huck, 2012) and the results of the analysis were based on correlation matrices.

Reliability analyses were used to check internal consistency of the measures. Reliability tests were based on the results of the exploratory factor analyses. Therefore, 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. Because the instruments for this study consisted of Likert-type scales, Cronbach’s alpha scores were used as the reliability coefficient (Huck, 2012). To measure internal consistency, alpha scores greater than .90 were considered excellent, scores between .80 and .90 were considered good, scores between .70 and .80 were considered acceptable, scores between .60 and .70 were considered questionable, scores between .50 and .60 were considered poor, and scores below .50 were unacceptable (George & Mallery, 2003).

To answer RQ1, descriptive statistics were used to determine the level of each of the variables. To answer RQ2, Pearson’s correlations were used to determine the correlations among each of the variables in the study. Additionally, a path analysis was conducted to answer RQ3, testing the predictive relationships.
identified in Figure 2 (p. 15; Huck, 2012). In JASP (JASP Team, 2020), a lavaan syntax was created to identify the direct and indirect paths between the variables. For direct relationships between the measured variables, a robust error calculation was used to control abnormally distributed variables (Huck, 2012). To further improve the model fit, correlations between a few of the variables in the study were inserted into the syntax. To address research questions concerning indirect relationships, a separate path analysis was conducted. Paths were created between independent variables, mediating variables, and dependent variables (Huck, 2012). These paths were defined and added to the syntax for the path analysis. For this analysis, a bootstrap error calculation was used to create a distribution that was specific to this study (Huck, 2012).

**Summary**

This study utilized a quantitative approach with a cross-sectional design to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

Power analysis suggested that a sample of 97 participants was needed to attain a desired level of significance for the study. Following data collection, descriptive statistics revealed that participants included 167 NATA non-certified student members, 153 current AT students and 14 recent graduates from AT programs. Gender, ethnicities, and program status varied.

Instruments for this study included questions that had been adapted from: 1) the perceived choice subscale from the IMI (α = .826; McAuley et al., 1987), 2) the perceived competence subscale from the IMI (α = .826; McAuley et al.,
1987), 3) the relatedness subscale of the IMI (α = .826; McAuley et al., 1987), 4) the Perceived Competence for Learning Scale (Williams & Deci, 1996), 5) the Learning Motivation Scale (Aesaert et al., 2015), 6) the academic identity subscale of the AAIS (ω = .93-.94; Yukhymenko-Lescoart, 2014), 7) the ATIS (M. Yukhymenko-Lescoart, personal communication, August 4, 2020), 8) the Academic Persistence Scale (Elliot et al., 1999), 9) the Intentions to Leave Scale (Xu, 2018), and 10) the Perceived Academic Performance Scale (α = .83; Verner-Filion & Vallerand, 2016). Questions from the instruments were compiled using an electronic survey system and were sent out following IRB approval. Following data collection, JASP (JASP Team, 2020) was used to perform statistical analyses. Following preliminary analyses, which included exploratory factor analyses and reliability analyses, descriptive statistics and Pearson’s correlations were calculated to answer RQ1 and RQ2. A path analysis was performed to answer the final research questions, RQ3. Chapter 4 provides the results of the statistical analyses.
CHAPTER 4: RESULTS

The purpose of this study was to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Using self-determination theory, social cognitive theory and social identity theory as theoretical frameworks, the following research questions were created for the study.

RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3: What are the predictive relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?

RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?

RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?
A preliminary analysis including exploratory factor analyses for each scale and reliability analyses based on the results of the exploratory factor analyses were conducted. Following the preliminary analyses, descriptive statistics and Pearson’s correlations were calculated to answer RQ1 and RQ2. Additionally, a path analysis was completed to address RQ3.

**Preliminary Analysis**

To determine factorial validity, exploratory factor analyses were conducted for each of the scales used in the study. Based on the results of the exploratory factor analyses, retained items from each scale were submitted for a reliability analysis. A description of the data analysis procedures and results of each analysis are below.

**Exploratory Factor Analyses**

As recommended by Huck (2012), to determine weaker, underlying factors within each scale, the principal axis factoring estimation method was used. Additionally, principal axis factoring was used due to the choice of utilizing exploratory factor analyses. Also following Huck’s recommendations, due to the expectation of correlation between items in each scale, an oblique rotation with an Oblimin method was used and the results of the analysis were based on correlation matrices. Each of the exploratory factor analyses utilized Kaiser’s criterion to determine the number of factors within each scale, meaning only eigenvalues above 1 were retained. Results of the exploratory factor analyses are described by scale below.

**Perceived Choice Subscale**

An exploratory factor analysis was conducted on the seven items of the perceived choice subscale. Results indicated that a total of 40% variance was
explained by the seven items in perceived choice. As shown in Table 1, factor loadings ranged from .54 to .81, all above the recommended .40. Because factor loadings were absent for item 6 of the scale, item 6 was removed from the analysis and the exploratory factory analysis was rerun with six items.

Table 1

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe I had some choice about doing what is required of me in the athletic training program.</td>
<td>.70</td>
</tr>
<tr>
<td>2. I felt like it was not my own choice to do what is required of me in the athletic training program.</td>
<td>.65</td>
</tr>
<tr>
<td>3. I didn’t really have a choice about doing what is required of me in the athletic training program.</td>
<td>.81</td>
</tr>
<tr>
<td>4. I felt like it was mandatory to do what is required of me in the athletic training program.</td>
<td>.64</td>
</tr>
<tr>
<td>5. I did what is required of me in the athletic training program because I had no choice.</td>
<td>.67</td>
</tr>
<tr>
<td>6. I did what is required of me in the athletic training program because I wanted to.</td>
<td></td>
</tr>
<tr>
<td>7. I did what was required of me in the athletic training program because it was mandatory.</td>
<td>.54</td>
</tr>
</tbody>
</table>

A second exploratory factor analysis was conducted on the items of the perceived choice subscale after item 6 was removed. A total of 45% variance was explained by this factor that consisted of the six items. Factor loadings for the six items are shown in Table 2. Results in Table 2 showed that factor loadings for each of the items in the scale ranged between .53 and .82, well above the required value of .40. These results showed good factorial validity for the perceived choice subscale.
Table 2

Factor Loadings for the Perceived Choice Subscale (Revised)

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe I had some choice about doing what is required of me in the athletic training program.</td>
<td>.69</td>
</tr>
<tr>
<td>2. I felt like it was not my own choice to do what is required of me in the athletic training program.</td>
<td>.66</td>
</tr>
<tr>
<td>3. I didn’t really have a choice about doing what is required of me in the athletic training program.</td>
<td>.82</td>
</tr>
<tr>
<td>4. I felt like it was mandatory to do what is required of me in the athletic training program.</td>
<td>.66</td>
</tr>
<tr>
<td>5. I did what is required of me in the athletic training program because I had no choice.</td>
<td>.64</td>
</tr>
<tr>
<td>6. I did what was required of me in the athletic training program because it was mandatory.</td>
<td>.53</td>
</tr>
</tbody>
</table>

The six items were then submitted to reliability analysis. As shown in Table 3, Cronbach’s alpha was .83, indicating good level of internal consistency. Therefore, six of the seven items from the perceived choice subscale were retained for further analysis.

Table 3

Cronbach’s Alpha Scores

<table>
<thead>
<tr>
<th>Scale</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic and Athletic Identity Scale</td>
<td>0.88</td>
</tr>
<tr>
<td>Athletic Trainer Identity Scale</td>
<td>0.84</td>
</tr>
<tr>
<td>Perceived Choice (revised)</td>
<td>0.83</td>
</tr>
<tr>
<td>Perceived Competence</td>
<td>0.86</td>
</tr>
<tr>
<td>Relatedness</td>
<td>0.90</td>
</tr>
<tr>
<td>Perceived Competence for Learning</td>
<td>0.86</td>
</tr>
<tr>
<td>Learning Motivation - Controlled Motivation</td>
<td>0.86</td>
</tr>
<tr>
<td>Learning Motivation - Autonomous Motivation</td>
<td>0.91</td>
</tr>
<tr>
<td>Academic Persistence</td>
<td>0.83</td>
</tr>
<tr>
<td>Intentions to Leave</td>
<td>0.70</td>
</tr>
<tr>
<td>Perceived Academic Performance</td>
<td>0.83</td>
</tr>
</tbody>
</table>
**Perceived Competence Subscale**

An exploratory factor analysis was conducted for the six items of the perceived competence subscale. Results indicated that a total of 52% variance was explained by this factor that consisted of the six items in perceived competence. Factor loadings showed good factorial validity, ranging between .65 and .80, well above the recommended .40 (see Table 4).

**Table 4**

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think I am pretty good at the required components of the athletic training program.</td>
<td>.80</td>
</tr>
<tr>
<td>2. I think I complete the required components of the athletic training program pretty well, compared to other students.</td>
<td>.67</td>
</tr>
<tr>
<td>3. After working on the required components of the athletic training program for a while, I feel pretty competent.</td>
<td>.65</td>
</tr>
<tr>
<td>4. I am satisfied with how I perform the required components of the athletic training program.</td>
<td>.73</td>
</tr>
<tr>
<td>5. I am pretty skilled when it comes to the required components of the athletic training program.</td>
<td>.77</td>
</tr>
<tr>
<td>6. When thinking of the required components of the athletic training program, there is a lot that I do very well.</td>
<td>.72</td>
</tr>
</tbody>
</table>

The six items were then submitted for a reliability analysis. As shown in Table 3 (p. 57), Cronbach’s alpha was .86, indicating good level of internal consistency. Therefore, all six of the items from the perceived competence subscale were retained for further analysis.

**Relatedness Subscale**

An exploratory factor analysis was conducted on the eight items of the relatedness subscale. Results showed that 54% variance was explained by the eight items in relatedness. As shown in Table 5, factor loadings ranged between .59 and
.85, all above the recommended .40. These results showed good factorial validity for the relatedness subscale.

**Table 5**

*Factor Loadings for the Relatedness Subscale*

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I felt really distant to a majority of my athletic training program faculty and clinical preceptors.</td>
<td>.85</td>
</tr>
<tr>
<td>2. I really doubt I would ever be friends with a majority of my athletic training program faculty and clinical preceptors.</td>
<td>.85</td>
</tr>
<tr>
<td>3. I felt like I could really trust the majority of my athletic training program faculty and clinical preceptors.</td>
<td>.73</td>
</tr>
<tr>
<td>4. I’d like a chance to work with and/or learn from a majority of my athletic training program faculty and clinical preceptors more often.</td>
<td>.59</td>
</tr>
<tr>
<td>5. I’d really prefer not to work with and/or learn from a majority of my athletic training program faculty and clinical preceptors in the future.</td>
<td>.66</td>
</tr>
<tr>
<td>6. I don’t feel like I could trust the majority of my athletic training program faculty and clinical preceptors.</td>
<td>.64</td>
</tr>
<tr>
<td>7. It is likely that I could become friends with a majority of my athletic training program faculty and clinical preceptors if we continued to interact a lot.</td>
<td>.71</td>
</tr>
<tr>
<td>8. I feel close to a majority of my athletic training program faculty and clinical preceptors.</td>
<td>.79</td>
</tr>
</tbody>
</table>

The eight items were submitted to reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .90, indicating excellent level of internal consistency. All eight items from the relatedness subscale were retained for further analysis.

*Perceived Competence for Learning*

An exploratory factor analysis was conducted on the four items of the Perceived Competence for Learning Scale. Results indicated that a total of 62% variance was explained by the four items in perceived competence for learning. As
shown in Table 6, factor loadings ranged from .70 to .85, well above the recommended .40. These results showed good factorial validity for perceived competence for learning.

Table 6

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel confident in my ability to learn the material in the athletic training program.</td>
<td>.70</td>
</tr>
<tr>
<td>2. I am capable of learning the material in the athletic training program.</td>
<td>.78</td>
</tr>
<tr>
<td>3. I am able to achieve my goals in the athletic training program.</td>
<td>.81</td>
</tr>
<tr>
<td>4. I feel able to meet the challenge of performing well in the athletic training program.</td>
<td>.85</td>
</tr>
</tbody>
</table>

Following the exploratory factor analysis, the four items were submitted for a reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .86, indicating good level of internal consistency. All four items from the Perceived Competence for Learning Scale were retained for further analysis.

Learning Motivation Scale

An exploratory factor analysis was conducted on the 19 items of the Learning Motivation Scale. Results showed that 27% variance was explained by the items in learning motivation. For this analysis, the results showed two factors for the scale. Specifically, factor 1 consisted of Items 1-11 representing controlled motivation, and Factor 2 consisted of Items 12-19 representing autonomous motivation. These two factors were as hypothesized for the study. As shown in Table 7, factor loadings for factor one ranged between .46 and .83 and factor loadings for factor two ranged between .65 and .82. Factor loadings for all items in
both factors one and two were above the recommended .40. Therefore, both factors measuring controlled and autonomous motivation showed overall good factorial validity.

Table 7

*Factor Loadings for the Learning Motivation Scale*

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ... but I actually do not know why.</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>2. ... but I think it is a waste of time.</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>3. ... but I do not understand why I should do my best.</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td>4. ... but I do not see the advantage of doing it.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>5. ... because others (parents, mentors, etc.) tell me I am supposed to be.</td>
<td>.64</td>
<td></td>
</tr>
<tr>
<td>6. ... because others (parents, mentors, etc.) want me to.</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>7. ... because others (parents, mentors, etc.) are forcing me.</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>8. ... because I would feel guilty if I wasn't.</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>9. ... because I would feel ashamed if I wasn't.</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td>10. ... because I want others (parents, mentors, etc.) to think I am smart.</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>11. ... because I want to show others (parents, mentors, etc.) that I am good.</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>12. ... because I want to learn new things pertaining to athletic training.</td>
<td>.82</td>
<td></td>
</tr>
<tr>
<td>13. ... because I think it is important for my future career goals.</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>14. ... because I find it useful for myself.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td>15. ... because I find it important for me as a person.</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>16. ... because I find it very interesting.</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>17. ... because I enjoy doing it.</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>18. ... because it intrigues me.</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td>19. ... because I like doing it.</td>
<td>.72</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Factor loadings ≤ .30 were suppressed from the table for readability purposes.*
Based on the results of the exploratory factor analysis, the 11 items from Factor 1, controlled motivation, and the eight items from Factor 2, autonomous motivation were submitted separately for a reliability analysis. Cronbach’s alpha for controlled motivation was .86, indicating good level of internal consistency (see Table 3, p. 57). Cronbach’s alpha for autonomous motivation was .91, indicating excellent level of internal consistency (see Table 3, p. 57). All items for controlled and autonomous motivation were retained for further analysis.

**Academic Identity Subscale**

An exploratory factor analysis was conducted on the five items from the academic identity subscale of the AAIS. Results indicated that a total of 62% variance was explained by the factor that consisted of five items. Results in Table 8 showed good factorial validity for the academic identity subscale as the factor loadings ranged from .59 to .91, all above the recommended .40.

**Table 8**

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Being a capable student.</td>
<td>.59</td>
</tr>
<tr>
<td>2. Being satisfied with my academic work.</td>
<td>.72</td>
</tr>
<tr>
<td>3. Doing well in school.</td>
<td>.88</td>
</tr>
<tr>
<td>4. Getting good grades.</td>
<td>.91</td>
</tr>
<tr>
<td>5. Having a high GPA.</td>
<td>.78</td>
</tr>
</tbody>
</table>

The five items were submitted to reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .88, indicating good level of internal consistency. Therefore, all five items from the academic identity subscale were retained for further analysis.
**Athletic Trainer Identity Scale**

Four items from the ATIS were submitted for an exploratory factor analysis. Results showed that a total of 60% variance was explained by the four items of the ATIS. As shown in Table 9, factor loadings ranged between .48 and .89, above the recommended .40. These results showed good factorial validity for the ATIS.

**Table 9**

*Factor Loadings for Athletic Trainer Identity Scale*

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Being a capable athletic trainer.</td>
<td>.78</td>
</tr>
<tr>
<td>2. Being proud to be an athletic trainer.</td>
<td>.48</td>
</tr>
<tr>
<td>3. Being satisfied with the athletic training services that I provide.</td>
<td>.88</td>
</tr>
<tr>
<td>4. Doing well when rendering athletic training services.</td>
<td>.89</td>
</tr>
</tbody>
</table>

Following the exploratory factor analysis, the four items were submitted for a reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .84, indicating good level of internal consistency. Therefore, all four items of the ATIS were retained for further analysis.

**Academic Persistence Scale**

Four items from the Academic Persistence Scale were submitted for an exploratory factor analysis. Results showed that a total of 58% variance was explained by the one factor that consisted of four items. As shown in Table 10, factor loadings ranged between .55 and .87, above the recommended .40. These results showed good factorial validity for academic persistence.

Following the exploratory factor analysis, the four items were submitted for a reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .83,
Table 10

*Factor Loading for Academic Persistence Scale*

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I become confused about something I am learning in the athletic training program, I go back and try to figure it out.</td>
<td>.55</td>
</tr>
<tr>
<td>2. Regardless of whether or not I like what I am learning in the athletic training program, I work my hardest to learn it.</td>
<td>.80</td>
</tr>
<tr>
<td>3. When something I am learning in the athletic training program gets difficult, I spend extra effort trying to understand it.</td>
<td>.87</td>
</tr>
<tr>
<td>4. I try to learn all of the material in the AT program &quot;inside and out,&quot; even if it is boring.</td>
<td>.80</td>
</tr>
</tbody>
</table>

indicating good level of internal consistency. Therefore, all four items of the Academic Persistence Scale were retained for further analysis.

*Intentions to Leave Scale*

An exploratory factor analysis was used to determine factorial validity for the three items of the Intentions to Leave Scale. Results of the analysis showed that a total of 47% variance was explained by the three items. As shown in Table 11, factor loadings for the items ranged between .57 and .80, above the recommended .40. These results showed good factorial validity for intentions to leave.

Table 11

*Factor Loadings for Intentions to Leave Scale*

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have seriously considered dropping out of college.</td>
<td>.80</td>
</tr>
<tr>
<td>2. I have seriously considered changing my major.</td>
<td>.67</td>
</tr>
<tr>
<td>3. I may drop out of college if there are good paying jobs available.</td>
<td>.57</td>
</tr>
</tbody>
</table>

The three items were submitted to reliability analysis. Results in Table 3 (p. 57) showed Cronbach’s alpha was .70, indicating an acceptable level of internal
consistency. Therefore, the three items from the Intentions to Leave Scale were retained for further analysis.

**Perceived Academic Performance Scale**

An exploratory factor analysis was conducted on the five items of the Perceived Academic Performance Scale. Results indicated that a total of 54% variance was explained by the five items in perceived academic performance. As shown in Table 12, factor loadings ranged from .60 to .84, well above the recommended .40. These results showed good factorial validity for the Perceived Academic Performance Scale.

**Table 12**

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I meet the official performance requirements expected out of an athletic training student.</td>
<td>.74</td>
</tr>
<tr>
<td>2. I adequately complete duties assigned to me in the classroom and in the clinic.</td>
<td>.76</td>
</tr>
<tr>
<td>3. I fulfill responsibilities specified in my course outlines (e.g., study, homework, readings, papers) and given to me by my clinical preceptors (e.g., clinical skills).</td>
<td>.73</td>
</tr>
<tr>
<td>4. I perform tasks that are expected of me in the classroom and in the clinic.</td>
<td>.84</td>
</tr>
<tr>
<td>5. My performance in the classroom and in the clinic are beyond demands.</td>
<td>.60</td>
</tr>
</tbody>
</table>

The five items were submitted for a final reliability analysis. Results of this analysis showed Cronbach’s alpha was .83, indicating good internal consistency (see Table 3, p. 57). Therefore, all five items from the Perceived Academic Performance Scale were retained for further analysis.
RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

Means and standard deviations were calculated for each of the measured variables in the study (see Table 13). Descriptive statistics showed that, on average, participants in this sample reported moderate levels of autonomy, neither being controlled or free to make their choices in the academic and clinical setting. The mean score for competence indicated that participants felt competent in their academic coursework and clinical skills that they were learning in their programs. Descriptive statistics also showed that, on average, participants felt connected to their AT faculty and preceptors. The means score for self-efficacy indicated that participants feel confident in their abilities to learn and perform well in their AT programs. The mean score for controlled motivation was relatively low and the mean score for autonomous motivation was high, indicating that participants in the sample are more motivated by intrinsic factors than factors that involve other people or external rewards. Descriptive statistics also showed that, on average, participants in the sample had high levels of both academic and athletic trainer identity.

In terms of student success, descriptive statistics showed high levels of persistence among participants in the sample. The mean score for intentions to leave was low, indicating most participants have no desire to leave or drop out of their AT programs. The mean score for perceived academic performance indicated that participants, on average, perceived their academic performance as fulfilling or surpassing what was demanded of them in their AT programs. Lastly, the mean score for GPA showed that on a 4.0 scale, most students are earning A’s and B’s in their AT programs.
Table 13

Pearson’s Correlations, Descriptive Statistics, and Cronbach’s Reliability Estimates for the Variables, N = 167

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Persistence</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Intentions to Leave</td>
<td></td>
<td>-.27***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Perceived Academic Performance</td>
<td>.32***</td>
<td>-.24**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. GPA</td>
<td>.23**</td>
<td>-.17*</td>
<td>.31***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Autonomy</td>
<td>.24**</td>
<td>-.27***</td>
<td>-.01</td>
<td>.01</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Competence</td>
<td>.36***</td>
<td>-.21**</td>
<td>.46***</td>
<td>.10</td>
<td>.03</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Relatedness</td>
<td>.29***</td>
<td>-.32***</td>
<td>.15</td>
<td>.08</td>
<td>.24**</td>
<td>.33***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Self-Efficacy</td>
<td>.43***</td>
<td>-.38***</td>
<td>.37***</td>
<td>.12</td>
<td>.28***</td>
<td>.58***</td>
<td>.44***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Controlled Motivation</td>
<td>-.34***</td>
<td>.48***</td>
<td>-.23**</td>
<td>-.09</td>
<td>-.36***</td>
<td>-.16**</td>
<td>-.36***</td>
<td>-.39***</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Autonomous Motivation</td>
<td>.46***</td>
<td>-.44***</td>
<td>.41***</td>
<td>.10</td>
<td>.19*</td>
<td>.32***</td>
<td>.28***</td>
<td>.38***</td>
<td>-.49***</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Academic Identity</td>
<td>.18*</td>
<td>-.11</td>
<td>.19*</td>
<td>.30***</td>
<td>-.11</td>
<td>.31***</td>
<td>.16*</td>
<td>.19*</td>
<td>-.06</td>
<td>.09</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>12. Athletic Trainer Identity</td>
<td>.19*</td>
<td>-.18*</td>
<td>.17*</td>
<td>-.08</td>
<td>.13</td>
<td>.40***</td>
<td>.27***</td>
<td>.28***</td>
<td>-.15</td>
<td>.33***</td>
<td>.41***</td>
<td>—</td>
</tr>
</tbody>
</table>

| M      | 5.84 | 2.34  | 5.09  | 3.57  | 3.84  | 5.49  | 5.67  | 6.00  | 1.79  | 6.43  | 5.12  | 6.02  |
| SD     | .79  | 1.35  | .62   | .32   | 1.10  | .70   | 1.03  | .72   | .80   | .59   | .97   | .85   |

*Note:* *p < .05, **p < .01, ***p < .001.
RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

Pearson’s correlations among the measured variables are also shown in Table 13. Results showed that all measures of student success were correlated in the expected directions. Persistence, perceived academic performance, and GPA were all significantly and positively correlated with each other and significantly and negatively correlated with intentions to leave. Meaning that the higher the persistence, perceived academic performance, and GPA, the lower the intentions to leave.

Persistence was significantly correlated with all predictors in positive directions except for controlled motivation, which was negatively correlated. The strongest correlations were with autonomous motivation, $r(165) = .46, p < .001$, and self-efficacy, $r(165) = .43, p < .001$. Therefore, the higher the persistence, the lower the controlled motivation and the higher the autonomy, competence, relatedness, self-efficacy, and autonomous motivation.

Except for a non-significant correlation with academic identity, intentions to leave was significantly correlated with all predictors. Except for controlled motivation, which was positively correlated, all other predictors were negatively correlated with intentions to leave. The strongest correlations were with controlled motivation, $r(165) = .48, p < .001$, and autonomous motivation, $r(165) = -.44, p < .001$. This means that the higher the intentions to leave, the lower the autonomy, competence, relatedness, self-efficacy, autonomous motivation, and athletic trainer identity, and the higher the controlled motivation.
Perceived academic performance was significantly correlated with all predictors except for autonomy and relatedness. Of the significant correlations, all predictors were positively correlated with perceived academic performance except for controlled motivation, which was negatively correlated. The strongest correlations were with competence, $r(165) = .46, p < .001$, and autonomous motivation, $r(165) = .41, p < .001$. Therefore, the higher the competence, self-efficacy, autonomous motivation, academic identity, and athletic trainer identity, the higher the perceived academic performance. Additionally, the lower the controlled motivation, the higher the perceived academic performance.

The final outcome, GPA, was significantly positively correlated only with academic identity, $r(165) = .30, p < .001$. Therefore, the higher the academic identity, the higher the GPA.

For psychological needs, surprisingly autonomy and competence were not correlated, but relatedness was significantly and positively correlated with both autonomy and competence. Meaning the higher the relatedness, the higher the competence and autonomy. All three psychological needs were also significantly and positively correlated with self-efficacy. Therefore, the higher the autonomy, competence, and relatedness, the higher the self-efficacy. Psychological needs were significantly negatively correlated with controlled motivation and significantly and positively correlated with autonomous motivation.

Several of the mediating motivational variables, including self-efficacy, types of motivation (controlled and autonomous) and identity (academic and athletic trainer), were significantly correlated with each other. Self-efficacy was significantly correlated with all other mediating motivational variables in the study. Except for controlled motivation, which was negatively correlated, these variables were positively correlated with self-efficacy. Controlled motivation was
significantly negatively correlated with autonomous motivation, $r(165) = -.49$, $p < .001$. Autonomous motivation and academic identity were both significantly and positively correlated with athletic trainer identity. These results partially supported hypothesis 2.

**Path Model Results**

The path model was specified as indicated in Figure 2 (p. 15). To improve model fit, additional correlations were added to the syntax. The additional correlations were between controlled motivation, autonomous motivation, academic identity, and athletic trainer identity. Following the addition of these correlations to the syntax, all possible correlations were estimated, allowing the path model to be fully identified. All correlations from the path analysis are included in Appendix L. Using the results of the direct predictors (see Appendix M), seven indirect paths were identified. These paths included 1) competence, autonomous motivation, persistence, 2) autonomy, controlled motivation, intentions to leave, 3) relatedness, controlled motivation, intentions to leave, 4) competence, autonomous motivation, perceived academic performance, 5) competence, autonomous motivation, intentions to leave, 6) competence, academic identity, GPA, and 7) competence, athletic trainer identity, and GPA. These indirect paths were defined and added to the syntax in a separate analysis. Complete results of the path analysis are shown in Appendix M and represented in Figure 3. The following sections describe the results of the path analysis and includes relevant excerpts from the complete results to aid with readability.
RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?

The dependent variables for this research question were self-efficacy, motivation (controlled and autonomous) and identity (academic and athletic trainer) and the independent variables were psychological needs (autonomy, competence, and relatedness). The structural model explained 45% of the variance in self-efficacy, 21% in controlled motivation, 17% in autonomous motivation, 12% in academic identity, and 20% in athletic trainer identity. Appendix M shows the complete results of this analysis, however, excerpts from Appendix M are included below for readability purposes. Significant paths between predictors can be seen in Figure 3.

Note: Non-significant relationships are not shown for readability purposes. * $p < .05$, ** $p < .01$, *** $p < .001$. 

Figure 3

*Predictive Relationships Between Variables in the Study*

![Diagram showing relationships between variables including self-efficacy, controlled motivation, autonomous motivation, persistence, intentions to leave, perceived academic performance, grade point average, academic identity, athletic trainer identity, autonomy, competence, and relatedness. Significant paths are marked with asterisks and p-values. Non-significant relationships are not shown for readability purposes.*
**Self-Efficacy**

As shown in Table 13, results of the analysis showed that self-efficacy was significantly and positively predicted by autonomy \( (B = .14, SE = .05, 95\% CI [.05, .23], p = .003, \beta = .19) \), competence \( (B = .51, SE = .07, 95\% CI [.38, .65], p < .001, \beta = .71) \), and relatedness \( (B = .16, SE = .05, 95\% CI [.06, .25], p = .001, \beta = .22) \), supporting Hypothesis 3a.1. Table 14 is an excerpt from the complete results of the path analysis located in Appendix M and shows the relationships between psychological needs (autonomy, competence, and relatedness) and self-efficacy. Results can also be seen in Figure 3 (p. 71).

<table>
<thead>
<tr>
<th>Path</th>
<th>( B \ (SE) )</th>
<th>95% CI</th>
<th>( p )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy ( \rightarrow ) Self-Efficacy</td>
<td>.14 (.05)</td>
<td>[.05, .23]</td>
<td>.003</td>
<td>.19</td>
</tr>
<tr>
<td>Competence ( \rightarrow ) Self-Efficacy</td>
<td>.51 (.07)</td>
<td>[.38, .65]</td>
<td>&lt; .001</td>
<td>.71</td>
</tr>
<tr>
<td>Relatedness ( \rightarrow ) Self-Efficacy</td>
<td>.16 (.05)</td>
<td>[.06, .25]</td>
<td>.001</td>
<td>.22</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Controlled Motivation**

Controlled motivation was significantly negatively predicted by autonomy \( (B = -.22, SE = .06, 95\% CI [-.33, -.11], p < .001, \beta = -.27) \) and relatedness \( (B = -.21, SE = .09, 95\% CI [-.38, -.04], p = .017, \beta = -.26) \). Competence, however, was not a significant predictor of controlled motivation \( (B = .07, SE = .09, 95\% CI [-.24, .10], p = .415, \beta = -.09) \) (see Table 15). These results partially supported Hypothesis 3a.5. Table 15 is an excerpt from the complete results of the path analysis located in Appendix M and shows the relationships between psychological needs (autonomy, competence, and relatedness) and controlled motivation. Results are also presented in Figure 3 (p. 71).
Table 15

Controlled Motivation Predicted by Psychological Needs

<table>
<thead>
<tr>
<th>Path</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Controlled Motivation</td>
<td>-.22 (.06)</td>
<td>[-.33, -.11]</td>
<td>&lt; .001</td>
<td>-.27</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Controlled Motivation</td>
<td>-.07 (.09)</td>
<td>[-.24, .10]</td>
<td>.415</td>
<td>-.09</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Controlled Motivation</td>
<td>-.21 (.09)</td>
<td>[-.38, -.04]</td>
<td>.017</td>
<td>-.26</td>
</tr>
</tbody>
</table>

Note: Excerpt from complete results of path analysis in Appendix M.

Autonomous Motivation

Autonomous motivation was significantly predicted by competence ($B = .24$, $SE = .07$, 95% CI $[.11, .37]$, $p < .001$, $\beta = .41$). Autonomy ($B = .06$, $SE = .04$, 95% CI $[.03, .15]$, $p = .166$, $\beta = .12$) and relatedness ($B = .05$, $SE = .05$, 95% CI $[-.06, .15]$, $p = .366$, $\beta = .09$) were not significant predictors of autonomous motivation (see Table 16). These results partially supported Hypothesis 3a.2.

Table 16 is an excerpt from the complete results of the path analysis (Appendix M) and shows the relationships between psychological needs (autonomy, competence, and relatedness) and autonomous motivation. Results are also presented in Figure 3 (p. 71).

Table 16

Autonomous Motivation Predicted by Psychological Needs

<table>
<thead>
<tr>
<th>Path</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Autonomous Motivation</td>
<td>.09 (.05)</td>
<td>[-.01, .18]</td>
<td>.076</td>
<td>.15</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Autonomous Motivation</td>
<td>.24 (.07)</td>
<td>[.11, .37]</td>
<td>&lt; .001</td>
<td>.41</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Autonomous Motivation</td>
<td>.08 (.05)</td>
<td>[-.02, .18]</td>
<td>.131</td>
<td>.13</td>
</tr>
</tbody>
</table>

Note: Excerpt from complete results of path analysis in Appendix M.
**Academic Identity**

Academic identity was significantly positively predicted only by competence ($B = .40, SE = .11, 95\% CI [.18, .62], p < .001, \beta = .41$). Autonomy ($B = -.12, SE = .09, 95\% CI [-.30, .07], p = .205, \beta = -.12$), and relatedness ($B = .10, SE = .08, 95\% CI [-.06, .26], p = .208, \beta = .10$) were not significant predictors (see Table 17). These results partially supported Hypothesis 3a.3. Table 17 is an excerpt from the complete results of the path analysis located in Appendix M and shows the relationships between psychological needs (autonomy, competence, and relatedness) and academic identity (see Figure 3, p. 71).

**Table 17**

<table>
<thead>
<tr>
<th>Path</th>
<th>$B (SE)$</th>
<th>95% CI</th>
<th>$p$</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Academic Identity</td>
<td>-.12 (.09)</td>
<td>[-.30, .07]</td>
<td>.205</td>
<td>-.12</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Academic Identity</td>
<td>.40 (.11)</td>
<td>[.18, .62]</td>
<td>&lt;.001</td>
<td>.41</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Academic Identity</td>
<td>.10 (.08)</td>
<td>[-.06, .26]</td>
<td>.208</td>
<td>.10</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Athletic Trainer Identity**

Athletic trainer identity was significantly positively predicted only by competence ($B = .46, SE = .10, 95\% CI [.27, .65], p < .001, \beta = .54$). Autonomy ($B = .08, SE = .06, 95\% CI [-.04, .21], p = .181, \beta = .10$) and relatedness ($B = .09, SE = .06, 95\% CI [-.04, .22], p = .160, \beta = .11$) were not significant predictors (see Table 18). These results partially supported Hypothesis 3a.4. Table 18 is an excerpt from the complete results of the path analysis (Appendix M) and shows the relationships between psychological needs (autonomy, competence, and relatedness) and athletic trainer identity (see Figure 3, p. 71).
Table 18

<table>
<thead>
<tr>
<th>Path</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy ( \rightarrow ) Athletic Trainer Identity</td>
<td>.08 (.06)</td>
<td>[-.04, .21]</td>
<td>.181</td>
<td>.10</td>
</tr>
<tr>
<td>Competence ( \rightarrow ) Athletic Trainer Identity</td>
<td>.46 (.10)</td>
<td>[.27, .65]</td>
<td>&lt; .001</td>
<td>.54</td>
</tr>
<tr>
<td>Relatedness ( \rightarrow ) Athletic Trainer Identity</td>
<td>.09 (.06)</td>
<td>[-.04, .22]</td>
<td>.160</td>
<td>.11</td>
</tr>
</tbody>
</table>

*Note: Excerpt from complete results of path analysis in Appendix M.*

**RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?**

For this research question, the dependent variables were persistence, intentions to leave, perceived academic performance, and GPA. The independent variables for this research question were self-efficacy, controlled motivation, autonomous motivation, academic identity, and athletic trainer identity. The structural model explained 35% of the variance in persistence, 34% in intentions to leave, 34% in perceived academic performance, and 18% in GPA. Complete results of the analysis are shown in Appendix M. For readability purposes, excerpts from the complete results are also represented below. Significant paths between self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) can also be seen in Figure 3 (p. 71).

**Persistence**

Results of the path analysis showed that autonomous motivation was the only significant direct predictor of persistence \( (B = .41, SE = .14, 95\% CI [-.13, .69], p = .004, \beta = .30) \). Self-efficacy \( (B = .18, SE = .10, 95\% CI [-.03, .38], p = .089, \beta = .16) \), controlled motivation \( (B = -.05, SE = .09, 95\% CI [-.23, .13], p = \)
.583, \( \beta = -.05 \)), academic identity \( (B = .10, SE = .06, 95\% CI [-.02, .22], p = .099, \beta = .12) \), and athletic trainer identity \( (B = -.12, SE = .07, 95\% CI [-.26, -.01], p = .073, \beta = -.13) \) were not significant predictors of persistence (see Table 19). These results partially supported Hypothesis 3b.1. Table 19 is an excerpt from the complete results of the path analysis (Appendix M) and shows the relationships between self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) and persistence.

Table 19

<table>
<thead>
<tr>
<th>Path</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy ( \rightarrow ) Persistence</td>
<td>.18 (.10)</td>
<td>[-.03, .38]</td>
<td>.089</td>
<td>.16</td>
</tr>
<tr>
<td>Controlled Motivation ( \rightarrow ) Persistence</td>
<td>-.05 (.09)</td>
<td>[-.23, .13]</td>
<td>.583</td>
<td>-.05</td>
</tr>
<tr>
<td>Autonomous Motivation ( \rightarrow ) Persistence</td>
<td>.41 (.14)</td>
<td>[.13, .69]</td>
<td>.004</td>
<td>.30</td>
</tr>
<tr>
<td>Academic Identity ( \rightarrow ) Persistence</td>
<td>.10 (.06)</td>
<td>[-.02, .22]</td>
<td>.099</td>
<td>.12</td>
</tr>
<tr>
<td>Athletic Trainer Identity ( \rightarrow ) Persistence</td>
<td>-.12 (.07)</td>
<td>[-.26, .01]</td>
<td>.073</td>
<td>-.13</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Intentions to Leave**

As shown in Table 20, controlled motivation was a significant positive predictor \( (B = .45, SE = .17, 95\% CI [.12, .77], p = .008, \beta = .26) \) and autonomous motivation was a significant negative predictor \( (B = -.56, SE = .20, 95\% CI [-.94, -.17], p = .005, \beta = -.24) \) of intentions to leave. Self-efficacy \( (B = -.25, SE = .19, 95\% CI [-.61, .12], p = .186, \beta = -.13) \), academic identity \( (B = -.10, SE = .12, 95\% CI [-.33, .13], p = .379, \beta = -.07) \), and athletic trainer identity \( (B = .05, SE = .11, 95\% CI [-.16, .27], p = .623, \beta = .03) \) were not significant predictors of intentions to leave (see Table 19). These results partially supported Hypothesis 3b.4. Table
20 is an excerpt from the complete results of the path analysis shown in Appendix M and shows the relationships between self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) and intentions to leave. Results are also presented in Figure 3 (p. 71).

**Table 20**

<table>
<thead>
<tr>
<th>Path</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy $\rightarrow$ Intentions to Leave</td>
<td>-.25 (.19)</td>
<td>[-.61, .12]</td>
<td>.186</td>
<td>-.13</td>
</tr>
<tr>
<td>Controlled Motivation $\rightarrow$ Intentions to Leave</td>
<td>.45 (.17)</td>
<td>[.12, .77]</td>
<td>.008</td>
<td>.26</td>
</tr>
<tr>
<td>Autonomous Motivation $\rightarrow$ Intentions to Leave</td>
<td>-.56 (.20)</td>
<td>[-.94, -.17]</td>
<td>.005</td>
<td>-.24</td>
</tr>
<tr>
<td>Academic Identity $\rightarrow$ Intentions to Leave</td>
<td>-.10 (.12)</td>
<td>[-.33, .13]</td>
<td>.379</td>
<td>-.07</td>
</tr>
<tr>
<td>Athletic Trainer Identity $\rightarrow$ Intentions to Leave</td>
<td>.05 (.11)</td>
<td>[-.16, .27]</td>
<td>.623</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Perceived Academic Performance**

Results of the path analysis showed that autonomous motivation was the only significant direct predictor of perceived academic performance ($B = .34$, $SE = .11$, 95% CI [.12, .56], $p = .002$, $\beta = .33$). Self-efficacy ($B = .09$, $SE = .09$, 95% CI [-.08, .26], $p = .297$, $\beta = .11$), controlled motivation ($B = -.05$, $SE = .06$, 95% CI [-.17, .08], $p = .467$, $\beta = -.06$), academic identity ($B = .04$, $SE = .05$, 95% CI [.06, .13], $p = .457$, $\beta = .06$), and athletic trainer identity ($B = -.06$, $SE = .06$, 95% CI [-.18, -.06], $p = .302$, $\beta = -.09$) were not significant predictors of perceived academic performance (see Table 21), partially supporting Hypothesis 3b.2. Table 21 is an excerpt from the complete results of the path analysis shown in Appendix M and shows the relationships between self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) and intentions to leave.
autonomous), and identity (academic and athletic trainer) and perceived academic performance. Results are also presented in Figure 3 (p. 71).

**Table 21**

*Perceived Academic Performance Predicted by Motivational Factors*

<table>
<thead>
<tr>
<th>Path</th>
<th>B(SE)</th>
<th>95% CI</th>
<th>p</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy → Perceived Academic</td>
<td>.09 (.09)</td>
<td>[-.08, .26]</td>
<td>.297</td>
<td>.11</td>
</tr>
<tr>
<td>Controlled Motivation → Perceived</td>
<td>-.05 (.06)</td>
<td>[-.17, .08]</td>
<td>.467</td>
<td>-.06</td>
</tr>
<tr>
<td>Autonomous Motivation → Perceived</td>
<td>.34 (.11)</td>
<td>[.12, .56]</td>
<td>.002</td>
<td>.33</td>
</tr>
<tr>
<td>Academic Identity → Perceived</td>
<td>.04 (.05)</td>
<td>[-.06, .13]</td>
<td>.457</td>
<td>.06</td>
</tr>
<tr>
<td>Athletic Trainer Identity → Perceived</td>
<td>-.06 (.06)</td>
<td>[-.18, .06]</td>
<td>.302</td>
<td>-.09</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Grade Point Average**

Results in Table 22 show that academic identity was a significant positive predictor (*B* = .14, *SE* = .03, 95% CI [.08, .19], *p* < .001, *β* = .41) and athletic trainer identity was a significant negative predictor (*B* = -.13, *SE* = .04, 95% CI [-.19, -.06], *p* < .001, *β* = -.33) of GPA. Self-efficacy (*B* = .02, *SE* = .05, 95% CI [-.08, .12], *p* = .695, *β* = .05), controlled motivation (*B* = -.01, *SE* = .03, 95% CI [-.07, .06], *p* = .855, *β* = -.02), and autonomous motivation (*B* = .06, *SE* = .06, 95% CI [-.05, .18], *p* = .256, *β* = .12) were not significant predictors of GPA (see Table 22). These results do not fully support Hypothesis 3b.3. Table 22 is an excerpt.
from the complete results of the path analysis (Appendix M) and shows the relationships between self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) and GPA (see Figure 3, p. 71).

Table 22

GPA Predicted by Motivational Factors

<table>
<thead>
<tr>
<th>Path</th>
<th>B(SE)</th>
<th>95% CI</th>
<th>p</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy → GPA</td>
<td>.02 (.05)</td>
<td>[-.08, .12]</td>
<td>.695</td>
<td>.05</td>
</tr>
<tr>
<td>Controlled Motivation → GPA</td>
<td>-.01 (.03)</td>
<td>[-.07, .06]</td>
<td>.855</td>
<td>-.02</td>
</tr>
<tr>
<td>Autonomous Motivation → GPA</td>
<td>.06 (.06)</td>
<td>[-.05, .18]</td>
<td>.256</td>
<td>.12</td>
</tr>
<tr>
<td>Academic Identity → GPA</td>
<td>.14 (.03)</td>
<td>[.08, .19]</td>
<td>&lt; .001</td>
<td>.41</td>
</tr>
<tr>
<td>Athletic Trainer Identity → GPA</td>
<td>-.13 (.04)</td>
<td>[-.19, -.06]</td>
<td>&lt; .001</td>
<td>-.33</td>
</tr>
</tbody>
</table>

Note: Excerpt from complete results of path analysis in Appendix M.

RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?

The results of this analysis can be separated into two parts: the direct effects and the indirect effects. The analysis of the direct effects examined whether psychological needs (autonomy, competence, relatedness) were direct predictors of measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) (see Appendix M; see Figure 3). Although complete results of this analysis are presented in Appendix M, excerpts have been included below for readability purposes.

Following this analysis, indirect paths between psychological needs and measures of student success were identified. Based on the results of the initial path
analysis, seven paths from the psychological needs (autonomy, competence, relatedness) to measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) were identified. The mediating variables in these paths were self-efficacy, motivation (controlled and autonomous), and identity (academic and athletic trainer).

**Persistence**

Results showed persistence was significantly and positively predicted by autonomy ($B = .10, SE = .05, 95\% CI [.01, .20], p = .026, \beta = .13$) and competence ($B = .20, SE = .07, 95\% CI [.02, .37], p = .029, \beta = .18$). Relatedness, however, was not a significant predictor of persistence ($B = .03, SE = .09, 95\% CI [-.15, .21], p = .722, \beta = .04$) (see Table 23). Table 23 is an excerpt from the table shown in Appendix M representing the direct relationships between all of the variables in the study and shows the direct relationships between psychological needs (autonomy, competence, and relatedness) and persistence (see Figure 3, p. 71).

### Table 23

<table>
<thead>
<tr>
<th>Path</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>\beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Persistence</td>
<td>.10 (.05)</td>
<td>[.01, .20]</td>
<td>.026</td>
<td>.13</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Persistence</td>
<td>.20 (.09)</td>
<td>[.02, .37]</td>
<td>.029</td>
<td>.25</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Persistence</td>
<td>.03 (.09)</td>
<td>[-.15, .21]</td>
<td>.722</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

One indirect path from competence to persistence was identified. This indirect path showed competence to be a significant positive predictor of persistence through autonomous motivation ($B = .10, SE = .04, 95\% CI [.02, .19], p = .023, \beta = .09$) (see Table 24). These results partially supported Hypothesis 3c.1.
### Table 24

**Parameter Estimates for Indirect Predictors**

<table>
<thead>
<tr>
<th>Path</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Path 1: Autonomy $\rightarrow$ Controlled Motivation $\rightarrow$ Intentions to Leave</td>
<td>-.10 (.05)</td>
<td>[-.21, -.01]</td>
<td>.049</td>
<td>-.08</td>
</tr>
<tr>
<td>Indirect Path 2a: Competence $\rightarrow$ Autonomous Motivation $\rightarrow$ Persistence</td>
<td>.10 (.04)</td>
<td>[.02, .19]</td>
<td>.023</td>
<td>.09</td>
</tr>
<tr>
<td>Indirect Path 2b: Competence $\rightarrow$ Autonomous Motivation $\rightarrow$ Intentions to Leave</td>
<td>-.13 (.07)</td>
<td>[-.30, -.03]</td>
<td>.052</td>
<td>-.07</td>
</tr>
<tr>
<td>Indirect Path 2c: Competence $\rightarrow$ Autonomous Motivation $\rightarrow$ Perceived Academic Performance</td>
<td>.08 (.04)</td>
<td>[.02, .18]</td>
<td>.047</td>
<td>.10</td>
</tr>
<tr>
<td>Indirect Path 3: Relatedness $\rightarrow$ Controlled Motivation $\rightarrow$ Intentions to Leave</td>
<td>-.09 (.05)</td>
<td>[-.21, -.01]</td>
<td>.083</td>
<td>-.07</td>
</tr>
<tr>
<td>Indirect Path 4: Competence $\rightarrow$ Academic Identity $\rightarrow$ GPA</td>
<td>.05 (.02)</td>
<td>[.02, .10]</td>
<td>.006</td>
<td>.12</td>
</tr>
<tr>
<td>Indirect Path 5: Competence $\rightarrow$ Athletic Trainer Identity $\rightarrow$ GPA</td>
<td>-.06 (.02)</td>
<td>[-.10, -.02]</td>
<td>.006</td>
<td>-.13</td>
</tr>
</tbody>
</table>

### Intentions to Leave

Intentions to leave was not significantly predicted by autonomy ($B = -.11$, $SE = .10$, 95% CI [-.31, .08], $p = .260$, $\beta = -.09$), competence ($B = .05$, $SE = .20$, 95% CI [.34, .43], $p = .818$, $\beta = .03$), or relatedness ($B = -.11$, $SE = .10$, 95% CI [-.32, .09], $p = .274$, $\beta = -.08$) (see Table 25). Table 25 is an excerpt from the table shown in Appendix M representing the direct relationships between all of the variables in the study and shows the direct relationships between psychological needs (autonomy, competence, and relatedness) and intentions to leave (see Figure 3, p. 71).
Table 2

<table>
<thead>
<tr>
<th>Path</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy → Intentions to Leave</td>
<td>-.11 (.10)</td>
<td>[-.31, .08]</td>
<td>.260</td>
<td>-.08</td>
</tr>
<tr>
<td>Competence → Intentions to Leave</td>
<td>.05 (.20)</td>
<td>[-.34, .43]</td>
<td>.818</td>
<td>.03</td>
</tr>
<tr>
<td>Relatedness → Intentions to Leave</td>
<td>-.11 (.10)</td>
<td>[-.32, .09]</td>
<td>.274</td>
<td>-.08</td>
</tr>
</tbody>
</table>

Note: Excerpt from complete results of path analysis in Appendix M.

Three indirect paths from psychological needs to intentions to leave were identified (see Table 24). The first path showed autonomy to be a significant negative predictor of intentions to leave through controlled motivation (\(B = -.10, SE = .05, 95\% CI [-.21, -.01], p = .049, \beta = -.08\)). The second path showed competence was also a significant negative predictor of intentions to leave through autonomous motivation (\(B = -.13, SE = .07, 95\% CI [-.30, -.03], p = .052, \beta = -.07\)). The final indirect path from relatedness to intentions to leave through controlled motivation was not significant (\(B = .09, SE = .05, 95\% CI [-.21, -.01], p = .083, \beta = -.07\)). These results partially supported Hypothesis 3c.4.

Perceived Academic Performance

Perceived academic performance was significantly predicted by competence (\(B = .27, SE = .08, 95\% CI [.12, .42], p < .001, \beta = .45\)). Autonomy (\(B = -.06, SE = .04, 95\% CI [-.14, .03], p = .175, \beta = -.09\)) and relatedness (\(B = -.04, SE = .05, 95\% CI [-.13, .06], p = .456, \beta = -.06\)), however, were not significant predictors of perceived academic performance (see Table 26). Table 26 is an excerpt from the table shown in Appendix M representing the direct relationships between all of the variables in the study and shows the direct relationships between psychological needs (autonomy, competence, and relatedness) and perceived academic performance (see Figure 3, p. 71).
### Table 26

**Direct Effects of Psychological Needs on Perceived Academic Performance**

<table>
<thead>
<tr>
<th>Path</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Perceived Academic Performance</td>
<td>-.06 (.04)</td>
<td>[-.14, .03]</td>
<td>.175</td>
<td>-0.09</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Perceived Academic Performance</td>
<td>.27 (.08)</td>
<td>[.12, .42]</td>
<td>&lt; .001</td>
<td>.45</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Perceived Academic Performance</td>
<td>-.04 (.05)</td>
<td>[-.13, .06]</td>
<td>.456</td>
<td>-0.06</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

One indirect path was identified from psychological needs to perceived academic performance (see Table 24). This indirect path showed competence to be a significant positive predictor of perceived academic performance through autonomous motivation ($B = .08, SE = .04, 95\% CI [.02, .18], p = .047, \beta = .10$). These results partially supported Hypothesis 3c.2.

**Grade Point Average**

As shown in Table 27, GPA was not predicted by autonomy ($B = .01, SE = .02, 95\% CI [-.04, .05], p = .673, \beta = .03$), competence ($B = .02, SE = .05, 95\% CI [-.08, .12], p = .760, \beta = .05$), or relatedness ($B = .01, SE = .03, 95\% CI [-.04, .06], p = .803, \beta = .02$). Table 27 is an excerpt from the table shown in Appendix M representing the direct relationships between all of the variables in the study and shows the direct relationships between psychological needs (autonomy, competence, and relatedness) and GPA (see Figure 3, p. 71).

Two indirect paths were identified from psychological needs to GPA (see Table 24, p. 81). The first path showed competence to be a significant positive predictor of GPA through academic identity ($B = .05, SE = .02, 95\% CI [.02, .10], p = .006, \beta = .12$). The second path showed competence to be a significant negative predictor of GPA through athletic trainer identity ($B = -.06, SE = .02$, 95\% CI [-.18, -.04], $p = .001, \beta = -.12$).
95% CI [-.10, -.02], \( p = .006, \beta = -.13 \). These results partially supported Hypothesis 3c.3.

**Table 27**

**Direct Effects of Psychological Needs on GPA**

<table>
<thead>
<tr>
<th>Path</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy ( \rightarrow ) GPA</td>
<td>.01 (.02)</td>
<td>[-.04, .05]</td>
<td>.673</td>
<td>.03</td>
</tr>
<tr>
<td>Competence ( \rightarrow ) GPA</td>
<td>.02 (.05)</td>
<td>[-.08, .12]</td>
<td>.760</td>
<td>.05</td>
</tr>
<tr>
<td>Relatedness ( \rightarrow ) GPA</td>
<td>.01 (.03)</td>
<td>[-.04, .06]</td>
<td>.803</td>
<td>.02</td>
</tr>
</tbody>
</table>

*Note:* Excerpt from complete results of path analysis in Appendix M.

**Summary**

Preliminary data analyses for the study included a series of exploratory factor analyses to determine factorial validity per scale. During the exploratory factor analyses, one item from the perceived choice subscale was dropped. Following this action, results of the exploratory factor analyses showed good factorial validity for all scales and divided the Learning Motivation Scale into two factors as hypothesized in this study. Based on the results of the exploratory factor analyses, reliability analyses were conducted by factor to determine internal consistency. Cronbach’s alpha scores ranged from acceptable to excellent. To answer RQ1, means and standard deviations were reported for all measured variables. These results showed that on average, AT students are moderate to high in levels of psychological needs (autonomy, competence, and relatedness), self-efficacy, autonomous motivation, identity (academic and athletic trainer), persistence, and perceived academic performance. Additionally, these scores showed that on average AT students are low in controlled motivation and intentions to leave. For GPA, on average AT students are scoring A’s or B’s in their courses.
Pearson’s correlations were also reported to answer RQ2. Results of this analysis showed persistence, intentions to leave, and perceived academic performance to be significantly correlated with most variables in the study. GPA, however, was only significantly correlated with academic identity. Several of the independent variables (psychological needs, self-efficacy, types of motivation, and identity) were also significantly correlated with each other.

Path analyses were used to answer RQ3. All paths were created using the research questions and conceptual framework (see Figure 2, p. 15). The primary path analysis identified direct predictors between the variables in the study. Results of this analysis showed psychological needs (autonomy, competence, and relatedness) significantly predicted self-efficacy. Autonomy and relatedness also predicted controlled motivation, and competence was a significant predictor of autonomous motivation and identity (academic and athletic trainer). Additionally, results of the path analysis showed that controlled motivation significantly predicted intentions to leave while autonomous motivation was a significant predictor of persistence, intentions to leave, and perceived academic performance. Academic and athletic trainer identity were both significant predictors of GPA, however, academic identity was a positive predictor and athletic trainer identity was a negative predictor. Self-efficacy was not a significant predictor of any of the measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

The secondary path analysis identified indirect predictors between the variables in the study. Using the results of the direct path analysis, seven indirect paths from psychological needs (autonomy, competence, and relatedness) to measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) through measures of motivation, self-efficacy, types of
motivation (controlled and autonomous), and identity (academic and athletic
trainer) were identified. Significant paths showed 1) autonomy predicting
intentions to leave through controlled motivation, 2) competence predicting
persistence, intentions to leave, and perceived academic performance through
autonomous motivation, and 3) competence predicting GPA through academic and
athletic trainer identity. Although parts of the hypotheses were supported by this
study, there were several hypotheses that were not supported by the data. In
chapter 5, the researcher will draw conclusions for this study based on current
literature.
CHAPTER 5: DISCUSSION

The purpose of this study was to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Research questions for this study were:

RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3: What are the predictive relationships between psychological needs, self-efficacy, types of motivation, identity, and measures of student success in AT students?

RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?

RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?

RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?

To answer RQ1, means and standard deviations were calculated for all variables; Pearson’s correlations were used to determine the correlational relationships for RQ2, and a path analysis was used to determine the predictive
relationships for RQ3. Although many of the results supported the hypotheses for this study, there were some hypotheses that were not supported by the data. The following sections will include a complete discussion of the results.

**RQ1: What are the levels of psychological needs, self-efficacy, types of motivation, identity, and student success in AT students?**

The following sections will report and discuss findings from data analyses used to answer RQ1. Discussions will utilize current literature on the topics to further analyze the results of this study.

**Psychological Needs**

Findings relative to psychological needs (autonomy, competence, and relatedness) showed that on average, AT students had high levels of competence. In the current study, measures of competence asked participants whether they felt they performed well and if they were satisfied with their performance in both their courses and their clinical rotations. Therefore, AT students on average, feel competent in the skills and information they are learning in their AT program. The results on competence are consistent with literature such as Young et al. (2013), showing that through meaningful clinical experiences in which AT students were given more responsibility and engaged in realistic AT experiences, AT students were able to feel competent and confident in the skills they were learning in their AT programs. These findings have suggested that one possible source of AT student competence is from practicing their AT skills and knowledge through realistic simulations on real-life patients.

For relatedness, findings of the current study showed that AT students are high in relatedness, having strong relationships based on trust and friendship with
their AT program faculty and preceptors. Bowman and Dodge (2011) supported the results of the current study, showing that AT students felt their interactions with AT program faculty were supportive and enjoyable and that positive interactions with AT program preceptors were also frequent. Additionally, Young et al. (2013) showed that AT students mostly reported their interactions with their AT program preceptors as positive and encouraging, suggesting that one possible source of AT students’ feelings of trust and friendship for their AT program faculty and preceptors comes from frequent, positive, and encouraging interactions.

Participants in the current study reported only moderate levels of autonomy. Therefore, participants of the study neither felt they had a choice or do not have a choice to do what is asked of them in their AT program. The relatively lower levels of autonomy may be because of the CAATE standard of direct and constant supervision of AT students during their clinical experiences (Scribner & Trowbridge, 2009). CAATE standards stated that AT student supervision must progress from interdependence to independence, but that the preceptor must always have the ability to intervene (CAATE, n.d.-d). The level of supervision required by the CAATE, and interdependence on the preceptor may decrease autonomy and inhibit learning for the AT student (Scribner & Trowbridge, 2009). For this study, 54 of the 167 participants reported being in the first year of their AT program. Therefore, these participants may have been more interdependent on their preceptors because they were only in their program for a few months at the time of data collection.

In summary, results on levels of psychological needs (autonomy, competence, and relatedness) were consistent with the literature, showing that AT students have positive interactions and relationships with AT program faculty and
preceptors (Bowman & Dodge, 2011), that they feel competent in the skills they are learning in their AT programs from gaining real-world experiences during their time in their clinical rotations (Young et al., 2013), and that AT program faculty and preceptors might need to foster greater independence in AT students as they progress through their AT programs (Scribner & Trowbridge, 2009).

**Self-Efficacy**

Results showed that on average, AT students had high levels of self-efficacy, meaning they were confident in their ability to learn material and perform well in their AT programs. One of Bandura et al.’s (1977) sources of self-efficacy, performance accomplishments, which was defined as past successful or failed attempts at completing a task (Fong & Krause, 2014), may show why AT students are confident in their AT skills and knowledge. Young et al. (2013) showed that AT students should be taking the AT skills and knowledge they are learning in their academic coursework and practicing them in their clinical rotations in a real-life learning environment. Opportunities to successfully complete skills may significantly change AT student self-efficacy.

Additionally, CAATE standards dictate that AT program preceptors are required to assess and evaluate students regularly on their clinical skills (CAATE, n.d.-d). Frequent assessments may allow AT program preceptors opportunities for feedback, which may be seen as another one of Bandura et al.’s (1977) sources of self-efficacy, verbal persuasion. Komarraju et al., (2010) showed that verbal persuasion in the form of feedback from an instructor was a salient source of self-efficacy. These findings have suggested that successful completion of AT skills in real-life environments and frequent opportunities to receive feedback may be reasons AT students reported high levels of self-efficacy.
Types of Motivation

Findings relative to types of motivation (controlled and autonomous) showed that on average, AT students have low controlled motivation and high autonomous motivation. Mazerolle et al. (2013) showed that AT students have high internal or intrinsic motivation because they are sure AT is what they want to do, and because of that surety, they are dedicated to completing their program requirements. However, Mazerolle et al. defined intrinsic motivation through self-motivation and goal accomplishment, which is more closely aligned with Ryan and Deci’s (2000) descriptions of autonomous motivation. Autonomous motivation not only includes intrinsic or internal motivation, but also forms of extrinsic motivation, including identified and integrated regulation, that involve what Deci and Ryan (2008) describe as “sense of self” (Ryan & Deci, 2000). Ryan and Deci described intrinsic motivation as personal enjoyment, while integrated and identified regulation included completing tasks out of personal importance or alignment with self-identified goals (see Figure 1). Controlled motivation included amotivation and forms of extrinsic motivation that are aligned with external factors or rewards (Ryan & Deci, 2000). These findings have suggested that AT students might have some external motives for being in their AT programs, they are mostly in their AT programs because of their own personal enjoyment and alignment with personal goals.

Additionally, 109 of the 167 participants in this study identified themselves as entry-level or post-professional master’s students. Mazerolle et al. (2013) showed that AT students enrolled in graduate programs are more internally motivated than undergraduate students because they purposefully decided to pursue a graduate degree in AT, further explaining the results of the current study.
Identity

Findings of the current study showed that on average, AT students reported strong academic and athletic trainer identity. Therefore, AT students not only considered themselves to be students, feeling a desire to do well in school, but they also self-categorized themselves as athletic trainers, feeling an importance to perform well and deliver quality care at the standard of an athletic trainer.

Corlett (2000) showed that students who are required to complete clinical experiences in addition to their academic coursework (e.g., nursing, AT) often place more of an emphasis on the skills and knowledge they learn in their clinical experiences, feeling that this information is more pertinent to them and more beneficial to their future careers. As AT students often spend around 20 or more hours per week in their clinical rotations, they may place more importance on their clinical experiences than their academic coursework, creating a stronger athletic trainer identity than an academic identity. Studies such as Corlett (2000) created plausible explanations for why results of the current study showed a trend in higher levels of athletic trainer identity than academic identity.

Measures of Student Success

Results pertaining to measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) showed that on average, AT students had high levels of persistence, low levels of intentions to leave, and high levels of perceived academic performance. Therefore, AT students persist even when their AT programs become difficult and also perceive themselves to be high performing students. These results were consistent with literature (e.g., Bowman & Dodge, 2011; Dodge et al., 2009; Young et al., 2013). Bowman and Dodge (2011) showed that AT program environments naturally foster persistence among AT students as skills that are learned in class are reinforced in their clinical
experiences and AT students are able to envision themselves practicing in the career of AT. Young et al. (2013) also provided evidence to support these results, showing that AT students are more likely to persist when they are placed in clinical experiences that allow them opportunities to have more responsibility and engage in real-world experiences in AT. Additionally, while practicing their AT skills and knowledge in real-life situations with real patients, AT students are able to assess and feel confident in their own performance (Young et al., 2013). Therefore, the opportunity for AT students to obtain clinical experiences and practice their AT skills and knowledge in real-world settings, may explain the reason for high levels of persistence, low levels of intentions to leave, and high perceived academic performance.

Additionally, persistence, intentions to leave, and perceived academic performance were all subjective measures of student success in this study. Meaning that students were asked to determine their own student success based on perception. In the current study, student success was measured objectively only by one variable, GPA. Results on GPA showed that on average AT students were high performing students, earning on average a 3.6 GPA on a 4.0 scale. Results of the current study showed that 154 of the 160 participants who self-reported their GPA had above a 3.0. Of the participants in the study, 109 identified themselves as graduate students. Studies have shown that as graduate students make the decision to pursue a higher degree, they are more committed to their investment and perform at higher levels (Girves & Wemmerus, 1988; Mazerolle et al., 2013).
RQ2: What are the correlational relationships between psychological needs, self-efficacy, types of motivation, identity, and student success in AT students?

The following section will discuss and analyze the correlational relationships between the variables in the study. Because of the connections between the measures of student success that were measured in the study, the four variables have been combined into two groups. First, persistence and intentions to leave were combined due to their similar correlations and opposition to each other. Second, perceived academic performance and GPA were combined due to their connection with academic performance. A detailed discussion of these four measures of student success and their relationships with other variables in the study follows.

Persistence and Intentions to Leave

Finding showed that autonomy, competence, and relatedness were positively related to persistence and negatively related to intentions to leave. In the current study, persistence was defined as the desire to engage in activities and was operationalized as a student’s drive to continue learning and working toward something even when it becomes difficult. In opposition, intentions to leave was defined as the student’s ideas of dropping out of their intended academic program or college (Xu, 2018). Because of the definitions of persistence and intentions to leave from Wentzel (1999) and Xu (2018), it was expected that persistence and intentions to leave would be opposites in the current study. Results of the study followed these expectations, showing negative correlations between persistence and intentions to leave. Young et al. (2013) supported the theory of opposition between persistence and intentions to leave as the study compared students who
persisted in AT versus students who dropped out of their AT programs. Results of Young et al. showed that autonomy, social support, self-efficacy, and time commitment affected students who persisted as well as students who dropped out. However, AT students in Young et al. who persisted had positive feelings regarding their learning experiences, preceptors, and time commitment and AT students who had negative feelings dropped out.

Findings showed that persistence was positively correlated with psychological needs (autonomy, competence, and relatedness), self-efficacy, autonomous motivation, identity (academic and athletic trainer), perceived academic performance, and GPA and negatively correlated with controlled motivation. Likewise, findings showed that intentions to leave was negatively correlated with psychological needs (autonomy, competence, and relatedness), self-efficacy, autonomous motivation, athletic trainer identity, perceived academic performance, and GPA and positively correlated with controlled motivation. These findings suggested that intentions to leave was the opposite of persistence, with the exception of academic identity, with which intentions to leave was not related. The sections below will discuss the correlations between the independent variables and persistence and intentions to leave.

**Psychological Needs**

Joesaar et al. (2011) supported the correlations between autonomy and competence and persistence and intentions to leave that were found in the current study, showing that when students’ psychological needs (autonomy, competence, and relatedness) are met, their persistence increased. Studies such as Zainuddin and Perera (2019) showed that when students are provided learning opportunities that promote autonomy, competence, and relatedness, they are more willing to work harder to meet course requirements. The increased effort described in
Zainuddin and Perera may be seen as academic persistence. Additionally, findings from Young et al. (2013) supported the results of the study, showing that through experiential learning, where students were able to practice their AT skills and knowledge in real-life experiences, students had greater feelings of autonomy and competence, increasing their desire to persist in AT. These findings suggested that if AT faculty and preceptors can facilitate opportunities for AT students to develop feelings of autonomy and competence, AT students may be more likely to persist and less likely to drop out of their AT program.

Findings from Young et al. (2013) also supported the correlational relationship between relatedness and persistence, showing that students who persisted in AT reported their relationships with their AT faculty and preceptors as personable and encouraging. In opposition, AT students who dropped out of their AT programs reported having poor relationships with their AT program faculty and preceptors, stating that they did not get along with each other (Young et al., 2013). Therefore, if AT program faculty and preceptors are able to have positive relationships including informal interactions with their AT students, they may be able to increase persistence and decrease intentions to leave.

**Self-Efficacy**

In the current study, persistence and intentions to leave were also significantly correlated with self-efficacy, with self-efficacy being positively correlated with persistence and negatively correlated with intentions to leave. Correlations between self-efficacy and persistence were supported by Bandura and Adams (1977) and Wentzel (1999), showing that when one has a strong belief in themselves, they are more likely to persist. Specifically in AT students, Young et al. (2013) showed that students who persisted in AT had experiences in their AT programs that increased their confidence in their skills and abilities. Young et al.
showed that increased confidence occurred through experiential learning, or real-life experiences, where AT students were able to practice their AT skills and knowledge in situations that were similar to the ones they will experience as an athletic trainer upon graduation. Additionally, Young et al. showed that students who dropped out of their AT programs did not have as many experiences that would build their confidence in their AT skills and knowledge. Bandura and Adams, Wentzel, and Young et al. supported findings from the current study, showing positive correlations between self-efficacy and persistence. Additionally, Young et al. also supported findings from the current study, showing the negative relationship between self-efficacy and intentions to leave.

Types of Motivation

Results showed that types of motivation (controlled and autonomous) were significantly related to persistence and intentions to leave. In the current study, autonomous motivation was positively related to persistence and negatively related to intentions to leave and controlled motivation was negatively related to persistence and positively related to intentions to leave. Additionally, the strength of the correlational relationship showed that above all other variables in the study, autonomous motivation had the strongest relationship with persistence. In opposition, the strongest correlational relationship for intentions to leave was controlled motivation. Therefore, AT students who had higher levels of autonomous motivation were more likely to persist while AT students who have higher levels of controlled motivation were more likely to drop out.

Pelletier et al. (2001) showed that while participants identified both autonomous and controlled motives for participation, participants who persisted had greater autonomous motives and lower levels of controlled or external motives for participation. Additionally, participants who dropped out had higher levels of
controlled or external motives for participation than participants who persisted. In the current study, autonomous motivation was operationalized through personal enjoyment, personal importance and usefulness, as well as personal interest and controlled motivation was operationalized through external rewards and approval of others (see Appendix E). Therefore, findings suggested that if AT students are more autonomously motivated by their personal enjoyment or importance to their career, their motives to participate may become more internalized and less focused on the external or controlled motives. Shifting motives to become more autonomous may develop AT student persistence.

**Identity**

Results of the current study showed that academic identity was significantly related to persistence but was not related intentions to leave. For the purpose of this study, academic identity was operationalized through the AAIS and measured in importance of doing well in school and having a good GPA (see Appendix F; Yukhymenko-Lescroart, 2014). Therefore, to those who have high academic identity, having a high GPA and doing well in school is extremely important. Placing importance on academic standards such as GPA has also been shown to be related to persistence and intentions to leave (Goguen et al., 2010). Therefore, AT students who have high academic identities may be more likely to persist and less likely to drop out. However, results from Goguen et al. (2010) showed that although self-reported GPA scores were high, some students still chose to leave or drop out of school, suggesting that it may be possible for students to strongly identify as a student and feel an importance to do well in school, but still choose to drop out of their academic programs. Young et al. (2013) reported several reasons that AT students choose to leave or drop out of their programs, including the time commitment and the amount of personal and social sacrifices that had to be made
as a result of the time commitment. These finding suggested that while academic identity may be one reason for a student’s persistence, there may be several reasons a student chooses to drop out of their intended program.

Findings also showed that athletic trainer identity was positively related to persistence and negatively related to intentions to leave. Therefore, students who have strong athletic trainer identities are less likely to drop out and students who do not self-categorize themselves as athletic trainers are more likely to drop out. In the current study, athletic trainer identity in this study was operationalized through the ATIS and measured by the importance of providing athletic training services (see Appendix F; M. Yukhymenko-Lescroart, personal communication, August 4, 2020). As AT students prepare to become athletic trainers, they are placed in clinical experiences where they are able to actually provide healthcare services and practice their AT skills and knowledge in real-life situations (Young et al., 2013). This ability to provide care to real-life patients may increase athletic trainer identity. Young et al. (2013) showed that AT students who receive quality AT experiences are also more likely to persist in AT, showing a positive relationship between athletic trainer identity and persistence and a negative relationship between athletic trainer identity and intentions to leave.

**Measures of Student Success**

Lastly, findings showed that persistence was significantly related to all other measures of student success, including intentions to leave, perceived academic performance and GPA. These results are consistent with the literature (e.g., Goguen et al., 2010). Goguen et al. (2010) supported the significant relationships between academic performance and persistence. Therefore, the better AT students do in their academic coursework and clinical experiences, the more likely they are to persist and the less likely they are to drop out. Additionally, the
relationship between persistence and academic performance found in Goguen et al. was so strong that it reduced the significance of all other variables in the study. Therefore, although there were other variables that may account for persistence, none of them were important relative to academic performance (Goguen et al., 2010).

In sum, all of the variables in the current study were related to persistence, with the strongest relationship between autonomous motivation and persistence. Additionally, all variables besides academic identity were related to intentions to leave, with the strongest relationship between intentions to leave and controlled motivation. In the current study, finding showed that types of motivation (controlled and autonomous), persistence, and intentions to leave were all significantly related to psychological needs (autonomy, competence, and relatedness). These finding suggested that psychological needs (autonomy, competence, and relatedness) may shift reasons for participation toward autonomous rather than controlled motives (Ryan and Deci, 2019), and when AT student motives are more aligned with their personal interest and enjoyment, they are more willing to persist (Pelletier et al., 2001).

**Perceived Academic Performance and GPA**

Perceived academic performance in the current study was based on the participant’s perception of their ability to perform tasks in the classroom and in their clinical experiences. Results of the current study showed perceived academic performance was correlated with all variables in the study except for autonomy and relatedness. To measure actual academic performance, the current study used GPA, which was self-reported by participants using a 4-point GPA scale. While perceived academic performance was significantly related to several of the variables in the study, GPA was only significantly related to persistence,
intentions to leave, perceived academic performance, and academic identity. The relationships between academic performance and persistence and academic performance and intentions to leave were discussed above.

**Psychological Needs**

Results of the current study showed that competence was the only psychological need (autonomy, competence, and relatedness) that was significantly correlated with perceived academic performance, and none of the psychological needs were related to actual academic performance, GPA. Although studies showed relationships between psychological needs (autonomy, competence, and relatedness) and academic performance (e.g., Komarraju et al., 2010), it may be that these psychological needs are more related to the measures of student success that are based on perception than actual academic performance. For example, Joesaar et al. (2011) and Zainuddin and Perera (2019) showed the relationships between psychological needs (autonomy, competence, and relatedness) and persistence, which is a subjective measure of student success.

The claim that psychological needs are more related to subjective measures of student success would explain the results of the current study where psychological needs were related to perceived academic performance, persistence, and intentions to leave, but were not related to actual academic performance, GPA. Additionally, in the current study, measures of psychological needs (autonomy, competence, and relatedness) were also based on perceptions, perceptions of choice, perceptions of competence, and perceptions of relationships. Although studies such as Niemiec and Ryan (2009) showed that students who have higher levels of psychological needs perform better, it may be possible that even low performing students (students with low GPA’s) have high feelings of psychological needs (autonomy, competence, and relatedness).
Perceived academic performance in the current study was operationalized through participant’s perception of their ability to perform tasks in the classroom and in their clinical experiences. The conceptualization of perceived academic performance was closely related to competence, defined by Sweet et al. (2012) as the ability to successfully and effectively complete a task. Therefore, both of these variables were constructed on the perceived ability to learn and complete AT skills and knowledge, explaining the relationship between competence and perceived academic performance. The relationship between competence and perceived academic performance was expected and is supported by literature (e.g., Young et al., 2013). Young et al. (2013) supported the relationship between competence and academic performance, showing that when students are provided opportunities to practice and demonstrate their skills and knowledge in real-life environments, their confidence and perceptions of competence increase. Findings have suggested that AT students’ level of competence may be a result of their perceptions of academic performance.

For AT students, it is possible that the relationship between autonomy and GPA was less significant because AT students reportedly do not feel much autonomy. Due to the required direct and constant supervision of AT students by their preceptors (Scribner & Trowbridge, 2009), AT students may not feel like they are able to make their own choices independent of their preceptors, decreasing their perceptions of their abilities to perform skills (Young et al., 2013). Additionally, in the current study, relatedness was operationalized as feelings of trust and friendships with AT program faculty and preceptors (see Appendix C). Although there were several studies to support the correlations between students and faculty relationships and academic performance (e.g., Hassel & Ridout, 2018; Klem & Connell, 2004), it is possible that for AT students
relationships with their AT faculty and preceptors are not related to their perceptions of their performance. Perhaps, as shown in Young et al. (2013), perceived academic performance was more closely related with competence.

**Self-Efficacy**

Findings showed that self-efficacy was significantly related to perceived academic performance. However, self-efficacy was not significantly related to actual academic performance, GPA. Bickerstaff et al. (2017) showed that when student self-efficacy increases they perform better academically. However, self-efficacy was based on one’s beliefs about their abilities (Bandura, 1989), which is a perception about their ability to perform a task. Therefore, Bandura (1989) and Bickerstaff et al. showed the correlation between self-efficacy and students’ perceptions of their performance. Actual measures of academic performance, such as GPA, are not based on perception or belief, they are based on actual performance and true knowledge. Krumrei-Mancuso (2013) showed significant correlations between self-efficacy and GPA. In fact, it was the strongest correlation of their study, however, it may be possible for a student to believe in themselves and their abilities, but still not be able to perform well academically. For example, studies in education have shown several correlations that may attribute to GPA, including socioeconomic status and social support (Malecki & Damaray, 2006). Therefore, there may be additional factors, other than self-efficacy, that are related to GPA that were not measured in the study.

**Types of Motivation**

Results of the current study showed that types of motivation (controlled and autonomous) were significantly related to perceived academic performance, but types of motivation (controlled and autonomous) were not significantly related to
actual academic performance, GPA. Studies such as Davidson and Beck (2006) have shown that types of motivation (controlled and autonomous) may be related to measures of student success and academic performance, showing correlations among motivation, student academic performance and retention. Additionally, Deci and Ryan (2008) showed that greater autonomous motivation was correlated with increased measures of academic performance and general measures of student success. Results of Deci and Ryan provided further evidence toward the possibility that psychosocial factors may be more related to general measures of student success that are based on perception, such as persistence and perceived academic performance, rather than measures that are based on actual academic performance (e.g., GPA and examination scores).

Identity

Academic identity was one independent variable that was significantly related to both perceived academic performance and actual academic performance, GPA. Therefore, AT students who have a strong academic identity may feel they are doing well in school and may actually have higher GPA’s than other AT students who do not have a strong academic identity. In the current study, GPA was included in how academic identity was operationalized. In the AAIS, which measured academic identity, participants were asked how important it was for them to do well in school and get a good GPA (see Appendix F). Therefore, the correlations among academic identity and academic performance (perceived and actual) were anticipated.

Lounsbury et al. (2005) supported the relationship between academic identity and GPA, showing that identity was a stronger predictor of GPA than other psychosocial factors. Yukhymenko-Lescroart (2014) also suggested that as one determines that it is important for them to perform well academically, their
academic identity increases. Therefore, to increase academic identity, it may be beneficial for students to understand the importance of doing well in school and getting a good GPA.

Jensen and Jetten (2016) showed that it is not only important for students in higher education to have a strong academic identity, but it is also important for students to have a strong professional identity. In the current study, professional identity was recognized as athletic trainer identity and measured through the importance of providing quality athletic training services. Jensen and Jetten showed that students who did not have strong professional identity were less confident in their abilities and expressed self-doubt in their performance despite their average grades. Results from Jensen and Jetten supported the results of the current study, showing that professional or athletic trainer identity is correlated with perceived academic performance. Therefore, although athletic trainer identity may not be related to actual academic performance, GPA, it should still be encouraged in AT students to develop positive perceptions of performance and confidence.

**Measures of Student Success**

Findings showed that measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) were all related with each other. The relationships between persistence and intentions to leave with perceived academic performance and GPA were already discussed above. However, the relationship between perceived academic performance and GPA are discussed below.

Results of the current study showed that perceived academic performance and GPA were positively related, meaning that when perceived academic performance increases, GPA increases. Macan et al. (1990) supported the
relationship between perceived academic performance and GPA, showing significant correlations among GPA and self-reported performance ratings. Therefore, the higher GPA obtained by participants in the study may have provided the high perceptions of academic performance.

In sum, the psychosocial factors measured in the current study, including psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (autonomous and controlled) and identity (academic and athletic trainer), may be more related to measures of student success that are based on perception. Measures of student success that are based on perception include persistence, intentions to leave, and perceived academic performance. The most significant psychosocial factors of these perceived measures of student success may be types of motivation (autonomous and controlled), with autonomous motivation increasing positive measures of student success (e.g., persistence) and controlled motivation increasing negative measures of student success (e.g., intentions to leave). Competence was also significantly related to perceptions of student success, especially with perceived academic performance. However, for actual academic performance, GPA, results of the study showed that most psychosocial factors were not significantly related. The only psychosocial factor that was related to GPA was academic identity, showing that participants who feel it is important to do well in school perform better academically.

**RQ3a: To what extent are self-efficacy, types of motivation, and identity in AT students predicted by psychological needs?**

The following section will discuss the predictive relationships between psychological needs (autonomy, competence, and relatedness) and the mediating
motivational variables in the study, including self-efficacy, types of motivation (controlled and autonomous) and identity (academic and athletic trainer).

**Self-Efficacy**

Findings showed all psychological needs (autonomy, competence, and relatedness) were significant predictors of self-efficacy, which is consistent with the literature (e.g., Bickerstaff et al., 2017; Cakici & Oflaz, 2012; Sousa et al., 2012). Autonomy has been shown to be a determinant of self-efficacy, suggesting that the freedom to participate in activities and make choices increases one’s belief in their abilities to accomplish tasks (Sousa et al., 2012). Showing that one approach to improving self-efficacy would be through autonomy, or the ability to make choices. In the current study, autonomy was operationalized through perceived choice. Therefore, improving student perceptions of choice may predict changes in self-efficacy.

Zainuddin and Perera (2019) and Cakici and Oflaz (2012) provided additional strategies to improve self-efficacy, showing that increases in competence as students participate in discussion and demonstration of knowledge and skills in the classroom also increased self-efficacy and confidence. Competence, as defined by Sweet et al. (2012), is the ability to successfully complete and perform a skill. Findings from Zainuddin and Perera and Cakici and Oflaz have suggested that through successful completion of skills and knowledge, competence may predict changes in self-efficacy.

Lastly, Bickerstaff et al. (2017) supported the relationship between relatedness and self-efficacy that was found in the current study, showing that positive teacher-student relationships increase self-efficacy. In the current study, relatedness was measured using questions about trust and friendship with AT program faculty and preceptors. The positive predictive relationship that was
identified between relatedness and self-efficacy as well as the supporting literature from Bickerstaff et al. suggested that positive relationships between AT students and AT program faculty and preceptors may predict positive changes in self-efficacy.

To summarize, results of the current study showed that psychological needs (autonomy, competence, and relatedness) were significant predictors of self-efficacy. The results stated above were supported by studies such as Bickerstaff et al. (2017), Cakici and Oflaz (2012), and Sousa et al. (2012), showing that when students have adequate feelings of autonomy, competence, and relatedness, they are more likely to have adequate feelings of self-efficacy as well.

**Types of Motivation**

Findings of the current study showed that autonomy and relatedness were significant negative predictors of controlled motivation. Ryan and Deci (2000) describe controlled and autonomous motivation on opposite ends of the motivational spectrum and Niemiec and Ryan (2009) showed that autonomous motivation relies on feelings of autonomy. Therefore, the higher the level of autonomy, the lower the level of controlled motivation. This negative relationship between autonomy and controlled motivation is reflected in the results of the current study. As AT students report feeling autonomous, it may be predicted that their levels of controlled motivation would be low. Additionally, Niemiec and Ryan discussed the need for relatedness to facilitate internalization of motivation. In describing the differences between controlled and autonomous motivation, Ryan and Deci showed that autonomous motivation was about internal rewards or factors, and controlled motivation was about external rewards or factors. Therefore, the necessity of relatedness for internalization, would explain the negative relationship between relatedness and controlled motivation, suggesting
that if AT program faculty and preceptors wish to decrease controlled motivation, they should focus on increasing autonomy and relatedness.

Despite evidence from Niemiec and Ryan (2009), neither autonomy nor relatedness were significant predictors of autonomous motivation. Due to the lack of autonomy felt by AT students (Scribner & Trowbridge, 2009), it is possible that the relatively lower levels of autonomy and reportedly high levels of autonomous motivation created a lack of significance between the two variables. Results of RQ2 showed a significant correlational relationship between autonomy and autonomous motivation, meaning that when one variable changes the other variable changes as well, however, the predictive relationship between autonomy and autonomous motivation may not have been a linear relationship, creating a lack of significance. As shown by Niemiec and Ryan, the correlational relationship is consistent with the literature.

Additionally, Ryan and Deci (2019) showed that when all three psychological needs are met, autonomous motivation increases. However, studies such as Cruess et al. (2014) and Sousa et al. (2012) examined the basic psychological needs individually, showing that some psychological needs (autonomy, competence, and relatedness) may be related to motivational factors independent from each other. Findings from Cruess et al. and Sousa et al. have suggested the possibility that not all of the psychological needs are necessary for one to have autonomous motivation. For AT students, relatedness may not be a strong determinant in their autonomous motivation. Results of RQ2 showed significant correlational relationships between relatedness and autonomous motivation, showing that when one variable changes, the other also changes. However, the relationship between these two variables may not have been linear, therefore, there was no predictive relationship.
Finally, competence was not a significant predictor of controlled motivation, but was a significant predictor of autonomous motivation. The predictive relationship between competence and autonomous motivation was supported by the literature. For example, Niemiec and Ryan (2009) discussed the importance for competence in the process of internalizing academic motivation, showing that students who feel more competent were more willing to engage in activities because they saw the value to themselves personally. Zainuddin and Perera (2019) also provided evidence for this claim, showing that as competence increased, internal motivation also increased. Therefore, as AT students develop greater feelings of competence, their internal drive, or autonomous motivation, may also increase.

**Identity**

Results of the current study showed that competence was the only significant predictor of identity (academic and athletic trainer). The relationship between competence and identity was consistent with the literature (e.g., Cruess et al., 2014). For example, Cruess et al. (2014) showed that through practice of clinical skills, one’s competence and confidence increase, allowing one to internalize the role they are playing. As one continues in their role, their role becomes part of themselves, increasing their identity (Cruess et al., 2014). Therefore, as AT students feel competent both as students and as athletic trainers, they will develop stronger academic and athletic trainer identities. AT program faculty and preceptors may be able to assist in the development of AT student academic and athletic trainer identity by allowing AT students to practice the knowledge and skills they are learning in their AT programs.

Although literature supported the results of the current study to provide evidence for relationships between competence and identity (academic and athletic
trainer), literature did not support the lack of significant relationships between
identity and relatedness (e.g., Stets & Burke, 2000). Although Stets and Burke
(2000) showed that interconnectedness was important for the formation of
identity, Cruess et al. (2014) and Jensen and Jetten (2016) suggested that identity
may be more attributed to feeling of competence rather than relatedness.

Findings showed that autonomy was also a non-significant predictor of
identity (academic or athletic trainer). This may be because AT students are not
able to be given much autonomy in their clinical experiences due to CAATE
standards (Scribner & Trowbridge, 2009). Increased autonomy suggested greater
independence when given the opportunity to make a decision. Because AT
students are not given many opportunities to make choices in their clinical
experiences (Scribner & Trowbridge, 2009), they may see a clear difference
between themselves and staff athletic trainers, making them have less athletic
trainer identity. This role delineation may prevent AT students from internalizing
the role of an athletic trainer, which as described by Cruess et al. (2014), is
necessary during the creation of an identity.

Additionally, the non-significant relationship between autonomy and
academic identity may be attributed to the lack of choices within an AT student’s
learning environment. CAATE standards have required AT programs to create a
course sequence and clinical progression for AT students (CAATE, n.d.-d),
meaning that before AT students are even admitted to their AT programs, the
choices of which classes they will take and which clinical rotations they will be
assigned to have already been made by AT program faculty. In the current study,
academic identity was operationalized by the importance of doing well in school
(Yukhymenko-Lescroart, 2014). If students are forced to take courses they are not
interested in, they may not feel an importance to do well in those courses.
Therefore, if AT students were able to make choices regarding their courses, they may be able to identify the importance of those courses to who they really are and the goals they are trying to accomplish, increasing their academic identity.

To summarize, all three psychological needs (autonomy, competence, and relatedness) were able to predict measures of motivation in the study, including self-efficacy, types of motivation (controlled and autonomous) and identity (academic and athletic trainer). The strongest predictive relationships were between competence and self-efficacy and competence and identity (academic and athletic trainer). Although the relationship between competence and autonomous motivation was not as strong, it was still significant and should be considered valuable. Therefore, it can be argued that competence was the strongest determinant of measures of motivation for AT students and that if AT program faculty and preceptors wish to increase AT student motivation, they should focus on developing adequate feelings of competence.

**RQ3b: To what extent are measures of AT student success predicted by self-efficacy, types of motivation, and identity?**

The following sections will discuss the direct predictive relationships between measures of motivation, including self-efficacy, types of motivation (controlled and autonomous) and identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

**Persistence and Intentions to Leave**

Findings of the current study showed that autonomous motivation was a significant direct predictor of persistence. The relationship between autonomous
motivation and persistence was consistent with the literature (e.g., Pelletier et al., 2001), the lack of significance between the other measures of motivation and persistence was somewhat inconsistent with the current literature (e.g., Bickerstaff et al., 2017; Hernandez et al., 2017; Wentzel, 1999).

Although literature on self-efficacy showed relationships with measures of student success (e.g., Bickerstaff et al., 2017; Young et al., 2013), it is possible that AT students persist or drop out for reasons other than their level of belief in themselves. For example, Young et al. (2013) showed that AT students who persisted identified relationships with peers, types of experiences in their clinical rotations, and personal enjoyment as reasons for their persistence. Additionally, Young et al. showed that those who dropped out of their AT programs dropped out for reasons other than confidence, including bad experiences with their AT program faculty and preceptors and a lack of willingness to commit to the amount of time required in their clinical experiences, identifying reasons for dropping out that have nothing to do with AT student’s belief in themselves. Therefore, it is possible for AT students to have high self-efficacy and still not want to persist.

Literature such as Young et al. (2013) may explain the lack of significance between self-efficacy and persistence and intentions to leave, however, it is also possible that the significance of other variables in the study altered the significance between these variables. It is important to note that findings from RQ2 showed that self-efficacy was correlated with both persistence and intentions to leave. Therefore, the lack of significance in the predictive relationships may have been caused by a non-linear relationship or a change of variance caused by the other, stronger variables in the study.

Pelletier et al. (2001) showed that participants who persisted had higher levels of autonomous motivation and lower levels of controlled motivation than
participants who dropped out. Therefore, those who participated in activities for reasons that align with autonomous motives were more likely to continue (Pelletier et al., 2001). Pelletier et al. also showed that all participants identified both autonomous and controlled motives for participating. However, those who persisted had lower levels of controlled motivation than the students who dropped out. The students who dropped out were also not considered to have high levels of controlled motivation, but their levels of controlled motivation were higher than those who persisted. Findings from Pelletier et al. supported the results of the current study, showing that autonomous motivation is a likely predictor of persistence and that the higher the autonomous motivation, the more likely one is to persist. However, Pelletier et al. also showed that participants have some level of external or controlled factors that influence their decisions to participate. Therefore, the amount of motivation (controlled and autonomous) does not determine persistence or intentions to leave, if one’s motives to participate are more aligned with autonomous motives, they will persist.

Both types of motivation (controlled and autonomous), however, may predict intentions to leave. Results of the current study showed that controlled motivation was a positive predictor of intentions to leave, and autonomous motivation was a negative predictor of intentions to leave. Not only were controlled and autonomous motivation predictors of intentions to leave, the relationships between controlled and autonomous motivation and intentions to leave were the strongest predictive relationships of any of the other relationships in the study. Therefore, the higher the autonomous motivation, the less likely one is to drop out and the higher the controlled motivation, the more likely one is to drop out. The results of the current study are consistent with findings from literature such as Pelletier et al. (2001). As mentioned above, Pelletier et al.
showed that participants who had higher levels of autonomous motivation were less likely to drop out. However, participants who dropped out had higher levels of controlled motivation than participants who persisted. Although results from Pelletier et al. showed that controlled motivation was not a predictor of persistence, they did show that controlled motivation was a predictor of drop out or intentions to leave. As ones’ motives for participation align more with external rewards or factors, they are more likely to drop out (Pelletier et al., 2001). Therefore, to increase persistence and decrease intentions to leave, AT program faculty and preceptors should focus more on increasing autonomous motivation and aligning motives of participation with internal rewards such as personal enjoyment and satisfaction as well as personal growth.

Academic and athletic trainer identity were also not significant predictors of persistence or intentions to leave. Studies such as Hernandez et al. (2017) and Patrick et al. (2018) provided evidence for relationships between academic and professional identity and persistence. However, both Hernandez et al. and Patrick et al. showed that the willingness to persist comes from an increase in personal interest that comes with stronger academic and professional identities, suggesting that identity may predict persistence and intentions to leave through intrinsic or autonomous motivation. However, for the current study, only the direct relationships between identity (academic and athletic trainer) and persistence and intentions to leave were measured. Evidence from Hernandez et al. and Patrick et al. may explain the lack of significance of the direct relationships between these variables.

**Perceived Academic Performance and GPA**

Results of the current study showed that perceived academic performance was positively predicted only by autonomous motivation and GPA was positively
predicted only by academic identity and negatively predicted by athletic trainer identity. Therefore, the result of this analysis was that self-efficacy was not a predictor of either measure of academic performance, either perceived or actual, which is inconsistent with the literature on self-efficacy (e.g., Bandura and Adams, 1977; Bickerstaff et al., 2017; Krumrei-Mancuso et al., 2013). Previous literature has shown that self-efficacy has a significant relationship with measures of success and academic performance (Bickerstaff et al., 2017) and that when compared to other predictors, the strongest relationship was between self-efficacy and GPA (Krumrei-Mancuso et al., 2013). The lack of significant relationships between self-efficacy and any of the measures of student success in this study renders the belief that the other measures of motivation had stronger relationships, affecting the significance of the relationships with self-efficacy. It is possible that the determinants of self-determination theory (autonomy, competence, and relatedness) were stronger than self-efficacy, forcing a larger variation between self-efficacy and measures of student success and affecting the significance of the linear relationship.

Additionally, it is possible that self-efficacy may be considered domain-specific, increasing one’s beliefs in their capabilities narrowly and only applying to situations that are similar to the ones that initially developed the self-efficacy (Grether et al., 2018). The measures of student success used for this study, however, may be considered domain-general, meaning that these traits can be transferred to multiple situations and environments (Grether et al., 2018). Therefore, it is possible for AT students to have high levels of self-efficacy in specific situations, but not have strong belief in themselves in situations that would determine their general academic performance. This may be especially true
if the situations they are being tested in do not match the situations that initially developed their self-efficacy.

Although autonomous motivation was a significant predictor of perceived academic performance, neither type of motivation (controlled or autonomous) was able to predict actual academic performance, GPA. Therefore, increased levels of autonomous motivation may make students feel they are performing well, but it does not actually predict a student’s ability to perform well. The connection between autonomous motivation and perceptions of performance may be due to the ”sense of self” that Deci and Ryan (2008) stated autonomous motivation was dependent on. Deci and Ryan described autonomous motivation as types of motivation that are dependent on internal drive. For example, in the current study, autonomous motivation was operationalized as personal enjoyment and satisfaction, as well feelings of internal or personal reward such as meeting personal goals (see Appendix E). Therefore, it is possible that the connection between these two variables occurs when one feels they are performing at a level that will allow them to meet their personal goals or at a level that allows for enjoyment. Niemiec and Ryan (2009) also supported the relationship between autonomous motivation and perceived academic performance, showing that when students’ motivation is more internalized, they felt less pressure to perform for others, facilitating better performance.

For actual academic performance, measured by GPA, Kusurkar et al. (2013) showed that autonomous motivation was not a direct predictor of GPA, but that it was an indirect predictor through good study strategies. Kusurkar et al. also showed that controlled motivation was not a predictor of actual academic performance or GPA, directly or indirectly through measures of motivation (self-efficacy, types of motivation, and identity). Additionally, correlational
relationships identified in RQ2 did not identify relationships between types of motivation (controlled and autonomous) and GPA.

Perhaps the most unexpected findings in the study were the predictive relationships between identity and academic performance. Although findings for athletic trainer identity were not as expected, the predictive relationship between academic identity and GPA was as expected and is consistent with the literature (e.g., Lounsbury et al., 2005). Findings have suggested a correlation between Ryan and Deci’s (2019) description of autonomous motivation and identity. Deci and Ryan (2008) described autonomous motivation as motives that align with sense of self. Similarly, identity is created from self-categorizations and social comparisons (Stets & Burke, 2000) that are based on how one views themselves. As academic performance and feelings of satisfaction in school becomes central to AT students, their actual academic performance increases. The predictive relationship between GPA and academic identity was also supported by Lounsbury et al. (2005), which showed that identity was a significant predictor of GPA.

Although the results between academic identity and GPA was as expected, the negative predictive relationship between athletic trainer identity and GPA was not expected. This may be explained by the emphasis that is placed on clinical experiences over academic coursework among students who are required to complete both academic coursework and clinical experiences (Corlett, 2000). Corlett (2000) showed that students in these types of programs (e.g., AT, nursing) place more importance on what they are learning during their clinical experiences than what they are learning in their academic coursework and feel that what they are learning and doing during their clinical experiences is more beneficial for their future careers than what they learn in the classroom. Therefore, as AT students continue to identify as athletic trainers in the clinical setting and what they are
learning in their clinical experiences becomes more important to their sense of self, being high achievers in the classroom becomes less important for them. This emphasis on clinical experiences may increase professional identity, decreasing academic identity and GPA.

**RQ3c: To what extent are measures of AT student success predicted by psychological needs directly and indirectly through self-efficacy, types of motivation, and identity?**

The following section will discuss the results of RQ3c, which was answered using a path analysis to determine the direct and indirect relationships between psychological needs (autonomy, competence, and relatedness) and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Results were divided by direct predictors and indirect predictors of measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

**Direct Predictors**

Results of the current study revealed very few direct predictive relationships between psychological needs (autonomy, competence, and relatedness) and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Findings showed that 1) autonomy and competence were direct predictors of persistence, and 2) competence was a direct predictor of perceived academic performance.

As previous studies have shown (e.g., Joesaar et al., 2011; Zainuddin & Perera, 2019), psychological needs (autonomy, competence, and relatedness) have been related to measures of student success that are based on perception, such as
persistence. Additionally, in the current study, all psychological needs (autonomy, competence, and relatedness) were operationalized through perception. Participants in the current study answered questions on psychological needs based on what they thought, felt, or believed their level of choice and competence to be (see Appendices A & B). Relatedness was also measured through perception as participants answered questions about how they felt about their AT program faculty and preceptors (see Appendix C). Therefore, it is possible that psychosocial factors may be more significant predictors of subjective measures of student success such as persistence, intentions to leave, and perceived academic performance, than of a student’s actual academic performance.

Autonomy was a significant direct predictor of persistence, which was consistent with Young et al.’s (2013) findings on persistence, which showed that AT students who persisted did so because they made the choice to be there, despite having to make a lot of sacrifices to do so. The situation described by Young et al. showed that AT students may not be able to make a lot of choices about their academic coursework or patient care, but they have made a choice, and that is to persist. This choice, or autonomy, may explain the very small relationship between autonomy and persistence in AT students that was found in the current study.

AT students’ decreased feelings of autonomy may explain the insignificant relationships between autonomy and intentions to leave, perceived academic performance, and GPA. As previously discussed, it is possible that AT students have decreased feelings of autonomy due to CAATE standards about direct and constant supervision (Scribner & Trowbridge, 2009). Young et al. (2013) showed that AT students who are provided more autonomy perform better and have more confidence in their performance. Therefore, it can be inferred that AT students
who are not given autonomy do not perform as well and have poor perceptions about their performance. Because participant’s average levels of autonomy were moderate, there may not have been a clear relationship between autonomy and these measures of student success, including intentions to leave, perceived academic performance, and GPA.

Findings showed that competence was a predictor of both persistence and perceived academic performance. The direct predictive relationship between competence and persistence was supported by Young et al. (2013) showing that AT students who persisted in AT reported feeling competent in their AT skills and knowledge. Joesaar et al. (2011) also showed that when psychological needs were met, persistence increased. As previously discussed, Young et al. suggested using real-life situations where AT students are able to practice their AT skills and knowledge. By demonstrating clinical skills and knowledge in situations that AT student may find themselves in as professional athletic trainers, AT students develop greater feelings of competence, increasing their persistence. Therefore, if AT program faculty and preceptors may be able to increase persistence by increasing levels of competence.

As previously discussed, Young et al. (2013) compared AT students who persisted with AT students who dropped out of their AT programs. Although students who dropped out identified that they were not able to have as much autonomy and limited opportunities to practice their AT skills and knowledge, they did not state that they felt they had low levels of competence. Young et al. also identified several reasons outside of feelings of competence that led AT students to drop out of their AT programs, including relationships and time management. Therefore, it is possible for AT students to feel competent in their
AT skills, but still have the desire to drop out of their AT programs, explaining the insignificant relationship between competence and intentions to leave.

Findings showed that AT students’ perceptions of competence may lead to increased perceptions about their performance. Young et al. (2013) showed that as AT student’s felt more competent in their AT skills and knowledge, their confidence increased, and they had better perceptions about their abilities to perform well. Results of Young et al. provided evidence toward the claim that increasing competence in AT students also increases perceived performance. However, findings did not reveal a significant relationship between competence and measures of actual academic performance, GPA, showing that it may be a significant predictor of those measures of student success that are based on perception, but not actual academic performance. Results of RQ2 also did not show a correlational relationship between competence and GPA. Therefore, competence is truly not a direct predictor of GPA. As previously discussed, it may be possible for AT students to have feelings of competence, but still not have what would be considered as a high GPA.

Although the direct predictive relationships between autonomy and competence can be explained, it is difficult to understand the insignificant relationship between relatedness and measures of student success. Studies such as Hassel and Ridout (2018) and Komarraju et al. (2010) have provided evidence for relationships between teacher-student relationships and student success. Additionally, Young et al. (2013) showed that AT students felt their relationships with their preceptors and peers encouraged them to persist in their AT program. Even negative relationships with preceptors were related with intentions to leave, causing AT students to not want to continue in their programs. However, Young et al. also showed that despite some of the negative relationships, there were even
greater positive relationships, including relationships with peers, that encouraged AT students to want to continue in their AT programs. The lack of significance between these variables in this study may be because the relatedness subscale asked participants about their relationships with their AT faculty and preceptors. These relationships may have less of an effect on persistence and intentions to leave than relationships with their peers. Young et al. showed that AT students who persisted described feelings of family between their classmates. Therefore, it may be the relationships AT students have with their peers that increases measures of student success, such as persistence.

Again, it must be noted that all three psychological needs (autonomy, competence, and relatedness) were correlated with measures of student success. Therefore, it should be reiterated that although these variables were correlated, these relationships may not have been linear, causing the predictive relationships to be insignificant.

**Indirect Predictors**

Using self-efficacy, types of motivation (controlled and autonomous), and identity (academic and athletic trainer) as mediating variables, results showed that 1) autonomy, through controlled motivation, was a significant negative predictor of intentions to leave, 2) competence, through autonomous motivation, was a significant positive predictor of persistence and perceived academic performance and a significant negative predictor of intentions to leave, and 3) competence, through academic identity was a significant positive predictor of GPA and through athletic trainer identity a significant negative predictor of GPA. Therefore, competence was the only psychological need that was either a direct predictor or indirect predictor of all of the measures of student success that were used in the
study (persistence, intentions to leave, perceived academic performance, and GPA).

The first indirect relationship showed that autonomy was a negative predictor of intentions to leave through controlled motivation. Therefore, the higher the autonomy, the lower their controlled motivation and the less likely their intentions to leave. Niemiec and Ryan (2009) showed that autonomy was a vital determinant of autonomous motivation and that the more autonomy they had, the less they aligned their motives with external rewards or factors. Additionally, Niemiec and Ryan showed that autonomy was a significant indicator of low levels of controlled motivation, supporting the relationship between autonomy and controlled motivation. Finally, Pelletier et al. (2001) showed that students who drop out have higher levels of controlled motivation than students who persist. Studies such as Niemiec and Ryan and Pelletier et al. support the findings of the current study, showing a clear indirect path from autonomy to intentions to leave through controlled motivation. Therefore, if AT program faculty and preceptors wish to decrease intentions to leave, they should focus on decreasing levels of controlled motivation by developing greater feelings of autonomy.

Results of the path analysis also showed that competence was an indirect predictor of persistence, intentions to leave, and perceived academic performance through autonomous motivation. This finding supported the theory that types of motivation are more able to predict measures of student success that are based on perception rather than actual academic performance. Niemiec and Ryan (2009) showed that students who had higher perceived competence found more enjoyment in the class material and reported increased autonomous motivation. Young et al. (2013) and Zainuddin and Perera (2019) also supported the finding of the current study, showing that when students feel more competent in their skills
and knowledge, their autonomous motivation increases and they are more likely to persist, less likely to drop out, and have more positive feelings about their performance. Studies such as Niemiec and Ryan, Young et al., and Zainuddin and Perera showed support for the indirect relationship between competence and persistence, intentions to leave, and perceived academic performance through autonomous motivation. Therefore, increases in measures of student success based on perception (persistence, intentions to leave, and perceived academic performance) may be caused by the increased internal or autonomous factors that occur as a result of feelings of competence.

The final indirect paths showed that competence was also a predictor of GPA, positively through academic identity and negatively through athletic trainer identity. This finding caused a firm separation between the two AT student identities. Cruess et al. (2014) and Jensen and Jetten (2016) supported the relationship between competence and identity, showing that as competence and confidence in skills and knowledge grow, one is more able to internalize their role, increasing their identity. As it becomes more important to one’s sense of self to be a high achiever and perform well academically, their academic identity will become stronger (Yukhymenko-Lescroart, 2014) and their GPA will increase (Lounsbury et al., 2005). Findings from Cruess et al., Lounsbury et al. (2005) and Yukhymenko-Lescroart (2014) supported the findings from the current study, explaining the indirect relationship between competence and GPA through academic identity.

The current study also showed that as students grow more competent in AT skills and knowledge, their professional identity as an athletic trainer increases, decreasing their GPA. Results from Cruess et al. (2014) also applied to athletic trainer identity, showing that as competence and confidence grows, students are
more able to internalize their role. In the case of AT skills and knowledge, their ability to practice their AT skills and knowledge in real-life situations in their clinical experiences may cause them to focus more on their athletic trainer identity. This finding is exacerbated by the fact that students who complete clinical experiences in addition to their academic coursework place more emphasis and see more benefit in the knowledge and skills they are learning through their clinical experiences rather than their academic coursework (Corlett, 2000). Therefore, AT students may place a greater importance on their clinical skills and knowledge, creating stronger athletic trainer identities and placing less importance on their academic standards, including their GPA’s. Therefore, findings from Cruess et al. may explain the negative predictive relationship between competence and GPA through athletic trainer identity.

Notably, there was no indirect predictive relationship between relatedness and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). Studies have shown that when students feel related to their faculty, staff, and peers, they are more confident in their abilities (Hassel & Ridout, 2018; Komarraju et al., 2010), they have increased intrinsic motivation (Zainuddin & Perera, 2019), and they have higher identity (Hernandez et al., 2017), all leading to increased persistence and academic performance; suggesting that there should be an indirect relationship between relatedness and measures of student success through self-efficacy, autonomous motivation, and identity. With the strength and number of indirect relationships between competence and measures of student success, it is possible that the significance was drawn away from relatedness and other variables in the study, creating more variance and a non-linear relationship.
In sum, it can be argued that the most significant predictors of measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) was competence, although there is evidence for the importance of autonomy as well.

**Implications for Practice**

The results of this study may allow AT program faculty and preceptors to increase measures of student success (persistence, intentions to leave, perceived academic performance, and GPA) by creating environments where AT students feel competent and confident in their AT knowledge and skills and are able to make independent choices.

For the current study, competence was one of the most significant predictors of measures of motivation as well as measures of student success (persistence, intentions to leave, perceived academic performance, and GPA). While autonomy and relatedness significantly predicted at least one measure of motivation, competence was a significant predictor of almost all measures of motivation, except for controlled motivation. Therefore, increasing competence in AT students may increase self-efficacy, autonomous motivation, academic identity, and athletic trainer identity. Sweet et al. (2012) defined competence as the ability to successfully and effectively complete a task. Young et al. (2013) showed that allowing AT students to practice their AT skills and knowledge in real-life situations would increase AT student competence. Therefore, to increase competence, AT students should be given ample opportunities to practice the skills they are learning in both the classroom and in their clinical experiences. Increased competence may increase AT student self-efficacy, autonomous motivation, academic identity, and athletic trainer identity.
Results of the current study also showed that autonomous motivation was the strongest predictor of measures of student success, including persistence, intentions to leave, and perceived academic performance. Niemiec and Ryan (2009) showed that as student’s motives for participation aligned more with autonomous or internal rewards such as personal enjoyment, personal interest, and alignment with personal goals, their autonomous motivation increased. Pelletier et al. (2001) also showed that as autonomous motivation increased, participants were more likely to persist and less likely to drop out. To increase autonomous motivation, Ryan and Deci (2019) showed that one should increase levels of psychological needs (autonomy, competence, and relatedness). However, the current study showed that the most significant predictor of autonomous motivation in AT students was competence. Therefore, by increasing feelings of competence, AT program faculty and preceptors may be able to increase autonomous motivation, increasing persistence, decreasing intentions to leave, and increasing perceived academic performance.

In addition to increasing autonomous motivation by increasing feelings of competence, AT program faculty and preceptors may be able to increase autonomous motivation by increasing AT student identity. Autonomous motivation includes not only intrinsic motivation, but types of extrinsic motivation that have to do with sense of self (Deci & Ryan, 2008). Therefore, increasing one’s sense of self by acknowledging and creating a strong identity may also increase autonomous motivation. As AT student motivation becomes more aligned with the “sense of self,” their motivational factors that are dependent on others, controlled motivation, will decrease. Results of the current study showed controlled motivation was a positive predictor of intentions to leave. Therefore, if AT students are motivated by factors other than themselves, they are more likely
to drop out of their AT programs. To decrease intentions to leave, AT program faculty and preceptors should decrease controlled motivation by increasing autonomous motivation.

Additionally, increasing academic identity will also increase measures of student success. As shown in Yukhymenko-Lescroart (2014), it is possible to have multiple identities. Because AT students are completing academic coursework and clinical experiences, they may acknowledge both academic and athletic trainer identities. The results of the current study, however, showed that academic identity was a positive predictor of GPA while athletic trainer identity was a negative predictor of GPA. Corlett (2000) showed that students who are in programs where they are required to complete both academic coursework and clinical experiences, place more of an emphasis on what they are learning in their clinical experiences because they perceive that those experiences will help them more in their future careers. This emphasis on clinical experiences over academic coursework may be the reason AT students have higher athletic trainer identity, negatively affecting their GPA. AT program faculty and preceptors should draw connections between what the student are learning in the classroom and how they can apply those theories and skills in their clinical experiences. This may make AT students see an importance in both academic coursework and clinical experiences. As AT students feel an importance to do well in school, their academic identity will increase, hopefully increasing their actual academic performance, measured by GPA.

The results of the current study not only showed that competence was an important predictor of measures of motivation, such as self-efficacy, autonomous motivation, and identity, but results also showed that competence was a direct predictor of persistence and perceived academic performance. Studies have shown that when AT students feel their clinical experiences offer meaningful
opportunities to practice the theories and skills they are learning in the classroom, they are more confident in their performance and are more likely to persist (Young et al., 2013). Young et al. (2013) supported the direct relationships between competence and measures of student success such as persistence and perceived academic performance.

Finally, findings from the current study showed autonomy to be one of the variables that may need to be increased in AT students. Autonomy by definition is the ability to make choices, or the student’s perception that they are able to make their own choices (Sweet et al., 2012). Although the CAATE requirement is that AT students be directly and constantly supervised by their preceptors (Scribner & Trowbridge, 2009), creating interdependence between the preceptors and the AT students, AT program faculty and preceptors may be able to place students in positions where they can practice making decisions for their patients. For example, rather than telling their AT students what treatments to provide, or what tests to complete, preceptors can allow students to make these decisions and make corrections as needed. Additionally, Zaiuddin and Perera (2019) provided evidence for increasing autonomy and competence through a flipped-classroom approach where students learn and study on their own outside of the classroom and then are engaged in discussion and demonstration in the classroom and in their clinical experiences. Therefore, outside of the classroom and clinical experiences, AT students would be able to choose how to research and learn about AT skills and knowledge that would allow them to perform well in the classroom and in their clinical experiences. Young et al. (2013) also showed that AT students should be placed in positions that would mimic real-life situations they would encounter after entering the field of AT. This not only includes having encounters with real-life patients who have real injuries, but also includes the ability to make
decisions. Increasing autonomy may help AT students feel more confident in their decisions and ability to be athletic trainers after graduation (Young et al., 2013). Increasing AT student autonomy would not only increase self-efficacy, autonomous motivation, and athletic trainer identity, but would also increase persistence, perceived academic performance, and possibly GPA (Ryan & Deci, 2019; Young et al., 2013).

In sum, results of the current study showed that AT program faculty and preceptors should make an effort to increase both competence and autonomy in AT students. Both of these psychological needs can be increased by creating opportunities for AT students that would a) allow AT students to successfully practice and complete the skills they are learning in real-world situations similar to ones they will experience after graduation, b) allow AT students to make decisions regarding patient care, and c) allow AT students to have opportunities to make decisions regarding their learning experiences, possibly by utilizing a flipped-classroom approach. Increasing autonomy and competence may increase autonomous motivation and academic identity, increasing measures of student success, including persistence, perceived academic performance, and GPA and decreasing intentions to leave. Additionally, AT program faculty and preceptors should draw connections between academic coursework and clinical experiences, keeping students from placing an emphasis on clinical experiences over their academic coursework. Seeing the importance of both clinical experiences and academic coursework may increase AT student’s GPA while also maintaining a high academic and athletic trainer identity.

**Limitations**

One of the main limitations of the study was the cross-sectional design, which was used to determine the relationships between the variables in the study.
Because in a cross-section design, information is collected from a group of participants at one point in time, causality cannot be established between the studied variables (Kesmodel, 2018).

An additional threat to internal validity included memory bias, which is the possibility that participants were unable to remember details of events or that participants remember details of events differently than what actually occurred (Lavrakas, 2008). Because some of the participants (8.4%) in the study were recent graduates who were not currently enrolled in an AT program, these participants answered questions based on previous experiences. Therefore, participant’s responses may have been more or less favorable now that they are further removed from their AT programs.

Response bias, or the possibility that participants were answering questions untruthfully (Lavrakas, 2008), was another limitation to the study. In addition to response bias, social desirability bias, or participants answering questions untruthfully to make them look more desirable or favorable to others (Lavrakas, 2008), was also considered a limitation to the study. Although response bias and social desirability bias were limitations of the study, there was no reason to believe participants intentionally answered questions untruthfully. However, because of these types of response biases, results may have been skewed toward the positive variables in this study, making the participants look more motivated or successful.

Participant demographics were also considered a limitation to the study. Although current demographic information for AT students could not be found, demographic data collected by the NATA in 2016 showed that NATA members during that academic year consisted of 54.5% females and 45.4% males (NATA, 2016). Participants of the current study mostly self-identified as females (76.6%),
showing that the participants in the study may not be an accurate representation of the AT student population.

An additional limitation of the study was the context within which the study was conducted. Due to COVID-19, educational experiences were altered for students, creating the possibility that some of the participants of this study were completing courses and clinical experiences virtually rather than in-person. These changes in coursework and clinical experiences were dependent on the decisions of individual universities and AT programs around the world and were based on state/country guidelines for COVID-19. Because participants of this study were from all over the world, it is difficult to say exactly how COVID-19 affected these educational experiences, and how these experiences affected participant responses.

The final limitation was the restricted timeline of the study. Due to the dissertation requirements for completion, CAATE measurements of AT student success such as retention and graduation rates, post-graduation employment rates, first-time BOC pass rates, and BOC pass rates regardless of number of attempts (CAATE, n.d.-e) were not able to be collected.

**Future Direction**

Future studies can build on the results from the current study to test whether the correlational and predictive relationships can be confirmed in experimental studies, designed to test for causality. Future studies utilizing an experimental design might introduce the flipped classroom approach to one set of participants, allowing those students to spend class time practicing and demonstrating their AT skills and knowledge while other students participate in a traditional classroom approach. Another option would be to introduce increased levels of autonomy in one group of participants by allowing those students to make choices regarding their learning environment and decisions about patient
care may also show differences between participant groups. Differences between the participants groups may show causality, allowing future researchers to determine whether psychological needs cause changes in measures of motivation and student success.

Utilizing a mixed-methods approach that would incorporate interviews, focus groups, and field observations may reduce the risk of memory bias, response bias, and social desirability bias, and allow future researchers to fully conceptualize the AT student experience. Additionally, a longitudinal study following a cohort of participants would allow future researchers to see how these variables would affect participants over time. This might help draw closer, more significant connections between the variables.

Collecting demographic data about current AT students may allow future researchers to study participants that are more representative of the AT student population. An extended timeline for the study may also allow future researchers to continue collecting data until there is a sample that is representative of the AT student population.

Due to COVID-19, it is likely that participants were completing academic coursework and clinical experiences virtually. Completing the study in a more typical semester might be helpful in showing what level of variables would be in a normal, more typical, AT program.

An increased timeline for data collection would allow future researchers to design a study that includes measures of AT student success that are more aligned with CAATE program outcomes, including first-time BOC pass rates and post-graduation employment rates.

Additionally, comparing levels of psychological needs, measures of motivation, and measures of student success between different groups of AT
students (e.g., genders, ethnicities, geographical location) may be valuable information for future researchers to study as well.

Lastly, it may be beneficial for future researchers to study how psychosocial factors are related to measures of student success in a general higher education student population rather than limiting the participants to AT students.

**Conclusion**

Many AT programs are unable to meet the CAATE accreditation standards that are based on measures of student success, causing them to lose their accreditation. Studies have shown that psychosocial factors such as psychological needs, self-efficacy, types of motivation, and identity may be attributed to increasing measures of student success such as persistence and academic performance. Therefore, the purpose of this study was to examine the correlational and predictive relationships between psychological needs (autonomy, competence, and relatedness), self-efficacy, types of motivation (controlled and autonomous), identity (academic and athletic trainer), and measures of student success (persistence, intentions to leave, perceived academic performance, and GPA).

Findings of the study showed relatively lower levels of autonomy among AT students compared with the other psychological needs, competence and relatedness. Increasing feelings of autonomy by allowing AT students to make more decisions in their academic coursework and clinical experiences may increase self-efficacy, autonomous motivation, and identity, increasing measures of student success. One of the most significant results of the study showed that competence was a significant predictor of several mediating motivation variables as well as all measures of student success either directly or indirectly through autonomous motivation and identity (academic and athletic trainer). Therefore, AT program faculty and preceptors may be able to increase measures of student success.
success by increasing competence. As a result of increased feelings of competence, AT students’ autonomous motivation and identity may also increase.

To increase competence, it would be beneficial for AT faculty and preceptors to allow students to practice and successfully complete the AT skills they are learning both in the classroom and in their clinical experiences. It would also be beneficial for AT 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 that students place on clinical experiences, increasing GPA while also allowing students to have a high academic and athletic trainer identity.

Practical implications for the study included, a) AT faculty and preceptors allowing AT students to make decisions regarding patient care b) allowing AT students to have more control of and make decisions regarding their learning experiences, and c) allowing AT students to practice and successfully complete the skills they are learning in the classroom and in their clinical experiences. The recommendations above would allow AT students to feel more confident in their abilities and would increase AT student autonomous motivation and academic and athletic trainer identities. Because of the correlational and predictive relationships, increasing these variables may have positive effects on measures of student success, such as persistence, perceived academic performance, and GPA.

Future researchers may be able to apply the findings of the current study to other measures of AT student success, such as scores on the BOC examination. If AT program faculty and preceptors are able to increase measures of student success in AT students, they may be able to maintain their CAATE accreditation and ensure their students that their AT program will adequately prepare them for their long-awaited futures as athletic trainers.
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JASP Team (2020). JASP (Version 0.14.1)[Computer software].


https://www.nata.org/about/athletic-training/obtain-certification

https://www.nata.org/about/strategic-alliance


APPENDIX A: PERCEIVED CHOICE SUBSCALE

Perceived Choice Subscale

As you answer the following questions, think about your overall experiences in the athletic training program, including what you are required to learn in your academic courses and what you are required to do in your practicum courses and clinical rotations.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe I had some choice about doing what is required of me in the athletic training program.</td>
<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>2. I felt like it was not my own choice to do what is required of me in the athletic training program.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>7</td>
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<tr>
<td>3. I didn’t really have a choice about doing what is required of me in the athletic training program.</td>
<td>1</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>4. I felt like it was mandatory to do what is required of me in the athletic training program.</td>
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<td>4</td>
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<tr>
<td>5. I did what is required of me in the athletic training program because I had no choice.</td>
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<td>6</td>
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<tr>
<td>6. I did what is required of me in the athletic training program</td>
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<tr>
<td>7. I did what was required of me in the athletic training program because it was mandatory.</td>
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APPENDIX B: PERCEIVED COMPETENCE SUBSCALE

Perceived Competence Subscale

As you answer the following questions, think about your experiences both in class and in your clinical rotations, including coursework, written examinations, practical examinations, proficiencies/competencies, and patient encounters (treatments, injury/illness evaluations, rehabilitations, etc.).

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<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1. I think I am pretty good at the required components of the athletic training program.</td>
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<tr>
<td>2. I think I complete the required components of the athletic training program pretty well, compared to other students.</td>
<td>1</td>
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<td>3. After working on the required components of the athletic training program for a while, I feel pretty competent.</td>
<td>1</td>
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<td>5</td>
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<tr>
<td>4. I am satisfied with how I perform the required components of the athletic training program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>5. I am pretty skilled when it comes to the required components of the athletic training program.</td>
<td>1</td>
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</table>
6. When thinking of the required components of the athletic training program, there is a lot that I do very well.

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APPENDIX C: RELATEDNESS SUBSCALE

Relatedness Subscale

As you answer the following questions, think about your experiences with athletic training program faculty and clinical preceptors.

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<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>1. I felt really distant to a majority of my athletic training program faculty and clinical preceptors.</td>
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<td>2. I really doubt I would ever be friends with a majority of my athletic training program faculty and clinical preceptors.</td>
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<td>3. I felt like I could really trust the majority of my athletic training program faculty and clinical preceptors.</td>
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<td>4. I’d like a chance to work with and/or learn from a majority of my athletic training program faculty and clinical preceptors more often.</td>
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<td>2</td>
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<td>4</td>
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<tr>
<td>5. I’d really prefer not to work with and/or learn from a majority of my athletic training program faculty and clinical</td>
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6. I don’t feel like I could trust the majority of my athletic training program faculty and clinical preceptors.

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7. It is likely that I could become friends with a majority of my athletic training program faculty and clinical preceptors if we continued to interact a lot.

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8. I feel close to a majority of my athletic training program faculty and clinical preceptors.

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APPENDIX D: PERCEIVED COMPETENCE FOR LEARNING

Perceived Competence for Learning

As you answer the following questions, think about your educational experiences in both your academic courses and your clinical rotations.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel confident in my ability to learn the material in the athletic training program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. I am capable of learning the material in the athletic training program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. I am able to achieve my goals in the athletic training program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. I feel able to meet the challenge of performing well in the athletic training program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX E: LEARNING MOTIVATION SCALE

Learning Motivation Scale

I am in my athletic training program...

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ... but I actually do not know why.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. ... but I think it is a waste of time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. ... but I do not understand why I should do my best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. ... but I do not see the advantage of doing it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. ... because others (parents, mentors, etc.) tell me I am supposed to be.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. ... because others (parents, mentors, etc.) want me to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. ... because others (parents, mentors, etc.) are forcing me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8. ... because I would feel guilt if I wasn't.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. ... because I would feel ashamed if I wasn't.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10. ... because I want others (parents, mentors, etc.) to think I am smart.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11. ... because I want to show others (parents, mentors, etc.) that I am good.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12. ... because I want to learn new things pertaining to athletic training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>13. ... because I think it is important for my future career goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>14. ... because I find it useful for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>15. ... because I find it important for me as a person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>16. ... because I find it very interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>17. ... because I enjoy doing it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>18. ... because it intrigues me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>19. ... because I like doing it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX F: ACADEMIC AND ATHLETIC IDENTITY SCALE AND ATHLETIC TRAINER IDENTITY SCALE

Academic and Athletic Identity Scale and Athletic Trainer Identity Scale

Imagine that the figure below is a diagram of you and characteristics that are central to your sense of who you are as a person.

Please think about this figure as you rate the items below. Most people will use a variety of answers, rating some qualities as very central and others as not central to their sense of self. To get a good idea of how you will compare and rate the different qualities, please read all of the items before you go back to rate each of them.

Please indicate how central to your sense of who you really are is each of the following characteristics. If a quality seems good or desirable to you but is not an important part of who you are, you should answer “Not central to who I really am”. Select the response that best represents your opinion about each characteristic being central to who you are.

How central to your sense of who you really are is each of these characteristics:

<table>
<thead>
<tr>
<th></th>
<th>Not Central</th>
<th>Slightly Central</th>
<th>Somewhat Central</th>
<th>Central</th>
<th>Very Central</th>
<th>Extremely Central</th>
<th>The Central Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Being a capable student.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. Being satisfied with my academic work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3. Doing well in school.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. Getting good grades.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. Having a high GPA.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. Being a capable athletic trainer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. Being proud to be an athletic trainer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8. Being satisfied with the athletic training services that I provide.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. Doing well when rendering athletic training services.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
### APPENDIX G: ACADEMIC PERSISTENCE

#### Academic Persistence

As you respond to the following questions, please consider your time in the athletic training program, both in academic courses and in your clinical rotations.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. When I become confused about something I am learning in the athletic training program, I go back and try to figure it out.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>2. Regardless of whether or not I like what I am learning in the athletic training program, I work my hardest to learn it.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>3. When something I am learning in the athletic training program gets difficult, I spend extra effort trying to understand it.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>4. I try to learn all of the material in the AT program “inside and out,” even if it is boring.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
APPENDIX H: INTENTIONS TO LEAVE SCALE

Intentions to Leave

As you respond to the following questions, please consider your time in your athletic training program.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have seriously considered dropping out of college.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. I have seriously considered changing my major.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. I may drop out of college if there are good paying jobs available.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX I: PERCEIVED ACADEMIC PERFORMANCE SCALE

Perceived Academic Performance Scale

As you respond to the following questions, please consider your performance in your athletic training program, both in your academic courses and in your clinical rotations.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I meet the official performance requirements expected out of an athletic training student.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. I adequately complete duties assigned to me in the classroom and in the clinic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. I fulfill responsibilities specified in my course outlines (e.g., study, homework, readings, papers) and given to me by my clinical preceptors (e.g., clinical skills).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. I perform tasks that are expected of me in the classroom and in the clinic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. My performance in the classroom and in the clinic are beyond demands.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX J: DEMOGRAPHIC AND PROGRAM INFORMATION

Demographic and Program Information

1. To which gender identity do you most identify?
   O Male
   O Female
   O Other ___________________________

2. Ethnicity (choose all that apply)
   O White
   O Hispanic or Latino
   O Black or African American
   O Native American or American Indian
   O Asian
   O Native Hawaiian or Pacific Islander
   O Other _______________________________

3. Geographic Location
   O U. S. Based
   O Non-U.S. Based

4. Are you a current student in an athletic training program?
   O Yes, I am a current student in an athletic training program
   O No, I have already graduated from my athletic training program

5. What level of student are you in your athletic training program?
   O This is my first year in my athletic training program.
   O This is my second year in my athletic training program.
   O This is my third year in my athletic training program.
   O This is my fourth year in my athletic training program.
   O I have graduated from my athletic training program.
   O Other _______________________________

6. What is the classification of your current athletic training program?
   O Undergraduate
   O Entry-level Masters
○ Post-professional Masters
○ Post-professional Doctoral
○ I am not currently a student in an athletic training program
○ Other ________________________________

7. What is your current grade point average (GPA)? If you are a recently graduated student or a first semester graduate student, please provide the cumulative GPA from your most recently completed degree.

_____________________________________

8. Are you currently a certified athletic trainer?
   ○ No, I have not taken the BOC
   ○ No, I have taken the BOC, but I did not pass
   ○ Yes, I took the BOC and passed

9. If you are currently a certified athletic trainer, how many attempts did it take you to pass the BOC?
   _____________________________________
APPENDIX K: INFORMED CONSENT FORM

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

Consent to Participate

You have been invited to participate in a study about athletic training student confidence, motivation, and identity. This study is led by Brittany A. Clason, MA, ATC, Dr. Mariya Yukhymenko, Dr. Christian Wandeler, and Dr. Scott Sailor, ATC. As athletic training students, your responses may be valuable for athletic training program faculty, staff, preceptors, and future athletic training program students.

All participants must be at least 18 years old.

Participants will be asked to complete a 74-item questionnaire that should take 8-10 minutes to complete. Regardless of level of participation, all individuals will have the chance to be entered into a drawing to receive a $50 Amazon gift card. After submitting the survey, you will be given a link to enter your email address for the drawing. Because we do not know how many individuals this will be, we do not know the odds of winning this prize. Prize winners will be notified by email in January 2021.

There are no risks associated with participating in this study, however participation in the study could improve understanding of athletic training student identity, confidence, and motivation. Participation in the study is voluntary. You are under no obligation to be a participant and, if at any time, you do not feel comfortable with a question being asked, you may skip the item or withdraw from the study.

The Committee on the Protection of Human Subjects at California State University, Fresno has reviewed and approved the present research study. All information you give will be kept strictly confidential by the study’s investigator. Your privacy will be protected to the maximum extent allowable by law. If you have any questions about this study, please contact Brittany A. Clason, MA, ATC at bclason@mail.fresnostate.edu. If you have any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any respect of this study, you may contact – anonymously, if you wish – Dr. Jennifer Randles, Fresno State Chair of the Committee on the Protection of Human Rights at (559) 278-2234.

☐ I am at least 18 years old and agree to participate in this study.
☐ I am NOT 18 years old OR I do NOT agree to participate in this study.
## APPENDIX L: CORRELATIONS IN PATH ANALYSIS

### Parameter Estimates for Tested Model

<table>
<thead>
<tr>
<th>Correlating Variables</th>
<th>B (SE)</th>
<th>95% CI</th>
<th>p</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy and Academic Identity</td>
<td>.02 (.06)</td>
<td>[.11, .14]</td>
<td>.812</td>
<td>.03</td>
</tr>
<tr>
<td>Self-Efficacy and Athletic Trainer Identity</td>
<td>-.00 (.03)</td>
<td>[-.06, .05]</td>
<td>.899</td>
<td>-.01</td>
</tr>
<tr>
<td>Self-Efficacy and Controlled Motivation</td>
<td>-.09 (.04)</td>
<td>[-.16, -.02]</td>
<td>.013</td>
<td>-.23</td>
</tr>
<tr>
<td>Self-Efficacy and Autonomous Motivation</td>
<td>.05 (.02)</td>
<td>[.01, .10]</td>
<td>.029</td>
<td>.18</td>
</tr>
<tr>
<td>Controlled Motivation and Autonomous Motivation</td>
<td>-.17 (.05)</td>
<td>[-.26, -.08]</td>
<td>&lt; .001</td>
<td>-.43</td>
</tr>
<tr>
<td>Controlled Motivation and Academic Identity</td>
<td>-.02 (.04)</td>
<td>[-.14, .09]</td>
<td>.676</td>
<td>-.04</td>
</tr>
<tr>
<td>Controlled Motivation and Athletic Trainer Identity</td>
<td>-.01 (.04)</td>
<td>[-.09, .08]</td>
<td>.848</td>
<td>-.02</td>
</tr>
<tr>
<td>Autonomous Motivation and Academic Identity</td>
<td>.00 (.03)</td>
<td>[-.06, .07]</td>
<td>.971</td>
<td>.00</td>
</tr>
<tr>
<td>Autonomous Motivation and Athletic Trainer Identity</td>
<td>.07 (.04)</td>
<td>[-.01, .15]</td>
<td>.080</td>
<td>.17</td>
</tr>
<tr>
<td>Academic Identity and Athletic Trainer Identity</td>
<td>.25 (.06)</td>
<td>[.13, .37]</td>
<td>&lt; .001</td>
<td>.36</td>
</tr>
<tr>
<td>Persistence and Intentions to Leave</td>
<td>.04 (.05)</td>
<td>[-.06, .15]</td>
<td>.444</td>
<td>.06</td>
</tr>
<tr>
<td>Persistence and GPA</td>
<td>.03 (.02)</td>
<td>[.00, .06]</td>
<td>.069</td>
<td>.15</td>
</tr>
<tr>
<td>Persistence and Perceived Academic Performance</td>
<td>.03 (.03)</td>
<td>[.03, .08]</td>
<td>.363</td>
<td>.08</td>
</tr>
<tr>
<td>Intentions to Leave and GPA</td>
<td>.03 (.03)</td>
<td>[-.08, .02]</td>
<td>.244</td>
<td>-.10</td>
</tr>
<tr>
<td>Intentions to Leave and Perceived Academic Performance</td>
<td>.00 (.05)</td>
<td>[.09, .10]</td>
<td>.928</td>
<td>.01</td>
</tr>
<tr>
<td>GPA and Perceived Academic Performance</td>
<td>.04 (.01)</td>
<td>[.02, .06]</td>
<td>&lt; .001</td>
<td>.28</td>
</tr>
</tbody>
</table>
### APPENDIX M: DIRECT RELATIONSHIPS IN PATH ANALYSIS

**Parameter Estimates for Tested Model**

<table>
<thead>
<tr>
<th>Direct Predictors</th>
<th>$B$ (SE)</th>
<th>95% CI</th>
<th>$p$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy $\rightarrow$ Self-Efficacy</td>
<td>.14 (.05)</td>
<td>[.05, .23]</td>
<td>.003</td>
<td>.19</td>
</tr>
<tr>
<td>Competence $\rightarrow$ Self-Efficacy</td>
<td>.51 (.07)</td>
<td>[.38, .65]</td>
<td>&lt;.001</td>
<td>.71</td>
</tr>
<tr>
<td>Relatedness $\rightarrow$ Self-Efficacy</td>
<td>.16 (.05)</td>
<td>[.06, .25]</td>
<td>.001</td>
<td>.22</td>
</tr>
<tr>
<td>Autonomy $\rightarrow$ Controlled Motivation</td>
<td>-.22 (.06)</td>
<td>[-.33, -.11]</td>
<td>&lt;.001</td>
<td>-.27</td>
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