

2015

An Explanatory Sequential Mixed-Method Investigation of Athletic Training Students' Perceptions of Preceptor Mentorship and Board of Certification Exam Success

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An Explanatory Sequential Mixed-Method Investigation of Athletic Training Students'
Perceptions of Preceptor Mentorship and Board of Certification Exam Success

By
Sabrina R. Fordham

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2015

Approval Page

This dissertation was submitted by Sabrina Fordham under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Acknowledgements

This dissertation is the result of the unfailing support of many dear people, and I'd be ungracious not to acknowledge them. The most supportive people in my life have always been my parents. Without their endless love and encouragement, I'd probably never have even pursued a doctorate. The promise of their pride continues to motivate me to become more than I ever dreamed was possible, and for that, I am eternally grateful. Although he'll never be the loudest in the cheering section, Alex certainly leads the fan club. He has been my rock, my paperclip, my enabler, my soundboard, my chef, my maid, and the most patient person I've ever met. His loving support encouraged me through the moments I didn't want to press forward. Words cannot express my appreciation, so I'll try every day to let you know. I love you all!

Every journey needs a good travel partner, and Elizabeth has been my road trip buddy. Whether I needed motivating or distraction, she has done it all. If I've learned anything over the past 2 years, it's that when they all said we were crazy, they were right.

I also owe a debt of gratitude to the sports medicine staff members who provided support and coverage so I could attend classes, to the athletic training students who were my muses, and to the athletic training faculty who encouraged me and provided me with opportunities to learn and to grow. I am thankful for each of you.

Abstract

An Explanatory Sequential Mixed-Method Investigation of Athletic Training Students' Perceptions of Preceptor Mentorship and Board of Certification Exam Success.
Fordham, Sabrina, 2015: Dissertation, Gardner-Webb University, Mentoring/BOC Success/Clinical Education/Preceptor Selection/Preceptor Training

The purpose of this study was to investigate the relationship between preceptor mentorship to athletic training students and first-attempt success on the Board of Certification (BOC) exam. Adult learning theory provides the theoretical framework. The study followed a mixed-method approach, using a focus-group discussion to gain a qualitative understanding of results from the online survey.

All candidates for the exam in November 2014, February 2015, and April 2015 were invited to complete the researcher-developed Athletic Training Preceptor Mentoring Traits survey. Weekly email reminders were sent until an acceptable response rate had been achieved. After the close of each survey window, the data were analyzed for each exam cohort and for the aggregate. A focus group from the sample discussed the aggregate data to satisfy the mixed-method design.

The present study found significant associations between all 25 Likert-type mentoring traits and first-attempt success on the BOC exam. Independent sample *t* tests also revealed significant differences between the overall Likert-type scale score for first-attempt pass candidates and candidates who did not pass the BOC exam on the first attempt. Mentor recognition was most prevalent among students under 30 years of age, but no significant difference was found between overall Likert-type scale scores for preceptors of undergraduate and graduate students. The results of the present study indicate that athletic training students who perceive mentoring characteristics in their most influential preceptors pass the BOC exam on the first attempt more frequently than candidates who do not perceive mentoring characteristics in their most influential preceptors. This association may be a function of a strong interpersonal relationship that facilitates the students' self-confidence for clinical skills.

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Chapter 1: Introduction

Despite athletic training students (ATs) spending at least 800 hours in clinical education settings over the course of their academic career (Susi, 2010), only approximately 80% of more than 3,000 candidates pass the Board of Certification (BOC) exam for entry-level athletic trainers (ATs) on the first attempt each year (BOC, 2013). Athletic training educators are challenged to identify factors that contribute to candidate success on the BOC exam, because the quality of athletic training programs (ATPs) is often judged by the program's first-time pass rate (Murray, 2014). Several attempts have been made to identify factors contributing to BOC exam success, including investigations by Draper (1989); Harrelson, Gallaspy, Knight and Lever-Dunn (1997); Middlemas, Manning, Gazzillo, and Young (2001); and Turocy, Comfort, Perrin, and Gieck (2000). This study investigates preceptor mentoring as a factor in preparing ATs to become certified ATs.

To become a certified AT, a candidate must graduate from an ATP that is accredited by the Commission on the Accreditation of Athletic Training Education (CAATE) and pass the BOC exam to earn the certified AT credential (ATC®) (BOC, 2013). The BOC exam entails 175 questions designed to assess candidate knowledge of the domains of athletic training: injury and illness prevention and wellness protection, clinical evaluation and diagnosis, immediate and emergency care, treatment and rehabilitation, and organizational and professional health and well-being (BOC, 2013). The ATP includes coursework encompassing didactic proficiencies including cognitive, psychomotor, and affective components in addition to clinical experiences that allow ATs the opportunity to develop clinical proficiencies (National Athletic Trainers' Association [NATA], 2014). Currently, CAATE accredits 334 baccalaureate-level

professional programs and 29 postbaccalaureate professional programs (CAATE, 2013). Most commonly, and as a matter of convenience, ATSS' clinical rotations are spent with the ATs on staff at the university or with local schools (Weidner & Laurent, 2001). As Henning and Weidner (2008) reported, only 38% of clinical instructors serve dual appointments in clinical and academic athletic training, suggesting that often preceptors are not faculty in the ATP. Since athletic training curriculum emphasizes preparing clinicians and not educators, many preceptors lack formal training or experience teaching (Susi, 2010). The CAATE currently has minimal regulations for preceptor qualifications beyond state healthcare profession credentialing, although the majority of ATP preceptors are certified ATs (CAATE, 2013). Furthermore, CAATE (2013) only mandates that preceptors "must receive planned and ongoing education from the program designed to promote a constructive learning environment" (p. 5), so preceptor training content may vary between institutions (Hartsell, 2013). The paucity of regulation in this area, considering that ATSS spend an average of more than 800 hours in the clinical setting (Susi, 2010), prompts the question of habits, qualities, or characteristics of preceptors that influence success on the BOC exam.

Statement of the Problem

The Bureau of Labor and Statistics (2013) projected 21% growth in the athletic training profession by the year 2022. Furthermore, the athletic training profession has received increased attention recently relative to the prevention of sports injuries. In July 2014, the Supporting Athletes, Families, and Educators to Protect the Lives of Athletic Youth Act, also known as the SAFE PLAY Act was introduced to Congress as Bill S. 2718 and H.R.5324 (NATA, 2014). Because more than 2.6 million youth ages 0 to 19 years receive emergency treatment annually for sports injuries (Centers for Disease

Control and Prevention [CDC], 2012), the SAFE PLAY Act recommends the CDC work with the Department of Health and Human Services to monitor and prevent sports-related injuries in young active populations. The SAFE PLAY Act recommends these agencies develop guidelines for emergency action plans for athletic events, monitor the incidents and causes of fatalities related to sports participation, and provide education related to common catastrophic sports illnesses and injuries (SAFE PLAY, 2015). Perhaps most important to the athletic training profession, the SAFE PLAY Act recognizes ATs among the healthcare professionals recommended for involvement in sports injury education and prevention efforts at schools. To meet the increasing demand for proficient entry-level professionals to ensure the safety of active students, ATPs must identify ways to prepare ATs to pass the BOC exam on the first attempt (Bowman & Dodge, 2011; Murray, 2014).

Purpose of the Study

The purpose of this study was to investigate the relationship between ATs' perceptions of mentoring and their first-time success on the BOC exam. This study follows an explanatory sequential mixed-methods design, meaning the researcher used data from an online survey to identify topics for further investigation in focus-group discussions (Creswell, 2014). An online Likert-type survey tool developed by the researcher, the Athletic Training Preceptor Mentoring Traits Survey (ATPMTS) measured BOC exam candidate perceptions of mentoring from their preceptors. Several weeks after the survey, online focus-group discussions were conducted to further explain survey results. Both types of data were collected to determine how preceptor mentorship influences first-attempt BOC success.

The role of mentoring has been investigated in athletic training and in other

medical fields such as nursing, physical therapy, and academic medicine and has been associated with increased student self-efficacy for clinical skills (Crosby, 2002; Hayes, 1998; Neal, 2008); socialization into the profession (Hayes, 1998; Hudson, 2002; Panseri, 2005; Pitney, Ehlers, & Walker, 2006); and critical thinking (Pitney & Ehlers, 2004). Several studies have identified preceptor characteristics that ATs and preceptors consider most desirable in clinical education, including giving constructive feedback (Berry, 2001; Curtis, Helion, & Domsohn, 1998; Dondanville, 2005); being available and approachable (Curtis et al., 1998; Mazerolle, Bowman, & Dodge, 2012); communicating clearly and effectively (Curtis et al., 1998; Hartsell, 2013; Hayes, 1998; Michalec, 2012); explaining concepts in great detail (Curtis et al., 1998); modeling the profession (Laurent & Weidner, 2001; O'Brien, 2011; Pitney & Ehlers, 2004); and having strong interpersonal skills (Clemmer, 2012; Phan, McCarty, Mutchler, & Van Lunen, 2012). Pickard (1998) observed that mentoring characteristics in athletic training are the same as mentoring characteristics in other fields (as cited in Pickard, 2003). In fact, Curtis et al. (1998), Mazerolle et al. (2012), and O'Brien (2011) recognized that mentoring is a desirable characteristic of clinical instructors. Burningham, Deru, and Berry (2010) observed that mentoring served as the foundation for the athletic training profession; and Hughes and Berry (2011) suggested that mentoring to millennial students is necessary for their development into proficient practitioners. If mentoring has been associated with vital components of the athletic training profession and if the BOC exam measures candidate abilities as entry-level professionals, then an investigation of the impact of mentoring on BOC exam success as it relates to the production of qualified ATs is appropriate.

Significance of the Study

This study is significant because the process of mentoring as a way to prepare candidates and employees is an important factor in professional preparation and socialization (Ryan & Brewer, 1997). Several studies have identified preceptor characteristics that students perceive to be most beneficial to their growth and success (Curtis et al., 1998; Mazerolle et al., 2012; O'Brien, 2011; Phan et al., 2012; Pitney & Ehlers, 2004), and many of the most desirable preceptor characteristics are consistent with mentoring behaviors. If the results of this study suggest that mentoring to ATSS affects BOC exam success, then ATP administrators might consider selecting preceptors who exhibit those characteristics or incorporating into preceptor training encouragement for and development of mentoring characteristics.

Conceptual Framework

The adult learner theory provides an appropriate framework for studying the ATS-preceptor dyad because both individuals are ultimately adult learners. The andragogical model asserts that adults learn through different processes than young learners. Knowles (1973) proposed the following assumptions when he presented andragogy as a theory of differentiating education for adult learners:

- Throughout maturation, self-concept progresses from dependency to self-direction. Adult learners need to be perceived as self-directing and become resistant and resentful if they are presented information in a more pedagogical manner.
- The prior experiences of adult learners enable them to learn new material through multiple means. Adult learners are experienced learners, and leaders of adults demonstrate respect when they consider the wealth of knowledge

and experience that adult learners possess.

- Adult learners acquire information out of necessity as it relates to their roles in society. This represents an advanced readiness to learn. This tenant of andragogy contrasts to pedagogy in that child learners are ready to learn the information necessary to their “biological and academic development” (Knowles, 1973, p. 47).
- Adult learners are problem-based learners, whereas children are subject-centered learners. Adults enter learning situations to reconcile problems in their immediate lives (Knowles, 1973).

Because adult learners are internally motivated, experienced learners, ATSs benefit from relationships with ATs who are willing to support and nurture student development into competent professionals (Hughes & Berry, 2011).

The application of andragogical principles has become recurrent in athletic training education literature. In 2004, Weidner and Henning wrote that ATSs in clinical experience settings should be regarded as adult learners who have elected to study the profession. Hughes and Berry (2011) explained how the mentoring relationship between an athletic training educator and an ATS helps the millennial student develop into a self-directed learner, a practice that is essential to athletic training professionals’ ongoing development through continuing education. ATSs also appreciate and benefit from open discussion and supportive learning environments in the clinical setting (Mazerolle et al., 2012). These characteristics, along with challenging their learning, have been identified in effective mentoring relationships (Pitney et al., 2006). By recognizing the individualities of adult learners, preceptors can serve as facilitators of ATS learning by granting them greater responsibility and opportunity for their learning and proficiency

(Hughes & Berry, 2011) which may lead to an increased likelihood for success on the BOC exam and more proficient entry-level ATs.

Research Questions

1. To what extent do ATs' recognition of a mentoring relationship with their preceptor, according to the ATPMTS, associate with passing the BOC exam on the first attempt?
2. According to the ATPMTS, which characteristics of mentoring, if any, associate with passing the BOC exam on the first attempt?
3. To what extent does recognition of a mentor associate with passing the BOC exam on the first attempt differ between postbaccalaureate and undergraduate ATs?

Definition of Terms

AT. "Athletic Trainers (ATs) are health care professionals who collaborate with physicians to provide preventative services, emergency care, clinical diagnosis, therapeutic intervention and rehabilitation of injuries and medical conditions" (NATA, 2014, "Athletic Training," para. 1).

Athletic Training Preceptor Mentoring Traits Survey (ATPMTS). The online survey tool developed by the researcher for this study.

BOC. The BOC establishes the standards for athletic training practice and continuing education. This organization provides the only credentialing service for BOC-certified ATs in the United States offering the ATC® credential. Candidates for the BOC exam must earn at least 500 points to successfully pass the exam (BOC, 2013).

CAAHEP. CAAHEP is the acronym for the Commission on Accreditation of Allied Health Education Programs. Contained within this agency was the Joint Review Committee on Educational Programs in Athletic Training (JRC-AT). This organization

served as the accrediting body for ATPs until 2006 when the JRC-AT began operating independent of CAAHEP and changed its name to CAATE (CAATE, 2013).

CAATE. CAATE is the acronym for the Commission on the Accreditation of Athletic Training Education. This organization accredits all professional programs in athletic training, including baccalaureate and postbaccalaureate programs (CAATE, 2013).

Mentor. A certified AT who is identified by the ATS and with whom the student enters an open, trusting, and supportive relationship for the purpose of socializing into the profession based on the professional's ability to effectively model the profession. This definition is operationalized for this study by combining the definitions of "mentor" elaborated by Haley-Andrews (2001), Hayes (1998), Neal (2008), and Pitney and Ehlers (2004).

Mentorship. A personal relationship developed for guidance and instructional purposes in the understanding of a new professional role (Ashburn, Mann, & Purdue, 1987). This is the same definition Pickard (2003) used in his study of the relationship between mentorship and BOC exam success.

Patient base. Patient base refers to the actual patient population at clinical sites where ATs may complete clinical experiences and may be involved in direct patient care (CAATE, 2013).

Preceptor. "A certified/licensed professional who teaches and evaluates students in a clinical setting using an actual patient base" (CAATE, 2013, "Standards," p. 14). CAATE used preceptor to replace the term "approved clinical instructor."

Proficient. For this study, "proficient" is defined as having successfully completed the process to earn the ATC® credential, since passing the exam is the

standard for competent entry-level ATs (BOC, 2013).

Summary

With an increasing demand for ATs comes an increasing demand for ATPs to produce proficient young professionals. Since the competence of an ATS to perform as an entry-level professional is determined by the BOC exam, athletic training educators should place great value on the didactic and clinical preparation of these students. While multiple factors have been investigated for association with exam success, the impact of the mentoring relationship that can develop between an ATS and his or her preceptor has scarcely been the focus of research. Because of the recent emphasis on applying adult learning principles to clinical education (Hughes & Berry, 2011; Weidner & Henning, 2004), the impact of this mentoring relationship on BOC exam success should be investigated.

Chapter 2: Literature Review

Mentoring in healthcare program clinical education has been associated with increased student self-efficacy for clinical skills (Crosby, 2002; Hayes, 1998; Neal, 2008); socialization into the profession (Hayes, 1998; Hudson, 2002; Panseri, 2005; Pitney et al., 2006); and improved critical thinking (Pitney & Ehlers, 2004). The present study used a mixed-methods design to investigate the relationship between mentoring in athletic training clinical education and success on the BOC exam. Adult learner theory provides the framework for this study. This literature review addresses the foundational concepts central to understanding the research problem and prior studies related to the research questions. A review of the BOC exam and factors contributing to BOC exam success follows. Additionally, clinical education in ATPs is reviewed, including an historical overview and recent changes to clinical education. Lastly, definitions and characteristics of preceptorship and mentorship in athletic training clinical education are reviewed.

Adult Learner Theory

The concept of andragogy, the theoretic model of adult learning, was developed in Europe in the 1960s. In 1968, Malcolm Knowles introduced andragogical principles that he had learned from a Yugoslavian educator to the United States as a better model for adult education than the pedagogical model previously in use (Cyr, 1999). Knowles (1973) proposed four assumptions when he introduced the andragogical model to education literature in the United States.

- As adults mature, they become increasingly self-directing.
- Adult learners utilize their previous experiences to facilitate new learning.
- Adults are motivated to learn skills and knowledge necessary to their social

and professional roles.

- Adult learners acquire knowledge to reconcile problems in their immediate lives, and are, therefore, performance-oriented learners (Knowles, 1973).

Knowles further added that adult learners prefer to be active in the process of learning. Self-directed learning appeals to adults and helps them become lifelong learners (Cyr, 1999).

Cyr (1999) observed that theories of adult learning continued to develop through the 1970s and 1980s. She reported supplements to the andragogical model including that

- Adults want to know the purpose and relevance of tasks.
- Adults prefer competency-based learning.
- Individual differences in adults can affect learning achievement.
- Adults prefer to learn at their pace and in their style.
- Adult learners desire to be respected.
- Adults may use self-mentoring strategies (Cyr, 1999).

Cyr (1999) also noted in her overview of adult learning theories that many adult educators in the 1990s offered an additional assumption to Knowles's (1973) initial four—the purpose of adult education is to produce lifelong learners.

Drago-Severson (2009) proposed a new model for leading adult learning based on her experiences working with adult learners in education. She noted the importance of collaboration in facilitating learning and suggested four pillar practices to support adult learning in educational settings—teaming, providing adults with leadership roles, engaging in collegial inquiry, and mentoring. Having adults work in teams creates opportunity for critical reflection and supports collective and individual growth through supports and challenges for each learner's way of knowing (Drago-Severson, 2009).

Drago-Severson explained that providing adults with leadership roles facilitates the development of collective culture by allowing adults, and educators in Drago-Severson's context, to bring three important traits to leadership roles: the ability to enhance culture through building culture with other educators, the ability to improve student learning by preserving the group's commitment to improvement, and the ability to improve instruction through collaboration (p. 112). Drago-Severson recognized the framework for leadership roles that Harrison and Killion (2007) identified—one of these roles includes that of mentor, which Drago-Severson summarized as “guide, role model, and coach, especially for beginning teachers as they enter the field for the first time” (p. 113). Collegial inquiry describes how adults can participate in collaborative reflection and discussion to improve instructional practices by identifying their own assumptions about educational practices and then by finding data to support or modify those understandings. These practices are recognized in adult development literature as supportive (Drago-Severson, 2009). Lastly, Drago-Severson discussed the role of mentoring in adult learning. She explained that mentoring emphasizes private, trusting relationships in which mentors engage with mentees to create environments in which the protégé can share and reflect with a more experienced educator. This provides the novice educator with individualized challenges and supports as he or she develops (Drago-Severson, 2009). These pillar practices provide adults opportunities to collaborate and to question their own assumptions and philosophies, as well as those of their colleagues, about teaching and learning while empowering adults to share decision making and support and to learn together (Drago-Severson, 2009).

Literature on clinical education in healthcare professions is not lacking application of the tenets of adult learning. Totin Meyer (2002) noted that by

incorporating collaboration into adult learning, instructors foster social environments that may enhance learning. In nursing, Ammon-Gaberson (1987) suggested preceptor programs utilize adult learning principles in preceptor training. Weidner and Henning (2004) explained that clinical instructors should regard ATs as adult learners who are motivated to study the athletic training profession. Hughes and Berry (2011) observed that because adult learners are internally motivated and experienced learners, ATs benefit from supportive and nurturing relationships with practicing ATs. By recognizing the individualities of adult learners, preceptors can serve as facilitators of AT learning by granting them greater responsibility and opportunity for their learning and proficiency (Hughes & Berry, 2011) which may lead to increased likelihood for success on the BOC exam and more proficient entry-level ATs.

Mentorship, Mentors, and Mentoring Programs

As a support for human development, mentorship has been recognized since the time of Homer's *Odyssey* when Odysseus asked his counselor and friend, who was the goddess Athena in male form under the name Mentor, to teach and to protect his son, Telemachus. Since then, a mentor has been recognized as someone who serves the same capacities as Mentor's character (Drago-Severson, 2009; Hayes & Gagan, 2005). While the definition of what it means "to mentor" has changed throughout the history of mentoring literature, the core of mentoring remains that it is "a developmental relationship that is embedded within a career context" (Ragins & Kram, 2007, as cited in Drago-Severson, 2009, p. 213). Hayes and Gagan (2005) remarked that the purpose of mentoring is to support a newcomer—be it a student, novice practitioner, or seasoned practitioner who has changed settings—in career advancement and personal development efforts while also furthering their education. They also clarified that a mentorship is

much more personal than other educational relationships. Neal (2008) added that mentorships are voluntary relationships as opposed to the assigned relationships common to clinical education preceptorships. Hayes (1998) iterated that the degree to which preceptors mentor their students may affect patient care, student self-efficacy, and student role competence; and mentoring to millennial students may be vital to their successful development into competent practitioners (Hughes & Berry, 2011). Hayes and Gagan (2005), Neal (2008), and Drago-Severson (2009) also noted that mentoring relationships should be dynamic to address the needs of the mentee throughout their socialization; this student-centered approach to mentorship is recurrent in mentoring literature (Gallo & Siedow, 2003; Phan et al., 2012; Wright, 2009). Hayes and Gagan (2005) explained the stages of mentoring relationships.

- In the initial phase, trust is established, roles are defined, and a strategy for meeting the needs of the mentee is developed. During this phase the mentee longs to feel safe and to belong, while novice mentors may feel role strain.
- In the middle phase, the mentee assumes more independence and autonomy while still utilizing support from the mentor.
- In the final stages of a mentoring relationship, the mentee is proficient and competent, both the mentee and the mentor have attained self-actualization, and the mentee prepares to change roles. This may herald a deeper friendship between the former mentee and mentor or the two may part ways.

Drago-Severson (2009) noted that although mentoring relationships must change with the needs of the mentee, the relationship also serves as a point of continuity while the mentee works to reach equilibrium in his or her new role.

The characteristics of mentors have been delineated in mentoring literature. As

individuals, mentors tend to be self-confident, dynamic, and energetic people who enjoy their profession (Neal, 2008). Neal (2008) also suggested that mentors encourage mutual respect, listen to and answer students' questions carefully, and take responsibility for their own actions; and this mutuality extends to learning, sharing, and growth of both partners in the mentorship (Haley-Andrews, 2001; Hayes, 2001; Neal, 2008). As mentors, instructors should be accessible (Pitney & Ehlers, 2004) and approachable (Mazerolle, Bowman, & Dodge, 2014; Neal, 2008). Nursing literature insists that mentors "look after" students (Neal, 2008) and nurture young practitioners (Dunn, 2012; Gallo & Siedow, 2003); and nurturing has also been cited in athletic training mentoring literature (Curtis et al., 1998). Role modeling and modeling of professional standards have been reported as common characteristics of mentors (Curtis et al., 1998; Laurent & Weidner, 2001; Neal, 2008; O'Brien, 2011); and professional development may involve professional networking (Ramanan, Phillips, Davis, Silen, & Reede, 2002).

A large portion of the characteristics of mentoring that have been identified in the literature may be considered supportive behaviors, and these behaviors informed the researcher's development of the ATPMTS that was used in this study. Preceptors may express support for a student through a variety of behaviors. Curtis et al. (1998) reported that ATSS identified explanation, demonstration, and providing constructive feedback as most helpful to their professional growth. Participants in Laurent and Weidner's (2001) study also indicated that good feedback is desirable of effective clinical instructors. Offering student-centered support appears in mentoring literature to emphasize addressing the individual needs of students (Phan et al., 2012) instead of focusing on the needs of the unit or department (Gallo & Siedow, 2003). This emphasis on education rather than departmental needs echoes the standards for clinical education set forth by

CAATE.

Themes of professional preparation also emerge in mentoring literature, and several mentoring characteristics have been categorized according to the researcher's expert panel. In clinical education, professional preparation may take the form of professional networking and socialization; taking interest in the student's professional wellbeing, modeling both professional standards and the role of athletic training professionals, and practicing clear communication with the student. Ramanan et al. (2002) suggested that mentors help prepare their mentees by helping them develop a professional network. Young (1990) observed that a mentor may facilitate the development of a protégé's professional network by serving as the protégé's first professional contact. The modeling function of effective mentoring was recognized as essential and desirable in a study by Laurent and Weidner (2001); participants in this study ranked modeling the highest of all eight of the subgroups of characteristics in this study. The role of socialization in the process of professional preparation of a mentee is noted by Hayes (1998), Hudson (2002), Panseri (2005), and Pitney et al. (2006); and these studies suggest that both formal and informal processes contribute to a protégé's socialization into and preparation to join a profession.

Personal characteristics of effective mentors have been delineated in mentoring literature and suggest that the most effective mentors are approachable (Mazerolle et al., 2012; Neal, 2008; Pitney & Ehlers, 2004). In clinical education, this may mean that the mentor possesses interpersonal skills that make protégés feel comfortable interacting with them. Participants in Pitney and Ehlers's (2004) investigation of mentoring reported that clinical educators were more approachable when they treated students with respect. Lack of respect, however, will distract from a positive environment (Curtis et al., 1998).

Mentoring literature in nursing clinical education includes that mentoring relationships center on mutuality between the mentor and the protégé. Mutual learning (Haley-Andrews, 2001; Hayes, 2001; Neal, 2008), mutual sharing (Haley-Andrews, 2001; Hayes, 2001), and mutual growth (Haley-Andrews, 2001; Hayes, 2001) are important factors of successful mentoring relationships. These characteristics contribute to friendship between the mentor and the mentee and promote confidence of the protégé as he or she develops into a competent practitioner (Hayes & Gagan, 2005).

Mentoring programs in which an interested and experienced clinician is paired with a novice practitioner may be effective ways to increase the likelihood that mentoring relationships may form, but Hayes and Gagan (2005) cautioned that mentor assignments may be disastrous. Instead, they recommended having a pool of potential mentors who may be voluntarily matched with newcomers based on mutual interests and professional goals. They also drew a distinction between coaching relationships and mentorships by noting that coaching may be appropriate for individual papers or projects but that mentoring relationships through mentoring programs generally requires a greater time commitment, perhaps at least 1 year (Hayes & Gagan, 2005). The distinction between mentor programs and coaching programs is echoed by Drago-Severson (2009).

Drago-Severson (2009) elaborated that mentoring relationships create “holding environments” (Kegan, 1982, p. 115, as cited in Drago-Severson, 2009, p. 220) by offering support and challenges to mentees by recognizing mentees’ way of knowing. Drago-Severson elaborated that “way of knowing” refers to levels of development that affect how learners interpret experiences; and she explained the four ways of knowing that are most common in adult learners—instrumental, socializing, self-authoring, and self-transforming (p. 39). By understanding and recognizing a mentee’s way of knowing,

a mentor can offer developmentally appropriate supports and challenges to help the mentee grow (Drago-Severson, 2009).

The advantages of mentor programs are also noted in mentoring literature. Dunn (2012) reported that mentoring contributes to reduced stress and burnout and increased satisfaction among patients and employees. Mentoring contributes to employee retention (Dunn, 2012; Gallo & Siedow, 2003), and the availability of preceptors with whom mentoring relationships may form has been found to contribute to student retention in ATPs (Hartsell, 2013; Young, Klossner, Docherty, Dodge, & Mensch, 2013). Dunn (2012) also reported that mentorships facilitate the development of critical thinking skills in students; and, since critical thinking skills are required for certification in most healthcare professions, mentoring may contribute to professional growth. If ATPs intend to best prepare ATSs for successful careers, then perhaps the role of mentoring programs in athletic training education should be considered.

Mentoring in Clinical Education

Although some researchers use the terms “mentor” and “preceptor” interchangeably, literature on mentoring draws purposeful distinction. Haley-Andrews’s (2001) definition echoes Ammon-Gaberson’s (1987) principles of successful preceptor programs by including that mentoring is characterized by learning, sharing, and growth between both the preceptor and the protégé. Hayes (1998) elaborated the definition of mentoring as “voluntary, intense, committed, extended, dynamic, interactive, supportive, trusting relationship between two people, one experienced, and the other a newcomer, characterized by mutuality” (p. 525) by distinguishing the mentoring relationship as one much more personal than simply an educational dynamic. Neal (2008) expounded on Hayes’s definition by observing that whereas students are assigned to work with

preceptors, students choose a mentor and that mentor is more likely to “look after” the student than a preceptor would. Pitney and Ehlers (2004) considered that mentoring relationships can only occur when protégés take the initiative to establish a relationship in the presence of preceptor accessibility and approachability, and findings by Neal (2008) and Mazerolle et al. (2012) support that approachability is central to ATSs’ perceptions of mentoring. Mentoring relationships in nursing are most successful when they occur in an environment that nurtures the young nurse and that is focused on the needs of the nurse (Gallo & Siedow, 2003). The absence of any of these criteria might relegate the nature of the relationship to one of preceptorship.

Mentoring in athletic training, then, should be characterized by an open and trusting voluntary partnership between an ATS and the certified AT he or she identifies as an accessible agent for socializing the student into the profession. This relationship is centered on mutual respect (Pitney & Ehlers, 2004) and can develop between a student and his or her assigned preceptor, or a student may identify an AT with whom they have not worked as part of a clinical rotation. Under the researcher’s definition, mentorship usually involves an experienced certified AT who is devoted to educating the student but who may or may not have had formal pedagogical training (Weidner & Henning, 2004).

Effects of the presence or absence of mentoring characteristics on clinical education. A body of literature exists addressing the impacts of mentoring characteristics, or the lack thereof, on clinical education in athletic training, nursing, and academic medicine. Together, these studies further help clarify the importance of selecting preceptors who already possess these traits or of helping develop these characteristics in clinical educators. Proper selection and training of preceptors is important because, as Michalec (2012) reported, students in their first year of clinical

education already identify key attributes of professionalism and socialize into the field through recognizing, adopting, and mimicking these attributes and behaviors.

When asked to rank behaviors of their clinical instructors that were most helpful to their own learning, ATSS most commonly reported explanation; demonstration; constructive feedback behaviors; respect for student knowledge, including acknowledgement and validation; nurturing, which includes confidence-building and willingness to help (Curtis et al., 1998); and providing student-centered mentoring, patience, experience, and interpersonal skills (Phan et al., 2012). Participants in studies by Laurent and Weidner (2001) and O'Brien (2011) agree that modeling was most helpful in clinical education. In the same vein, Neal (2008) noted that the best clinical instructors enjoy the profession; are self-confident; and are dynamic, energetic people. In addition to those personal characteristics, Neal suggested superior preceptors encourage mutual respect; take responsibility for their own actions; listen to, understand, and answer students' questions carefully; and model clinical skills and judgment. Classroom instructors also may influence students' clinical skill development by modeling desirable clinical judgment through "personal stories and real-world scenarios" (O'Brien, 2011, p. 54). Additionally, development of professional networking is considered an attribute of satisfactory mentoring (Ramanan et al., 2002), a purpose which can be served by both clinical and classroom instructors.

Negative modeled behaviors and the absence of mentoring characteristics can also influence student learning in the clinical setting (Michalec, 2012). Poor professional and administrative skills (Curtis et al., 1998) and poor interpersonal and supervisory skills such as offering public or belittling criticism, being judgmental, not being open-minded, and the inability to direct students to useful literature (Kotzabassaki et al., 1997) are

considered to be characteristics of the worst clinical instructors. Students were also less likely to approach preceptors who have treated them poorly in the past (Pitney & Ehlers, 2004). Students reported particular frustration in the clinical setting when preceptors demonstrated an apparent lack of time (Phan et al., 2012) and when clinical instructors did not exhibit the behaviors that are most valued by the profession (Michalec, 2012).

Although the terms “preceptor” and “mentor” are defined differently, mentoring relationships can develop from preceptorships when the student recognizes attributes of the preceptor worth incorporating into the young professional’s own practice (Donovan, 1990). According to Pitney et al. (2006), 64% of ATSs identified the head AT or a current athletic training staff member as their mentor. This supports the observations of Curtis et al. (1998) and O’Brien (2011) that mentoring through modeling of foundational behaviors by athletic training preceptors is of vital importance to ATS development. While mentoring relationships represent mutual efforts from both the mentor and the protégé, it is important to note that protégés must maximize opportunities to learn by asking questions, being attentive, and exceeding the minimum requirements of a preceptor-student relationship (Pitney & Ehlers, 2004). Because mentors may not even realize that they serve as role models for students (Haley-Andrews, 2001), student initiative in the development of a mentoring relationship should not be overlooked.

Clinical Education in ATPs

Clinical education in athletic training has seen vast reform over the course of its life, moving from models reliant upon clinical experiences to models emphasizing clinical education (Alvarez, 2004). Although athletic training curriculum began in the 1950s and 1960s, clinical education did not take shape for 10-20 years. After its conception and until early in the 21st century, ATSs could seek certification after

completing 600 to 800 hours of clinical experience in conjunction with an approved athletic training curriculum or after completing 1,500 or 1,800 clinical hours in the absence of an accredited curriculum in either the apprenticeship or internship route. In the early 2000s, the CAATE replaced the Commission on Accreditation of Allied Health Education Programs (CAAHEP) as the sole provider of accreditation verification for ATPs (Weidner & Henning, 2002). CAATE provides ongoing oversight and ensures consistency between the three primary bodies that detail requirements for ATPs including NATA, the BOC, and CAATE (CAATE, 2013).

CAATE (2013) defined clinical education as “the application of athletic training knowledge, skills, and clinical abilities on an actual patient base that is evaluated and feedback provided by a preceptor” (p. 13); where a preceptor is a certified AT selected by the ATP administrators to teach and evaluate ATs at clinical sites. ATs are required to complete clinical education experiences in a variety of settings, including general medical settings, over the course of at least 2 academic years (CAATE, 2013). While at the clinical site, the preceptor assists the student with the integration of didactic information into clinical practice while socializing the student into the profession (Hungerford, 2012) by providing ongoing informal formative feedback to students (Neal, 2008). Clinical education standards are the same for undergraduate and postbaccalaureate professional ATPs (CAATE, 2013).

Maximizing clinical education proves to be a vitally important and challenging task, especially since students have attributed 53% of their professional development to their clinical experiences (Weidner & Henning, 2002). ATs spend an average of at least 800 hours in clinical settings over the course of their education (Susi, 2010). Miller and Berry (2002) reported, after analyzing videos of students in their clinical placements, that

as much as 50% of the time in the clinical setting is spent doing unengaging tasks such as cleaning and restocking athletic training facilities, socializing about topics unrelated to athletic training, and waiting. Weidner, Noble, and Pipkin (2006) observed that ATSs do not receive proper clinical education because they often do not receive appropriate supervision. Emphasizing active learning time (Miller & Berry, 2002) and increasing “pressure situations” in classroom experiences (Christoffer, 2011) will minimize the chances that entry-level ATs are not adequately prepared for work as young healthcare professionals. Since ATSs attribute over half of their professional preparation to their clinical education and since mentoring in other healthcare fields has been shown to increase student self-efficacy, proficiency, and competence, an investigation is warranted to see if mentoring in athletic training clinical education leads to success on the BOC exam and a way to meet the ever-growing demand for proficient entry-level ATs.

The Preceptor in Athletic Training Education

Because of the emphasis on the clinical experience in athletic training education, the role of the preceptor as the primary deliverer of clinical experiences is critically important (O’Brien, 2011). Defining the role of the preceptor proves to be challenging. Most definitions of preceptor identify characteristics of teaching, coaching, and tutoring behaviors in an assigned relationship (Neal, 2008); but the role entails much more than simply teaching or supervising in a clinical education setting. Preceptors facilitate ATS learning in real time on an actual patient base (Mazerolle et al., 2012) while providing healthcare and managing administrative duties (Henning & Weidner, 2008). CAATE dictates the following standards for preceptor responsibilities and qualifications:

- “Preceptors must function to:
 - Supervise students during clinical education;

- Provide instruction and assessment of the current knowledge, skills, and clinical abilities designated by the Commission;
- Provide instruction and opportunities for the student to develop clinical integration proficiencies, communication skills and clinical decision-making during actual patient/client care;
- Provide assessment of ATSS' clinical integration proficiencies, communication skills and clinical decision-making during actual patient/client care;
- Facilitate the clinical integration of skills, knowledge, and evidence regarding the practice of athletic training;
- A preceptor must demonstrate understanding of and compliance with the program's policies and procedures;
- A preceptor must be credentialed by the state in a health care profession;
- A preceptor must not be currently enrolled in the professional ATP at the institution;
- A preceptor must receive planned and ongoing education from the program designed to promote a constructive learning environment (CAATE, 2013, "Standards," p. 5).

Despite a myriad of roles, the preceptor's most important job is to teach and to offer feedback to ATSS relative to NATA's (2011) Education Competencies. This dictates athletic training preceptors must possess skills in supervision, communication, and instructional methods that are in excess of their preparation as an AT. Preceptors facilitate ATSS' clinical competency by involving students in active learning in an environment conducive to learning (Mazerolle et al., 2012).

The benefits of serving as a preceptor are usually limited to personal satisfaction; and the increased responsibility may contribute to role strain and to feelings of stress, inadequacy, and feeling overwhelmed (Neal, 2008). Henning and Weidner (2008) reported that 49% of collegiate ATs who took part in their study experienced moderate to high degrees of role strain. Of greater concern is their observation that in female preceptors and in graduate assistant ATs who serve as preceptors, role strain is compounded by role incompetence (Henning & Weidner, 2008). Henning and Weidner asked collegiate ATs who served as approved clinical instructors to take the Athletic Training ACI Role Strain Inventory. Of the 118 respondents, 47 were head ATs; 45 were assistant ATs; and 26 were graduate assistant ATs. Forty-nine percent of their participants experienced moderate to high role strain in balancing their healthcare, clinical education, and administrative responsibilities. The authors described role incompetence as occurring when the AT lacks the knowledge, skills, or abilities for their role. Graduate assistant ATs and female ACIs reported greater degrees of role incompetence. Additionally, the authors reported that role strain is increased when ACIs perceive that ACI training offered by their institution did not sufficiently prepare them for their clinical instructor roles (Henning & Weidner, 2008).

Selection of preceptors is often a matter of convenience—university athletic training staff members are often considered preceptors because they are an easily accessible population (Weidner & Laurent, 2001), and athletic training staff members use ATs to help offset multiple demands in the clinical setting (Erickson, 1998; Weidner & Pipkin, 2002; Young et al., 2013). As such, many preceptors do not espouse the role of clinical supervisor and do not fully appreciate the value of preceptorship to student learning. Dondanville (2005), therefore, recommended first assessing the quality of

preceptors to ensure ATs receive quality clinical education experiences.

Certified ATs' teaching abilities should serve as criterion for selection as preceptors (Mazerolle et al., 2012) because, among preceptors with 0-3 years of experience, those with pedagogical coursework have significantly greater confidence in their ability to evaluate ATs (Wright, 2009). Preceptors should receive regular training and evaluation of their instructional skills to ensure continuing quality of clinical education (Mazerolle et al., 2012). Weidner and Henning (2004) recommended preceptor selection, training, and evaluation based on the seven standards developed in their study. In Weidner and Henning's study, 16 directors of ATPs participated in three Delphi rounds to identify minimum standards to which all clinical instructors should be held. The resulting seven standards include legal and ethical behavior, communication skills, interpersonal relationships, instructional skills, supervisory and administrative skills, performance evaluation, and clinical skills and knowledge to ensure the education of ATs remains a primary focus in the clinical education experience. These standards are accompanied by 50 measurement criteria to ensure that clinical educators clearly meet each standard (Weidner & Henning, 2004).

Once quality preceptors have been selected, they must be properly trained to ensure quality clinical education and to limit coincidental learning that might violate accreditation requirements (Weidner & Henning, 2004). Much like ATs learn to become effective healthcare practitioners through both formal and informal processes, so do certified ATs learn to become preceptors (Mazerolle et al., 2014). Informal processes such as observations, reflections on prior experiences in their roles as both a preceptor and a protégé, and student evaluations can socialize ATs into the preceptor role (Mazerolle et al., 2014). However, 48% of preceptors considered formal preceptor

training to be the most effective means by which to prepare them to become clinical educators (Wright, 2009); and the beneficial effects of preceptor training were felt most strongly by clinical instructors with fewer years of experience (Panseri, 2005). Still, Henning and Weidner (2008) reported 35% of their study's preceptor population felt inadequately prepared for their role as a clinical educator by the preceptor training program offered by their ATP. As Mazerolle et al. (2014) noted, ATPs should recognize that ATs typically do not have formal pedagogical training because pedagogy is not required in CAATE curriculum; and they should use preceptor workshops to facilitate ATs' understanding of the role of the preceptor while emphasizing proper supervision, effective methods of instruction, and the benefits of mentoring to ATs. Effective preceptor training programs also incorporate aspects of peer facilitation of socialization and encourage interactions between preceptors during training (Mazerolle et al., 2014).

Ammon-Gaberson (1987) expanded upon six principles for a successful preceptor program. These basic ideologies include

- Recognizing and appreciating that learning is a normal adult activity, and encouraging preceptors to create a positive learning environment helps students focus on learning as opposed to obligations.
- Learning should occur in a safe environment because adults with high self-esteem learn more than students with lower self-esteem.
- Adults who value the role of the adult learner and who are able to manage their own learning are best suited for growth. In this principle, preceptors and students can learn together.
- Descriptive feedback that is given readily is most appropriate for adult learners.

- Successes fortify changes in behavior and motivate adult learners.
- Adults are often anxious when beginning learning programs, and increased levels of stress may negate learning.

By recognizing and valuing the characteristics of ATs who enter roles in clinical education, ATPs can structure supportive and beneficial opportunities for development of effective preceptor skills. Interestingly, Mazerolle et al. (2014) also recommend educating students to offer constructive feedback to assist the individual preceptor's growth.

The BOC Examination

The BOC exam is the culminating step in the process toward earning the ATC® credential (NATA, 2013, "Professional Education in Athletic Training"). The BOC was established in 1969 as the branch of NATA responsible for the certification of ATs (BOC, 2013). In 1989, the BOC separated from the NATA and incorporated as an independent organization that is solely responsible for certifying ATs (BOC, 2013). Currently, 49 states and the District of Columbia regulate the practice of athletic training; with California remaining the only state without regulation (BOC, 2013).

BOC exam eligibility. To earn the certified AT credential, ATC®, a student must first complete an ATP curriculum that is accredited by CAATE and then pass the certification exam. In a student's last semester in the ATP, the program director must verify that the student has completed, or will soon complete, all of the requirements of the ATP as are approved by CAATE. Once a student's candidacy is confirmed, he or she is eligible to register for the exam using BOC's website, BOC Central™. After registering, candidates pay for the exam; and after the window for registration has closed,

candidates receive email notification from Castle Worldwide, which is BOC's chosen provider of computerized testing, to schedule their exam (BOC, 2013).

BOC exam structure and development. Traditionally, the BOC exam was a paper-based test consisting of three distinct parts: a multiple-choice written section, a written simulation section, and an oral practical skills demonstration section. In June 2007, the BOC exam converted to a computerized version of the paper-and-pencil format, an adaptation that increased the first-time pass rates from 31.5% for 2006-2007 testing windows to 39.1% in 2007-2008 and 51.5% in 2008-2009 (Johnson, 2010). The first-time pass rate for 2012-2013 was 80.8% (BOC, 2013). The computer-based exam consists of 175 items, some of which are unscored experimental questions that may take any of the following formats:

- Multiple choice items.
- Items that require students to label specific anatomical structures.
- Questions that require ordering items correctly or selecting multiple correct responses.
- Written scenarios followed by five test questions (BOC, 2013).

A total of 4 hours is allotted to take the exam, and candidates are allowed to navigate the entire exam at will. Scores are reported on a scale from 200 to 800, and candidates must earn at least 500 points to pass and to be eligible for the ATC® credential (BOC, 2013).

The items on the BOC exam are designed to assess candidates' knowledge of five domains of athletic training as outlined in the *Role Delineation Study/Practice Analysis* (BOC, 2013). The domains include

- Injury and illness prevention and wellness protection.
- Clinical evaluation and diagnosis.

- Immediate and emergency care.
- Treatment and rehabilitation.
- Organizational and professional health and well-being (BOC, 2013).

Test items are created by certified ATs who have applied to the BOC to participate in question development. Possible items are edited and reviewed by a panel of certified ATs and psychometric experts from Castle Worldwide. After development, questions are included on the BOC exam as experimental items that do not contribute to candidate scores (BOC, 2013). Castle Worldwide performs item analyses to “ensure that the questions perform as intended” before the questions reappear on subsequent exams as scored items (BOC, 2013, “Exam Development and Scoring,” para. 4).

Factors affecting BOC exam success. Standard 11 of the CAATE (2013)

Standards for the Accreditation of Professional Athletic Training programs states that ATPs must maintain a minimum 3-year aggregate 70% first-time pass rate; ATPs, therefore, have an interest in selecting and preparing candidates who are most likely to pass the BOC exam on the first attempt. As such, the identification of factors that influence pass rates on the BOC exam is the interest of ATPs (Esparza, 2012).

Several academic and personal factors have been identified that may allow ATPs to select students who are most likely to be successful on the BOC exam. Harrelson et al. (1997) found that overall GPA and athletic training GPA were strong predictors of success on the BOC exam in students at the University of Southern Mississippi. Similarly, Draper (1989) and Searcy (2006) reported overall GPA was significantly correlated with success on the written section of the former 3-part BOC exam. In Erickson’s (1998) study, her Delphi method panel of ATP directors agreed that ATs who demonstrated “common sense, inquisitiveness, decision making skills, and the

ability to think critically” seem more likely to pass the BOC exam on the first attempt (p. 66). Erickson also reported that students are more likely to pass the BOC exam on the first try if they are able to understand and interpret test questions correctly (Erickson, 1998). Harrelson et al. (1997) suggested that the composite score on the ACT could be considered a strong predictor of first-time BOC exam success.

Attempts have been made to identify predictors of success on the BOC exam after the elimination of the 3-part test. In her study of predictors in undergraduate students, Esparza (2012) found that final grades in Anatomy I, but not Anatomy II, correlated with first time BOC success. She also reported that GPA, both overall and prior to admission into the ATP, predicted success (Esparza, 2012). Although Hickman (2010) did not find significance among Division I football experience, student demographic factors, or ATP characteristics, she reported that GPA approached significance and that given the small sample in her study, this finding seems to support prior evidence that GPA may continue to be a predictor. Final GPA may also predict first-time success in entry-level master program students (Murray, 2014). Hungerford (2012) also contributed to the literature on academic factors that may associate with success by adding that the perceptions of the importance of ATP components, especially the concept of learning over time, may predict BOC exam success; but that the sequencing of coursework did not seem to have any impact. Little (2012) reported that the length of clinical education was not associated with BOC exam success. The author remarked, however, that students who spent more time in the clinical setting were more confident with psychosocial intervention strategies which may be attributed to greater exposure to these situations (Little, 2012). Breitbach, Downey, and Frager (2013) reported that students who experience increased anxiety related to academic pursuits,

who have external loci of control, and whose coping mechanisms focus on emotion rather than problem-focused approaches have lower first-time pass rates. The authors added that ATPs can help these students by employing multiple test preparation strategies (Breitbach et al., 2013), but taking multiple practice exams is not singularly associated with increased pass rates (Butterfield, 2010).

Research has also identified several factors that may allow program directors and clinical coordinators to structure their ATPs in ways to best promote success on the BOC exam. Erickson's (1998) panel of program administrators suggested that athletic training courses should aim to evaluate students frequently, should demand high-level performance from students, and should address NATA's Competencies in Athletic Training. Each athletic training course should also reiterate to students the importance of incorporating the competencies into their clinical rotations (Erickson, 1998). Program directors and clinical coordinators may also serve their students by incorporating computers and computer testing into ATP curriculum since familiarity with computers might contribute to BOC test preparation (Christoffer, 2011).

Factors associated with clinical education might also attribute to BOC exam success. While Erickson (1998) reported that clinical experiences should be "of quality," some variance in the literature exists regarding what makes a quality clinical experience (p. 58). The nature of the sport covered in the clinical experience has been proposed as a determinant of BOC test success, with a greater number of high-risk sport rotations being correlated with overall BOC exam pass rate (Turocy et al., 2000). An increased number of clinical rotations is associated with BOC exam success, as is an early start to clinical experiences (Searcy, 2006). Turocy et al. (2000) reported that students who spent more than 400 hours beyond the minimum requirement for clinical hours were more likely to

pass the certification test than students who only met the minimum.

During clinical experiences, ATs should be placed with clinical instructors who are committed to educating ATs and who serve as challenging and supportive mentors to maximize BOC exam success (Erickson, 1998). In her evaluation of progression through the athletic training education domains, Hungerford (2012) reported that ATPs can be organized with proper attention to coursework and clinical education in ways that will maximize ATs' success on the BOC exam and will increase first-time pass rate. She remarked that perceptions of the importance of and the implementation of the components of the program are more influential on BOC exam pass rates than are the timing and sequence of the domains (Hungerford, 2012).

Several studies have identified factors that are not attributed to success on the BOC exam, some in contrast to reports of prior studies. Draper (1989) found no significant relationship between ATs' learning style and success on the BOC exam. The number of self-assessment exams taken before the BOC exam is not associated with increased success (Butterfield, 2010). ATs age at the time of BOC testing is also not correlated with BOC exam success in a survey related to football clinical experiences (Hickman, 2010). Hickman (2010) and Turocy et al. (2000) reported that students placed with low-risk sports were just as likely to pass the BOC exam as students who are placed with high-risk sports. In contrast to Erickson's (1998) recommendation that clinical instructors should provide challenging and supportive leadership as mentors to ATs, Pickard's (2003) study suggested that mentoring did not affect outcomes on the previous 3-part, pencil-and-paper version of the BOC exam. He compared responses to the Athletic Trainer Mentor Questionnaire which he developed by revising a mentoring relationship questionnaire from the *Education Testing Service*, with participant's scores

on each section of the BOC exam. He found that mentoring relationships between ATs and the head AT or clinical coordinator in either the curriculum or internship route did not have an effect on success on the BOC exam. The present study defines “mentor” differently than Pickard did in his study and does not limit this relationship to the head AT or clinical coordinator positions, which might influence the impact of the construct on BOC examination success. Additionally, Pickard’s study focused on the relationship between mentoring and BOC exam success on the former 3-part test format; review of current literature did not find any investigations of this relationship on the computerized exam. The instrument used in the present study also differs from Pickard’s instrument in that the items on the ATPMTS are consistent with mentoring traits from current mentoring literature in healthcare professions.

Summary

The athletic training profession has seen many changes in recent years in the structure of clinical education and the format of the profession’s certification exam. Although attempts have been made to identify characteristics of ATPs, of ATs, and of clinical education experiences that might influence success on the BOC exam, few investigations have been made into the impact of the relationships between clinical instructors and ATs and success on the BOC exam. Since the characteristics of mentoring in athletic training are the same as mentoring characteristics in other professions (Pickard, 2003), the nature of the impact on mentoring relationships in the clinical setting on success on the computerized-version of the BOC exam is worthy of investigation.

Chapter 3: Methods

To earn certification as an AT, students must complete an athletic training education curriculum, including classroom and clinical education experiences, and pass the BOC exam. The influence of mentoring in the clinical education component has been investigated on the prior 3-part format of the BOC exam (Pickard, 2003), and the present study examined this relationship on the current computerized version of the BOC exam. This chapter addresses the research methods that were used to answer the research questions, including population identification, participant selection, development of the survey instrument that was used in this study, and the protocol for data collection.

Participants

Athletic training candidates who complete the BOC exam in the November, February, and April testing windows were invited to participate. For the 2012-2013 exam year, 4,950 candidates completed the BOC exam. Of these candidates, 3,631 took the exam for the first time; the first-time pass rate was 80.80% (BOC, 2013). All candidates for the November 2014, February 2015, and April 2015 exam windows, including first-time test takers and repeat test takers, were included in the invitation.

Instrumentation

The researcher collected data from the three testing cohorts—November 2014, February 2015, and April 2015—using an online researcher-developed survey followed by focus-group interviews. The process of survey development and the educational process assessment are described in the following sections.

Survey. The researcher created the ATPMTS that was used in this study. The survey consists of three sections: a self-reported participant demographic section, a participant-reported preceptor demographic section, and a section of Likert-type scale

items related to characteristics of mentoring.

The participant demographic questions include the National Collegiate Athletic Association (NCAA) division and the NATA district with which the CAATE-accredited ATP is affiliated. A survey item also asked the respondents to clarify if the ATP is undergraduate or graduate level. Two additional participant demographic questions asked participants to identify themselves as male or female and to select in which 4-year range the participant's age is included. The final three participant demographic questions asked respondents to self-report if this was their first-attempt at taking the BOC exam, if they passed or failed on the attempt, and if they considered that they have a mentor in athletic training.

In the second section of the survey, participants reported the professional title and gender of the athletic training preceptor they considered to be most influential. Respondents also reported at what point in their education they worked with the preceptor.

The final section of the survey asked participants to rate on a 5-point Likert-type scale, ranging from "Strongly Disagree" to "Strongly Agree," the degree to which they felt the preceptor identified in the second section demonstrated a variety of mentoring characteristics. The mentoring behaviors and characteristics were identified in previous studies on mentoring. Appendix A is a table identifying major themes from mentoring literature and prior research which included those themes.

Survey development. The researcher developed the ATPMT survey for this study by identifying characteristics and behaviors associated with mentoring in clinical education from athletic training, nursing, and academic medicine literature. A table of studies that contributed to the survey is included (Appendix A). The researcher

assembled the survey and then solicited feedback from the athletic training education faculty at a private university.

In the first round of survey development, members of the survey review board expressed concern over the wording in survey items. The original survey did not draw distinction between athletic training preceptors, preceptors in athletic training clinical education that may be in other healthcare professions, and ATs who may not consistently practice clinically. The researcher amended the survey tool to refer to clinically active certified ATs who serve as preceptors in ATPs. Many survey items in the “Preceptor as a Mentor” section were also edited to reflect more professionally appropriate wording of the construct being measured by each question. For example, in the original draft of the survey, the researcher asked participants to consider the extent to which “My preceptor cared about me.” After the first round of review, this item was edited to “My preceptor showed interest in my professional and personal wellbeing.”

A second concern from the first round of review related to some of the items themselves. Originally, the researcher included preceptor behaviors that had been previously identified in mentoring literature as less conducive to protégé learning. After this round of review, five of the Likert-type items were eliminated with the understanding that students are not likely to consider a preceptor who exhibits these characteristics to be a mentor. The items that were removed included such behaviors as considering the ATS to be “an extra set of hands,” embarrassing the ATS in front of their peers, speaking negatively of the ATS in front of others, hesitating to help the ATS, and appearing disinterested in the ATS. Additionally, two redundant items were removed.

The items related to preceptor accessibility and approachability were questioned during the first review; but following a review of mentoring literature, these constructs

were found to be separate and worthy of inclusion.

After these initial edits, the researcher circulated the survey for a second round of review. The reviewers expressed agreement on the third section, but the first two sections of the ATPMTS received feedback. The greatest concern from this round of review resulted in change in student-reported preceptor demographic information. Originally, participants were asked to indicate the job title or position of their preceptor. Preceptor “job title or position” held was changed to “job setting,” because the researcher and the review board thought this edit might yield information more relevant to ATP administrators. The researcher also edited some of the survey items to reflect a change in current terminology from “athletic training education program” or “ATEP” to “athletic training program” or “ATP.”

The researcher submitted the third draft of the survey for review, and the review panel agreed upon the ATPMTS.

After the panel reached agreement, the researcher shared the survey with rising senior-level students in the private university’s ATP for a round of review. Four students responded with feedback. Student reviewers expressed concern that an ATS might recall more than one preceptor when they are asked to reflect on the mentoring characteristics. To improve participant focus, the researcher added instructions for participants to consider their “most influential preceptor” and to indicate if this preceptor is who they consider to be their mentor. The student panel confirmed that the survey items were clear and easily understood, and they reported no problems with the format of the survey. The finalized version of the ATPMTS is included (Appendix B).

Survey testing and validation. The survey was tested using a snowball sampling technique. The researcher first shared the survey with graduates from local universities

and then shared the survey with lists of recent graduates who fit the participant profile identified by the first set of pilot participants (Huck, 2012). Fifty-seven candidates who had all recently taken the BOC exam and may have passed or failed received invitations to take the survey. The researcher asked each participant to take the survey and then to provide feedback about the overall experience for further development. Thirty-three candidates responded to the survey, for a response rate of 58%; and 11 offered feedback on the items and on the total time to complete the survey. Based on the feedback from pilot test participants, “primary job setting” was added to clarify the employment status of candidates’ most influential preceptor. The mean time for candidates to complete the survey was 7 minutes.

Based on recommendations that the pilot testing sample be 10-20% of the study sample (Simon, 2011), the researcher determined 30 responses to be an adequate number for survey validation. This number was chosen because the mean sample size for the three testing cohorts was 265, and 30 responses represented 11% of the mean sample size. After an adequate number of pilot participants responded, the researcher used SPSS software (IBM SPSS Statistics for Macintosh, Version 22.0) to calculate Cronbach’s alpha as a measure of internal reliability since it is the most commonly reported reliability measure (Field, 2013) which was found to be 0.979 for the Likert-type survey items. Field (2013) recommended including alpha for each subscale of a survey, so these coefficients are included in Table 1.

Table 1

Cronbach's α for Each ATPMTS Subscale

Subscale	Student-centered support	Approachable	Professional preparation	Mutuality	Overall
Cronbach's α	.920	.947	.886	.833	.979

Although the alpha level of the overall instrument and some subscales is higher than the 0.90 recommended by Streiner's (2003) article on internal consistency which suggests that alpha levels greater than 0.90 may indicate unidimensionality, the researcher desires an understanding of the relationship between mentoring characteristics and success on the BOC exam. As such, some redundancy, which may be indicated by a high alpha level (Streiner, 2003), is tolerated.

Focus-group interviews. Focus-group interviews were scheduled 2 weeks after the close of the survey. The purpose of these open-ended discussions with participants who took the ATPMTS was to help explain the results of the online survey (Creswell, 2014). The focus-group discussions took place in an online audio forum. Protocols for the interviews were developed following analysis of the data from the survey.

Data Collection Procedure

Data were collected for three of the BOC's testing windows—November 2014, February 2015, and April 2015. The number of candidates in each BOC testing window for the 2012-2013 exam year is listed in Table 2 (BOC, 2013).

Table 2

Number of BOC Candidates for 2012-2013 Exam Year

Test Window	Fail	Pass	Total
April	399	1,757	2,156
June	388	685	1,073
August	268	256	524
November	259	292	551
February	194	452	646

The November, February, and April testing windows were chosen because they are the only three test administrations that occur within the same academic year. The August testing window is excluded because some colleges and universities do not resume classes until September. Additionally, the November testing window was chosen because the pass rate for this exam year is 53%; and sampling from a test administration with such a low pass rate allowed for a more critical examination of the relationship between mentoring and BOC exam success.

The BOC offers survey support services to researchers. Utilizing this service, the BOC distributed survey invitations on behalf of the researcher to the listed email addresses of athletic training candidates who attempted the BOC exam in each of the November, February, and April testing windows. The email correspondence in which a BOC, Inc., representative confirmed that they could facilitate distribution of the ATPMTS to the target population is included (Appendix C).

Survey procedure. The BOC issues results approximately two weeks after the close of the testing window, and the researcher asked the BOC to distribute the survey no more than 2 weeks after test scores are posted. The survey remained open for 1 month,

with a reminder email being sent each week after the original invitation, following recommendations from Anderson and Gansneder (1995) that follow-up reminders be sent in 1-week intervals after the original internet survey invitation. The researcher distributed the survey to 586 candidates from the November cohort, 686 candidates from the February cohort, and 1,428 candidates from the April cohort. This sampling mimics the oversampling model used by Andrews, Nonnecke, and Preece (2003) in their investigation of online survey methodology to compensate for anticipated low survey response rates. These samples were estimated to produce a 95% confidence level. No identifying information was collected from the participants when they completed the ATPMTS. At the conclusion of the ATPMTS, participants were directed to an invitation to participate in the focus-group interviews. The focus-group invitation is presented as Appendix D. The results of the focus-group invitation were separate from the ATPMTS results to protect respondent anonymity.

Focus-group interviews. After results from the online survey were analyzed, three of seven participants who expressed interest in participating in the focus-group interviews participated in the focus group. The researcher used a random sample generator to contact participants who expressed interest in the focus-group interviews. The interviews took place using an online forum. Audio recordings were taken for the purpose of transcription. All data were stored on a password-protected computer. The protocol for the focus group was developed after data from the online survey had been analyzed, although the same types of questions were used for each of the three focus-group cohorts. Questions related to the BOC exam were specifically excluded from the interview in accordance with BOC privacy policies (BOC, 2013). Following the focus groups, the interviews were transcribed, analyzed, and coded for themes to supplement

ATPTMS data. A timeline of the data collection procedure is presented in Table 3.

Table 3

Data Collection Timeline

Week of Study	Study Procedure	Data Collected
1-2	BOC exam administration	None
2-4	BOC exam scoring	None
4-5	BOC results released to candidates	None
6-10	Initial survey invitation sent to candidates; Weekly follow-up reminders; Researcher codes incoming survey responses	ATPMTS data
11-12	Researcher analyzes survey responses, uses random sample generator to select focus-group participants	None
13	Researcher contacts focus-group participants with invitation to online discussion	None
14-15	Online focus-group discussion	Interview data

The timeline of the study began with the 2-week test administration window of the BOC exam, and this procedure was repeated for each of the selected BOC exam testing windows.

Statistical Analyses

Because this study employed a mixed-methods approach, both quantitative and qualitative analyses were performed to answer the research questions.

Research Question 1. To what extent do ATSS' recognition of a mentoring relationship with their preceptor, according to the ATPMTS, associate with passing

the BOC exam on the first attempt? To answer this question, the investigator analyzed data from the ATMPTS. The researcher performed a Chi-square test for association using responses to items 6, 7, and 8 of the researcher-developed survey to determine if a relationship exists between these variables. This test is appropriate for determining the presence of a relationship between nonparametric variables (Laerd Statistics, 2013). In this procedure, items 6 and 7 were used to create a *dummy* code to indicate which participants passed and failed the BOC exam during the selected test administration windows. The Chi-square analysis performed using responses to item 8 and the status of pass or fail on candidates' first BOC exam attempt. The survey items that were used in the Chi-square test for Research Question 1 are included in Table 4.

Table 4

Survey Items Used in Chi-square Test Analysis to Answer Research Question 1

Item number	Item Prompt
6*	Was this testing window your first attempt at the BOC exam?
7*	Did you pass the BOC exam on your first attempt?
8	Do you consider yourself to have a mentor in athletic training?

Note. *Items 6 and 7 were used to create a variable indicating that a candidate passed the exam on the first attempt.

The researcher also used the dummy coded first-time pass variable to conduct a pooled *t* test using the scale from all 25 mentoring characteristics. This analysis is appropriate because as Boone and Boone (2012) reported, Likert scale data may be subjected to interval-level data analysis procedures. This analysis allowed the researcher to determine the association between BOC exam success and recognition of an athletic

training mentor. The Likert-type items that were used in the pooled *t*-test analysis of the first research question are included in Table 5.

Table 5

Survey Items Used in Pooled t-Test Analysis of Research Question 1

Item number	Item Prompt
12	My preceptor helped me prepare for the BOC exam.
13	My preceptor appeared to want me to succeed.
14	My preceptor modeled the standards of the profession.
15	My preceptor demonstrated respect for me.
16	My preceptor provided support for my learning.
17	My preceptor helped me develop critical thinking skills.
18	My preceptor communicated clearly with me.
19	My preceptor demonstrated appreciation of me.
20	My preceptor was accessible.
21	My preceptor carefully explained difficult concepts so I could understand them.
22	My preceptor proclaimed my accomplishments to others.
23	My preceptor had an appropriate professional relationship with me.
24	My preceptor made time for me.
25	My preceptor provided constructive feedback/evaluation of me.
26	My preceptor supported me in front of patients.
27	My preceptor gave opportunity for and encouraged my creativity.
28	My preceptor showed interest in my professional and personal wellbeing.
29	My preceptor seemed to understand my academic strengths and weaknesses.
30	My preceptor answered by questions thoroughly.
31	My preceptor was approachable.
32	My preceptor helped me develop a professional network.
33	My preceptor helped me with athletic training skills and concepts.
34	My preceptor demonstrated trust in me.
35	My preceptor enhanced my self-esteem.
36	My preceptor seemed willing to learn with me and from me.

Additional statistical tests were performed using responses to items 2 through 11.

The researcher investigated the relationships between other demographic factors such as NCAA affiliation of the ATP, NATA district of the ATP, and candidate age with mentor recognition and BOC exam pass rates using Chi-square tests. These survey items are included in Table 6.

Table 6

Demographic Items on ATPMTS

Item number	Item Prompt
2	What is the NCAA affiliation of your CAATE-accredited ATP?
3	In what NATA district is your CAATE-accredited ATP?
4	What is your gender?
5	What is your age?
6	Was this testing window your first attempt at the BOC exam?
7	Did you pass the BOC exam on your first attempt?
8	Do you consider yourself to have a mentor in athletic training?
9	What is the job setting of your most influential preceptor?
10	In what semester did you most recently complete a clinical rotation with that preceptor?
11	Do you consider your most influential preceptor to be your mentor?

The results of these analyses allowed the researcher to identify any possible contributing factors of BOC exam success that might be relevant to the present study or might be indicated for future research. Another Chi-square analysis was performed to investigate the relationship between the semester in which candidates worked with their most influential preceptor and BOC exam pass status. Additionally, the researcher analyzed frequencies of preceptor mentor job settings and the frequency with which candidates recognize their most influential preceptor as their mentor. This analysis allowed the researcher to develop a line of focus-group questioning to further explore why, if at all, students frequently do not consider their most influential preceptor to be

their athletic training mentor. The results of these analyses are presented in a frequency distribution table.

Lastly, the researcher used a pooled t test, similar to the analysis Pickard (2003) used, to investigate if there is a relationship between the ATPMTS Likert-type items scale score and BOC exam pass or fail status. Data from the focus-group discussion for each test administration were used to support the quantitative analyses. The results of these analyses are reported in Chapter 4, with a discussion of the results included in Chapter 5.

Research Question 2. According to the ATPMTS, which characteristics of mentoring, if any, associate with passing the BOC exam on the first attempt? To answer this question, the investigator performed a Chi-square test for association using the Likert-type items on the ATPMTS and the dummy coded variable representing first-time pass or fail status. These survey items are included in Table 5. A Chi-square cross-tabulation, which is used to display the cases that fall into each category of a survey, was conducted to identify significant relationships between each item and first-time BOC results.

The researcher grouped the Likert-type items on the ATPMTS into four categories of mentoring characteristics based on theme. Thematic groupings were reviewed and confirmed by a convenience sample of athletic training clinical educators. Because the items on the survey are randomly ordered, Table 7 lists the categorical themes and the survey items within each theme.

Table 7

ATPMTS Items by Category

Category	Item number in survey
Student-centered support	12, 13, 16, 17, 21, 22, 25, 26, 27, 29, 30, 35
Approachable	18, 20, 23, 24, 28, 31
Professional preparation	14, 32, 33
Mutuality	15, 19, 34, 36

The researcher also conducted pooled t tests using Likert-type scales created by grouping the mentoring characteristics. The results of these analyses are reported in a table, and the results of the focus-group interviews were analyzed for theme and are presented in Chapter 4 in support of the quantitative analysis.

Research Question 3. To what extent does recognition of a mentor associate with passing the BOC exam on the first attempt differ between postbaccalaureate and undergraduate ATs? To answer this question, the researcher performed a Chi-square cross-tabulation using responses to items 1, 8, 9, and 11—the prompts for these items are included in Table 8.

Table 8

Survey Items Used in Chi-square Cross-tabulation of Research Question 3

Item Number	Item Prompt
1	What is the degree type of your ATP?
8	Do you consider yourself to have a mentor in athletic training?
9	What is the job setting of your most influential preceptor?
11	Do you consider your most influential preceptors to be your mentor?

The researcher also used a pooled t test to analyze the Likert-type items sum scores for undergraduate and graduate students. A frequency distribution table is used to present relevant frequencies in which undergraduate and graduate students identified athletic training mentors and the job titles of these mentors. Focus-group discussion data were used to support the findings of the quantitative analysis.

The results of the quantitative analyses of the ATPMTS informed the focus-group discussion protocols that occurred after the survey. Subsequent analyses of the data from each test administration window allowed the researcher to speak to the nature of the relationship between mentoring and BOC exam success. The researcher's understanding of this relationship was informed by samples from three test administration windows, each with different historical first-time pass rates.

Limitations

Limitations in this study include

- Participants self-reported whether or not the most recent BOC exam administration was a successful attempt. While there is no external motivator

to provide false information, social desirability bias may compel some participants to do so (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

- Participants from the November BOC exam window received the ATPMT survey approximately two months after their exam results were released. Participants from the February and April testing windows received the survey invitation within 1 week of their results being released. This resulted in lower response rates from the November testing cohort compared to the February and April cohorts, especially if candidates who tested in November graduated in December.
- Participants received the survey invitation at the email address they provided to the BOC. As such, only candidates who check this email address had an opportunity for inclusion in the study.
- Only participants who chose to submit a response to the ATPMT survey were presented an invitation to participate in the focus-group discussions.

Delimitations

Delimitations in this study include

- Candidates must have attempted the BOC exam during the November, February, or April testing windows.
- The primary investigator led the online focus-group discussions. While this may present a source of bias, the researcher, as the moderator, was able to ask probing questions specific to the jargon of athletic training clinical education.

Summary

This study investigated the relationship between preceptor mentoring characteristics and initial success on the BOC exam for ATs. Data to answer the research

questions in this study were collected from BOC exam candidates using the researcher-developed ATPMTS. Subsequent analysis of the ATPMTS and focus-group discussion data allowed the researcher to discuss the relationship between preceptor mentorship and first-time success on the BOC exam.

Chapter 4: Results

The present study was designed to investigate the relationship between ATSS' perceptions of mentoring by their preceptor and first-time success on the BOC exam for ATs. This study followed an explanatory sequential mixed-method design, collecting data from BOC exam candidates for the November 2014, February 2015, and April 2015 exam windows using the researcher-developed ATPMTS and focus-group interviews. Data used to address the three research questions for this study are presented in this chapter.

Data Collection Process

The BOC distributed an e-mail blast containing the survey invitation and hyperlinks to the survey on behalf of the researcher. Candidates from the November 2014 exam received their invitation approximately two months after the BOC released exam results for those candidates. Candidates from the February and April exam windows received their invitations the day after BOC exam results posted. All invitations were sent with a request to complete the survey within 7 days. Utilizing email tracking, the BOC distributed weekly e-mail reminders to the recipients who had not opened the email and followed the external hyperlink to the survey. Participants also had the option to elect out of receiving follow-up reminders from this study by selecting an unsubscribe link contained within the e-mail. Weekly reminders were sent until a response rate exceeding 7.5% was attained at which point the survey was closed and no further reminders were sent. Participants who completed the ATPMTS were provided an opportunity to participate in online focus-group discussions regarding survey results from their BOC testing window. Candidates who were willing to participate provided consent to be contacted by leaving their e-mail address after submitting the survey.

Within 2 weeks of the survey closing, online focus-group discussions were scheduled. A third party contacted a random sampling of respondents who left their e-mail addresses to invite them to the focus-group discussion. Each participant was given instructions to use a numerical identifier and to disable their video feed to protect their anonymity. For the November and February testing windows, the researcher hosted the online focus group for 45 minutes waiting for participants to attend. When two focus-group attempts yielded no results, the researcher revised the study to eliminate an online focus group from the April exam candidates. Instead, a convenience sample of participants in the study population was invited to participate in a focus-group discussion regarding the aggregate data from all three exam windows. Three respondents of the seven who were invited agreed to participate in the focus-group discussion. This revision maintained the explanatory sequential mixed-method design of the study.

Participants and Response Rates

The population for the present study was BOC exam candidates. The ATPMTS was distributed to all candidates for the November 2014, February 2015, and April 2015 exam windows. The number of candidates surveyed, the number of respondents, response rates for each exam window, and the aggregate of all three exam windows are presented in Table 9.

Table 9

Sample Sizes and Response Rates

	# Sampled	# Responses	Response Rate
Nov. 2014	586	52	9%
Feb. 2015	686	101	15%
Apr. 2015	1428	155	11%
Overall	2700	308	11%

The BOC email blast service, which was used to distribute the ATPMTS, typically sees a response rate of 7.5% (M. Lindquist, personal communication, February 6, 2015); the response rates for each of the exam windows and for the aggregate exceeds this rate.

Demographic Information

The researcher asked participants to report the following demographic information: degree type of their ATP, NCAA affiliation of their ATP, NATA district of their ATP, gender, age, first-time BOC exam pass status, and self-report recognition of a mentor. Table 10 is a summary of demographic information for respondents for each exam window and for the total sample.

Table 10

Respondent Demographic Information

		Nov. 2014		Feb. 2015		Apr. 2015		Overall	
		Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Degree	Undergrad	47	90.4%	81	80.2%	141	91%	269	87.3%
	Master	5	9.6%	20	19.8%	14	9%	39	12.7%
NCAA affiliation	NCAA I	24	46.2%	57	56.4%	66	42.6%	147	47.7%
	NCAA II	11	21.2%	19	18.8%	42	27.1%	72	23.4%
	NCAA III	14	26.9%	17	16.8%	43	27.7%	74	24%
	Other	3	5.8%	8	7.9%	4	2.6%	15	4.9%
NATA district	1	2	3.9%	9	8.9%	11	7.1%	22	7.2%
	2	10	19.6%	11	10.9%	18	11.6%	29	12.7%
	3	3	5.9%	9	8.9%	10	6.5%	22	7.2%
	4	9	17.6%	10	9.9%	29	18.7%	48	15.6%
	5	1	2%	13	12.9%	14	9%	28	9.1%
	6	3	5.9%	7	6.9%	7	4.5%	17	5.5%
	7	3	5.9%	10	9.9%	7	4.5%	20	6.5%
	8	3	5.9%	4	4.0%	5	3.2%	12	3.9%
	9	0	0%	8	7.9%	14	9%	22	7.2%
	10	0	0%	1	1.0%	2	1.3%	3	1%
	I don't know.	17	33.3%	19	18.8%	38	24.5%	74	24.1%
Gender	Male	26	50%	43	42.6%	57	36.8%	126	40.9%
	Female	26	50%	58	57.4%	98	63.2%	182	59.1%
Age	20-24 years	36	69.2%	78	78.0%	141	91%	255	83.1%
	25-29 years	10	19.2%	15	15.0%	11	7.1%	36	11.7%
	30-34 years	3	5.8%	3	3.0%	2	1.3%	8	2.6%
	35-40 years	0	0%	3	3.0%	0	0%	3	1%
	More than 40 years	3	5.8%	1	1.0%	1	.6%	5	1.6%
First-time pass?	Yes	26	50%	79	78.2%	138	89%	243	78.9%
	No	26	50%	22	21.8%	17	11%	65	21.1%
Mentor?	Yes	37	71.2%	81	81%	134	86.5%	252	82.4%
	No	15	28.8%	19	19%	20	12.9%	54	17.6%

Participants in this study represented all districts of the NATA, both undergraduate and master-level ATPs, all NCAA divisions in addition to other athletic affiliations, and ages from 20 to more than 40 years.

Participants were invited to report demographic information on their most influential preceptors. ATPMTS items related to preceptor demographic information

included job setting, the most recent semester in which the ATS worked with their most influential preceptor, and if the student considers their most influential preceptor to be their mentor. Table 11 is a summary of responses to the preceptor demographic items for each exam window and for all of the respondents.

Table 11

Preceptor Demographic Information

		Nov. 2014		Feb. 2015		Apr. 2015		Overall	
		Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Job setting	NCAA I	9	17.6%	31	30.7%	48	31%	88	28.7%
	NCAA II	4	7.8%	10	9.9%	25	16.1%	39	12.7%
	NCAA III	6	11.8%	13	12.9%	28	18.1%	47	15.3%
	Other college	3	5.9%	5	5.0%	5	3.2%	13	4.2%
	Dual appt.	8	15.7%	18	17.8%	13	8.4%	39	12.7%
	High school	15	28.8%	16	15.8%	28	18.1%	59	19.2%
	Clinic	2	3.8%	1	1.0%	5	3.2%	8	2.6%
	Other	4	7.7%	7	6.9%	3	1.9%	14	4.6%
Most recent semester worked with preceptor	Semester of exam	16	30.8%	20	20.0%	58	37.4%	94	30.6%
	1 semester before exam	9	17.3%	24	24.0%	37	23.9%	70	22.8%
	2 semesters before exam	11	21.2%	18	18.0%	19	12.3%	48	15.6%
	3 semesters before exam	6	11.5%	18	18.0%	15	9.7%	39	12.7%
	4 semesters before exam	2	3.8%	7	7.0%	10	6.5%	19	6.2%
	>4 semesters before exam	3	5.8%	10	10.0%	10	6.5%	23	7.5%
	Never	5	9.6%	3	3.0%	6	3.9%	14	4.6%
Is preceptor mentor?	Yes	34	65.4%	75	75.0%	121	78.6%	230	75.2%
	No	18	34.6%	25	25.0%	33	21.4%	76	24.8%

Participants in the study recognized preceptors from all NCAA divisions as well

as ATs who work in schools with other athletic affiliations. ATs who serve dual appointments as educators and practicing clinicians were recognized as respondents' most influential preceptors; as were ATs working in hospital or sports medicine clinics, high schools, and ATs serving in less traditional roles. Preceptors with whom candidates worked within the academic year they took the BOC exam were identified as most influential more frequently than preceptors with whom candidates completed clinical education rotations prior to their last year in the ATP. Overall, respondents considered their most influential preceptor as their mentor 75.2% of the time. This recognition is consistent for the February and April cohorts, but 65.4% of respondents from the November exam window recognized their preceptor as their mentor.

Data Collection Tool Analysis

The researcher-developed ATPMTS was pilot tested prior to the study. Data from the pilot test were used to calculate the reliability coefficient for each of the subscales and for the total of all the Likert-type items on the instrument. These measures were repeated for each of the exam cohorts and for the total of all participant responses. Table 12 is a summary of reliability testing for the ATPMTS.

Table 12

Cronbach's α for ATPMTS Subscales

	Student-centered support	Approachable	Professional preparation	Mutuality	Overall
Nov. 2014	.933	.944	.795	.935	.974
Feb. 2015	.963	.960	.867	.932	.984
Apr. 2015	.954	.930	.855	.914	.979
Overall	.955	.944	.831	.926	.980

All scales for all exam windows demonstrated acceptable reliability; although the professional preparation subscale, which included items related to modeling professional standards, developing the candidate's professional network, and assisting the candidate with athletic training skill acquisition, consistently demonstrated lower reliability than the other subscales. The professional preparation subscale demonstrated higher reliability ($\alpha=.886$) during pilot testing, and the mutuality subscale demonstrated lower reliability ($\alpha=.833$) during the pilot test.

Statistical Analysis

A variety of statistical procedures were used to address each of the three research questions in this study. The results for the statistical analyses for each question are presented below. An alpha level of .05 was used for all statistical analyses since this is the most common criterion used to determine the possibility of a Type I error (Field, 2013).

Research Question 1

To answer Research Question 1, "To what extent do ATSS' recognition of a mentoring relationship with their preceptor, according to the ATPMTS, associate with passing the BOC exam on the first attempt," the researcher performed a Chi-square cross-tabulation using the dummy coded first-time pass variable and the mentor recognition variable. Table 13 shows the results of the analysis for each exam window and for the overall responses.

Table 13

Chi-square Analysis of Mentoring and First-Time Pass

	Value	df	Sig. (2-tailed)
Nov. 2014	4.591	1	.032*
Feb. 2015	6.298	1	.012*
Apr. 2015	14.953	1	.001**
Overall	30.463	1	.001**

Note. * significant at $p=.05$; ** significant at $p=.01$.

A relationship appears to exist between mentoring and passing the BOC exam on the first attempt. This association appeared in all three exam windows used in this study as well as in the aggregate of all three exam windows. The Chi-square test for the November cohort found significant results: $\chi^2 (1, N=52)=4.591, p=.032$. The April ($N=154$) and aggregate ($N=306$) cohorts found significant relationships as well, both at $p<.001$. Chi-square test results for the February cohort ($N=100$) approached significance at the $p=.001$ level.

The researcher then conducted a t test using the dummy coded first-time pass variable and the Likert-type item total scale score. This test was intended to determine if candidates who passed the BOC exam on the first attempt scored their most influential preceptors more highly on the Likert-type mentoring characteristic items on the ATPMTS. Table 14 is a summary of the independent samples t -test results for each exam window and for the total responses. Presented below are the mean, standard deviation, and number of respondents for each condition (recognizes a mentor and does not recognize a mentor) as well as the lower and upper limits of the confidence interval, the t

value, and the degrees of freedom for each exam cohort.

Table 14

First-Time Pass and ATPMTS Overall Scale t Test

	Mentor?						95% CI for		t	df
	Yes			No			Mean Difference			
	Mean	SD	n	Mean	SD	n	Lower	Upper		
Nov. 2014	109.08	12.21	26	92.00	34.72	26	2.36	31.80	2.366*	31.09
Feb. 2015	109.90	18.69	78	89.60	31.20	22	5.93	34.67	2.909*	25.39
Apr. 2015	111.56	15.47	138	100.65	24.04	17	-1.66	23.49	1.83*	17.67
Overall	110.76	16.25	242	93.45	30.90	65	9.39	25.33	4.36*	73.75

Note. Unequal variances; *significant at $p < .05$.

The highest possible score on the Likert-type items overall scale is 125. Equal variances were not assumed. The t test indicated significant relationships in each BOC exam cohort. On average, candidates who passed the BOC exam on the first attempt ($M=110.76$, $SD=16.25$) scored their most influential preceptors more highly on the mentoring trait Likert-type items than candidates who did not pass on the first attempt ($M=93.45$, $SD=30.90$); $t(73.75)=4.36$, $p<.001$. Candidates who passed on the first attempt attributed on average 87% of the total Likert-type item points to their most influential preceptor compared to preceptors of candidates who did not pass on the first attempt receiving 74% of the total Likert-type item points.

The researcher investigated the relationship between first-time pass status, mentor recognition, and participant demographic factors using a Chi-square analysis of responses to items 2 through 11 of the ATPMTS. Table 15 is a summary of the results of the Chi-square analysis of first-time pass and demographic factors.

Table 15

Chi-square Analysis of First-time Pass and Demographic Factors

		Value	df	Sig. (2-tailed)
NCAA affiliation	Nov. 2014	.877	3	.831
	Feb. 2015	3.002	3	.391
	Apr. 2015	3.471	3	.325
	Overall	3.291	3	.349
NATA district	Nov. 2014	10.911	8	.207
	Feb. 2015	21.388	10	.019*
	Apr. 2015	5.370	10	.865
	Overall	27.262	10	.002**
Gender	Nov. 2014	2.769	1	.096
	Feb. 2015	.032	1	.858
	Apr. 2015	.455	1	.505
	Overall	.937	1	.333
Age	Nov. 2014	4.733	3	.192
	Feb. 2015	5.272	4	.261
	Apr. 2015	6.680	3	.083
	Overall	18.690	4	.001**
Preceptor job setting	Nov. 2014	10.051	7	.186
	Feb. 2015	6.520	7	.481
	Apr. 2015	4.954	7	.666
	Overall	3.298	7	.856
Most recent semester with preceptor	Nov. 2014	11.463	6	.075
	Feb. 2015	10.497	6	.105
	Apr. 2015	16.528	6	.011*
	Overall	25.209	6	.001**
Is preceptor your mentor?	Nov. 2014	.340	1	.560
	Feb. 2015	.078	1	.780
	Apr. 2015	2.739	1	.098
	Overall	1.020	1	.313

Note. * significant at $p < .05$; ** significant at $p < .01$.

Significant relationships were found between the NATA district in which the candidate's ATP is situated, respondent's age, and the most recent semester in which the candidate completed a clinical rotation with their most influential preceptor.

The relationship between passing the exam on the first attempt and NATA district appeared in the February cohort and again in the aggregate. Of the candidates who

passed on the first attempt in February ($N=79$), 10 respondents reported membership in NATA District 2; 10 respondents replied their ATP is in District 10; and 11 replied that they did not know their NATA district affiliation. Of all the first-time pass candidates from this study ($N=243$), 40 reported membership in District 4; 35 reported membership in District 2; and 48 were unsure of their NATA district.

The age of the candidate demonstrated a significant relationship with passing the BOC exam on the first attempt: $\chi^2 (4, N=307)=18.690, p=.001$. Of the 243 candidates who passed the BOC exam on the first attempt, 212 reported that their ages were 20-24 years. This age group accounted for 255 of 307 total participants.

A significant relationship was found between the semester in which candidates most recently completed a clinical education rotation with their most influential preceptor and passing the BOC exam on the first attempt. This relationship appeared in the April testing window: $\chi^2 (6, N=155)=16.528, p=.011$. In this window, 56 of the respondents who passed the BOC exam on the first attempt ($N=138$) completed clinical education rotations in the semester they took the BOC exam. Thirty-six other first-time pass candidates were clinically involved with their most influential preceptor in the semester before they took the exam, such that 66% of first-time pass candidates worked with their most influential preceptor in their last year of athletic training education. A relationship appeared between passing the BOC exam on the first attempt and completing clinical education with candidates' most influential preceptor: $\chi^2 (6, N=307)=25.209, p<.001$. Overall, 86 of the first-time pass candidates ($N=242$) were clinically involved with their most influential preceptor the semester they took the BOC exam. An additional 58 respondents completed clinical education rotations with their most influential preceptor the semester before taking the exam. Overall, 60% of candidates who passed the BOC

exam on the first attempt learned with their most influential preceptor in the final academic year of their education program. One focus-group participant explained this relationship, saying a student's most influential preceptor is

a really good study tool . . . you can use them. If you don't understand something then you can go to them and ask the questions you need, figure it out, and have them help you that way and . . . help you figure out the best way you want to study. (Focus-Group Participant 3, May 13, 2015)

Another participant elaborated that

your most influential preceptor is someone that, either subconsciously or consciously, you want to strive to be. . . . you clearly strive toward the traits that that preceptor has because they are having a greater influence so it can, in some sense, give you some motivation to work for your BOC. (Focus-Group Participant 2, May 13, 2015)

Table 16 is a summary of the results of the Chi-square analysis of mentor recognition and participant demographic factors. This analysis represents an attempt to uncover if any relationship exists between demographic factors and candidate recognition of a mentor, information which may lead to deeper examination of the findings of the present study.

Table 16

Chi-square Analysis of Mentor Recognition and Demographic Factors

		Value	Df	Sig. (2-tailed)
NCAA affiliation	Nov. 2014	4.376	3	.224
	Feb. 2015	8.312	3	.040*
	Apr. 2015	3.570	3	.312
	Overall	6.657	3	.084
NATA district	Nov. 2014	5.692	8	.682
	Feb. 2015	13.578	10	.193
	Apr. 2015	16.885	10	.077
	Overall	22.445	10	.013*
Gender	Nov. 2014	.843	1	.358
	Feb. 2015	.256	1	.613
	Apr. 2015	.131	1	.717
	Overall	.418	1	.518
Age	Nov. 2014	8.205	3	.042*
	Feb. 2015	7.314	4	.120
	Apr. 2015	9.970	3	.021*
	Overall	21.004	4	.001**
Preceptor job setting	Nov. 2014	14.888	7	.037*
	Feb. 2015	6.160	7	.521
	Apr. 2015	3.683	7	.815
	Overall	10.118	7	.182
Most recent semester with preceptor	Nov. 2014	7.644	6	.265
	Feb. 2015	8.874	6	.181
	Apr. 2015	11.789	6	.067
	Overall	22.810	6	.001**
Is preceptor your mentor?	Nov. 2014	3.263	1	.071
	Feb. 2015	17.898	1	.001**
	Apr. 2015	39.179	1	.001**
	Overall	55.827	1	.001**

Note. * significant at $p < .05$; ** significant at $p < .01$.

Significant relationships appear between mentor recognition and several of the variables including NCAA affiliation, NATA district, age, most influential preceptor's job setting, the most recent semester in which a candidate completed clinical education

with their most influential preceptor, and recognition of the most influential preceptor as a mentor. Each of these relationships is discussed in turn.

NCAA affiliation of the ATP demonstrated a relationship with mentor recognition, $\chi^2 (3, N=100)=8.312, p=.040$, in the February exam window. Of the 81 respondents from this cohort who recognize a mentor, 49 (60%) attended colleges and universities that compete in NCAA Division I. This relationship did not appear in any other exam cohorts or in the aggregate. When asked to explain this possible relationship, a focus-group participant responded, “I don’t really think it means anything because DI schools hold a lot of students in their program as opposed to a DII school where they might have like seven students graduating” (Focus-Group Participant 1, May 13, 2015).

A significant relationship appeared between mentor recognition and NATA district for the aggregate of all cohorts: $\chi^2 (10, N=305)=22.445, p=.013$. Overall, 52 of the respondents who recognize a mentor ($N=251$) reported not knowing their NATA district.

An association between a candidate’s age and mentor recognition is noted. This relationship appears in the November $\chi^2 (3, N=52)=8.205, p=.042$ April $\chi^2 (3, N=154)=9.970, p=.021$; and overall cohorts $\chi^2 (4, N=305)=21.004, p=.013$. Candidates aged 20-24 years recognize mentors more frequently than older participants. One focus-group participant commented that traditional college-age students “are just a little more needy because we’ve always had our parents” (Focus-Group Participant 1, May 13, 2015). This participant explained that older students may be less inclined to recognize a mentor, positing that “They’re at the point in their life where they’ve matured more than we have . . . and their mindset is different, they’re a little more focused and determined” (Focus-Group Participant 1, May 13, 2015). Another participant added, “due to their age

they could be dealing with preceptors who could technically be younger than them so it's hard to view someone younger than you as a mentor" (Focus-Group Participant 2, May 13, 2015). This participant observed that older students may not recognize mentors as frequently as younger students because "where you are in life is different so your relationships are sometimes harder to make because they've been through different experiences than you've been through so they're looking at the situation from a different perspective" (Focus-Group Participant 2, May 13, 2015).

An association was found between the job setting of candidates' most influential preceptor and candidates' recognition of a mentor: $\chi^2 (7, N=51)=14.89, p=.037$. This relationship appeared only in the November cohort. Candidates who recognized a mentor ($N=36$) most frequently recognized as mentors preceptors who work in NCAA Division I ($N=7$), who work in the high school setting ($N=7$), and who serve dual appointments as ATP faculty and sports medicine clinical staff ($N=7$). When asked to explain this, focus-group participants offered the following commentary. On the topic of high school ATs being recognized as mentors, a focus-group participant noted, "High school is a different experience than most people are used to so it just seems more influential" (Focus-Group Participant 1, May 13, 2015). Another participant added, "[High school ATs are recognized as mentors] because they do so much. I don't want to say the word 'impressive' but what they can balance is a lot so it's influential because they're doing so much" (Focus-Group Participant 2, May 13, 2015). Explanation was offered that high school ATs may be frequently recognized as mentors because "[They] also teach a sports med class at the high school so they're constantly in teaching mode" (Focus-Group Participant 3, May 13, 2015). She followed up adding "Also, a lot of ATs know that high school is where they want to go so they look at the high school AT as 'ok, this is

what I need to do to be in that setting” (Focus-Group Participant 3, May 13, 2015).

Speaking to reasons ATs who serve dual appointments may be more frequently recognized as mentors, a focus-group participant explained, “They get that relationship in the classroom and out of the classroom. So you know you can go to them for information and for education purposes when you have a question because you know they have the background” (Focus-Group Participant 3, May 13, 2015).

A relationship exists between ATs recognizing a mentor and that mentor being their most influential preceptor. This relationship was statistically significant in the February cohort, $\chi^2 (1, N=99)=17.898, p<.001$; the April cohort, $\chi^2 (1, N=154)=39.179, p<.001$; and the aggregate cohort, $\chi^2 (7, N=51)=55.827, p<.001$.

Table 17 is the cross-tabulation of mentor recognition and the recognition of candidates’ most influential preceptor as their mentor.

Table 17

Cross-Tabulation of Mentor Recognition and Recognition of Most Influential Preceptor as Mentor

			Preceptor mentor?		Total
			Yes	No	
Nov. 2014	Mentor?	Yes	27 (73%)	10 (27%)	37
		No	7 (47%)	8 (53%)	15
	Total		34 (65%)	18 (35%)	52
Feb. 2015	Mentor?	Yes	67 (91%)	7 (9%)	74
		No	13 (52%)	12 (48%)	25
	Total		80 (81%)	19 (19%)	99
Apr. 2015	Mentor?	Yes	116 (87%)	18 (13%)	134
		No	5 (25%)	15 (75%)	20
	Total		121 (79%)	33 (21%)	154
Overall	Mentor?	Yes	210 (84%)	41 (16%)	251
		No	19 (35%)	35 (65%)	54
	Total		229 (75%)	76 (25%)	305

Overall, 75% of candidates recognized their most influential preceptor as their mentor.

One focus-group participant explained why ATs might not recognize their most influential preceptor as their mentor in athletic training.

You can still be influenced by someone greatly but not have them be that person that you go to for everything. You can learn a lot and have very productive rotations, however you might not have a good relationship to base them to be your mentor. (Focus-Group Participant 2, May 13, 2015)

She concluded, “In general, if your personalities go well together then it’s easier for them to be your mentor because you would feel comfortable going to them not only about your rotation but what to do with your future” (Focus-Group Participant 2, May 13, 2015).

After establishing a significant relationship between mentor recognition and the recognition of candidates’ most influential preceptor as their mentor, the researcher performed a cross-tabulation of a dummy coded variable indicating first-time pass on the BOC exam while recognizing the most influential preceptor as a mentor and the most recent semester in which the ATS completed clinical education experiences with the preceptor mentor. Table 18 is the results of that cross-tabulation.

Table 18

Cross-Tabulation of First-Time Pass with Preceptor Mentor and Most Recent Semester with Most Influential Preceptor

		Nov. 2014		Feb. 2015		Apr. 2015		Overall	
First-time pass with preceptor mentor?		Yes	No	Yes	No	Yes	No	Yes	No
Semester most recently worked with most influential preceptor	Semester of BOC	6 (38%)	10 (28%)	14 (24%)	6 (14%)	43 (38%)	15 (35%)	63 (34%)	31 (27%)
	1 before BOC	2 (13%)	7 (19%)	15 (26%)	9 (21%)	33 (29%)	4 (9%)	50 (27%)	20 (17%)
	2 before BOC	2 (13%)	9 (25%)	12 (21%)	6 (14%)	11 (10%)	8 (19%)	25 (14%)	23 (19%)
	3 before BOC	3 (19%)	3 (8%)	9 (16%)	9 (21%)	11 (10%)	4 (9%)	23 (12%)	16 (13%)
	4 before BOC	1 (6%)	1 (3%)	3 (5%)	4 (10%)	7 (6%)	3 (7%)	11 (6%)	8 (7%)
	>4 before BOC	0 (0%)	3 (8%)	5 (9%)	5 (12%)	5 (5%)	5 (12%)	10 (5%)	13 (11%)
	Never	2 (13%)	3 (8%)	0 (0%)	3 (7%)	2 (2%)	4 (9%)	4 (2%)	10 (8%)
	Total	16	36	58	42	112	43	186	121

There is a statistically significant relationship between passing the BOC exam on the first attempt while recognizing the most influential preceptor as a mentor and the semester in which the student most recently completed clinical education with the preceptor mentor: $\chi^2 (6, N=307)=15.458, p=.017$. Overall, 60.1% of respondents who passed the BOC exam on the first attempt while recognizing a mentor worked with their most influential preceptor in the semester they took the exam or the semester before they took the exam.

Research Question 2

To answer Research Question2, “According to the ATPMTS, which

characteristics of mentoring, if any, associate with passing the BOC exam on the first attempt,” the researcher performed a Chi-square test for association using each of the 25 Likert-type mentoring characteristics with the dummy coded first-time pass while recognizing the most influential preceptor as mentor variable. Table 19 shows the results of that analysis. To facilitate comprehension, because some participants omitted individual items, the number of valid responses to each item is listed in Table 19.

Table 19

Chi-square Test for Association of Likert-type Items and First-time Pass with Preceptor Mentor Variable

		<i>N</i>	Value	df	Sig. (2-sided)
Prepared for BOC?	Nov. 2014	50	4.389	6	.624
	Feb. 2015	100	21.567	4	.001**
	Apr. 2015	155	22.032	4	.001**
	Overall	305	44.737	4	.001**
Wanted me to succeed?	Nov. 2014	50	4.087	4	.394
	Feb. 2015	99	12.683	3	.005**
	Apr. 2015	154	12.214	4	.016*
	Overall	303	25.666	4	.001**
Modeled standards of the profession?	Nov. 2014	49	4.939	3	.176
	Feb. 2015	97	9.449	4	.051
	Apr. 2015	155	19.679	4	.001**
	Overall	301	33.336	4	.001**
Demonstrated respect for me?	Nov. 2014	49	5.242	3	.155
	Feb. 2015	99	13.085	3	.004**
	Apr. 2015	154	6.637	3	.084
	Overall	303	25.244	3	.001**
Supported me?	Nov. 2014	49	5.855	3	.119
	Feb. 2015	100	13.846	4	.008**
	Apr. 2015	154	21.282	4	.001**
	Overall	302	34.421	4	.001**
Helped me develop critical thinking?	Nov. 2014	50	8.369	3	.039*
	Feb. 2015	100	9.635	4	.047*
	Apr. 2015	154	22.950	4	.001**
	Overall	304	40.190	4	.001**
Communicated with me?	Nov. 2014	48	3.899	3	.273
	Feb. 2015	99	13.137	4	.011*
	Apr. 2015	155	7.444	3	.059
	Overall	302	18.668	4	.001**
Demonstrated appreciation of me?	Nov. 2014	50	6.541	3	.088
	Feb. 2015	100	18.955	3	.001**
	Apr. 2015	155	15.102	4	.004**
	Overall	305	32.443	4	.001**
Was accessible to me?	Nov. 2014	49	3.436	3	.329
	Feb. 2015	100	9.507	4	.050*
	Apr. 2015	154	15.132	4	.004**
	Overall	303	25.806	4	.001**
Clearly explained concepts to me?	Nov. 2014	50	3.720	4	.445
	Feb. 2015	100	11.280	4	.024*
	Apr. 2015	155	9.418	4	.051
	Overall	305	23.465	4	.001**

(continued)

		<i>N</i>	Value	df	Sig. (2-sided)
Proclaimed my accomplishments to others?	Nov. 2014	50	11.444	4	.022*
	Feb. 2015	100	15.507	3	.001**
	Apr. 2015	154	15.029	4	.005**
	Overall	304	44.011	4	.001**
Had an appropriate professional relationship with me?	Nov. 2014	50	2.720	3	.437
	Feb. 2015	98	7.411	3	.060
	Apr. 2015	154	7.752	4	.101
	Overall	302	16.849	4	.002**
Made time for me?	Nov. 2014	49	4.663	3	.198
	Feb. 2015	99	12.477	4	.014*
	Apr. 2015	155	24.531	4	.001**
	Overall	303	37.379	4	.001**
Provided constructive feedback?	Nov. 2014	49	2.867	2	.238
	Feb. 2015	99	16.371	4	.003*
	Apr. 2015	155	14.392	4	.006**
	Overall	303	29.445	4	.001**
Supported me in front of patients?	Nov. 2014	50	2.894	3	.408
	Feb. 2015	99	11.365	4	.023*
	Apr. 2015	154	12.129	3	.007**
	Overall	303	22.922	4	.001**
Encouraged my creativity?	Nov. 2014	49	1.719	4	.787
	Feb. 2015	99	13.814	4	.008*
	Apr. 2015	153	18.587	3	.001**
	Overall	301	29.356	4	.001**
Showed interest in my wellbeing?	Nov. 2014	49	4.904	3	.179
	Feb. 2015	98	11.911	4	.018*
	Apr. 2015	153	19.662	4	.001**
	Overall	300	36.783	4	.001**
Understood my academic strengths/weaknesses?	Nov. 2014	50	4.326	3	.228
	Feb. 2015	98	15.600	4	.004*
	Apr. 2015	155	21.181	4	.001**
	Overall	303	31.827	4	.001**
Thoroughly answered my questions?	Nov. 2014	50	6.811	3	.078
	Feb. 2015	99	8.455	3	.037*
	Apr. 2015	155	9.713	4	.046*
	Overall	304	21.886	4	.001**
Was approachable?	Nov. 2014	50	4.326	4	.364
	Feb. 2015	98	10.873	4	.028*
	Apr. 2015	155	14.608	4	.006**
	Overall	303	26.436	4	.001**
Helped develop my professional network?	Nov. 2014	50	7.614	4	.107
	Feb. 2015	99	13.111	4	.011*
	Apr. 2015	153	14.538	4	.006**
	Overall	302	36.837	4	.001**

(continued)

		<i>N</i>	Value	df	Sig. (2-sided)
Demonstrated trust in me?	Nov. 2014	50	4.241	3	.237
	Feb. 2015	98	15.809	4	.003*
	Apr. 2015	154	11.504	3	.009**
	Overall	302	28.642	4	.001**
Helped me with athletic training skills?	Nov. 2014	49	4.806	3	.187
	Feb. 2015	98	15.760	4	.003*
	Apr. 2015	155	20.009	4	.001**
	Overall	302	38.122	4	.001**
Enhanced my self-esteem?	Nov. 2014	50	3.372	4	.498
	Feb. 2015	99	20.195	4	.001**
	Apr. 2015	155	9.924	4	.042*
	Overall	304	32.150	4	.001**
Willing to learn with me and from me?	Nov. 2014	50	5.995	4	.200
	Feb. 2015	99	19.520	4	.001**
	Apr. 2015	155	7.331	4	.119
	Overall	304	30.895	4	.001**

Note. * significant at $p < .05$; ** significant at $p < .01$.

From the aggregate data, all of the mentoring traits demonstrated relationships at $p < .01$. Two items, “My most influential preceptor helped me develop critical thinking skills” and “My most influential preceptor proclaimed my accomplishments to others,” demonstrated significant relationships in each cohort. The November cohort, which had the lowest first-time pass rate, demonstrated the fewest associations between mentoring characteristics and passing the BOC exam on the first attempt. The item “My most influential preceptor had an appropriate professional relationship with me” only demonstrated a significant relationship in the aggregate cohort. Overall, 63% of candidates who agreed or strongly agreed that their most influential preceptor had an appropriate relationship with them passed the BOC exam on the first attempt.

When asked to discuss how all 25 mentoring traits contribute to BOC exam success, a focus-group participant explained, “it builds confidence within you and that helps a lot going into the test just because you have confidence in yourself that you can do it and pass” (Focus-Group Participant 3, May 13, 2015). Probing more deeply, the focus group was asked if any characteristics were more likely to contribute to a

candidate's confidence. Focus-group participants were asked to identify characteristics from the ATPMTS that are most likely to contribute to confidence. Participants mentioned the following survey items.

- My preceptor supported me.
- My preceptor wanted me to succeed.
- My preceptor supported me in front of patients.
- My preceptor made time for me.
- My preceptor was approachable.
- My preceptor understood my academic strengths and weaknesses.

Each participant contributed items to this list of confidence-building characteristics, and each item listed was mentioned once with no indication of ranking characteristics in order of their contribution to student confidence. The researcher asked participants to identify any of the 25 mentoring traits might make someone an influential preceptor but not a mentor. One participant commented that "If you took the constructive feedback in the wrong direction and took it as a negative thing or if there was a lot of feedback that you were doing things wrong then that could make a difference" (Focus-Group Participant 3, May 13, 2015). A second participant added that

I've have influential preceptors who have been supportive of me, they do want me to succeed, and they did model good standards of athletic training, and they did help boost my confidence but they are not necessarily my mentor because I had other relationships that were stronger. (Focus-Group Participant 2, May 13, 2015).

The researcher performed a *t* test of ATPMTS subscale scores of candidates who passed the BOC exam on the first attempt while recognizing their preceptor as their

mentor. Table 20 shows the results of that t test. Presented below are the mean, standard deviation, and number of respondents for each condition as well as the lower and upper limits of the confidence interval, the t value, and the degrees of freedom for each exam cohort.

Table 20

First-Time Pass with Preceptor Mentor and ATPMTS Scales t Test

		First-time Pass with Preceptor Mentor?						t	df
		Yes			No				
		Mean	SD	n	Mean	SD	n		
Student-centered support	Nov. 2014	54.44	6.01	161	44.92	14.19	36	.013*	50
	Feb. 2015 ^a	54.26	5.23	58	45.49	12.71	41	<.001**	49.64
	Apr. 2015	54.04	7.48	112	47.86	8.60	43	<.001**	153
	Overall ^a	54.15	6.71	186	46.17	11.89	120	<.001*	168.31
Approach.	Nov. 2014	27.06	3.34	16	23.44	7.68	36	.077	50
	Feb. 2015 ^a	27.69	2.57	58	24.00	7.13	41	.003*	47.41
	Apr. 2015 ^a	27.67	3.68	112	25.35	4.52	43	.004**	64.50
	Overall ^a	27.62	3.33	186	24.32	6.50	120	<.001*	159.76
Profess. Prep.	Nov. 2014	13.69	1.66	16	10.89	3.64	36	.005**	50
	Feb. 2015 ^a	13.33	1.81	58	10.90	3.35	41	<.001**	56.50
	Apr. 2015 ^a	13.47	2.08	112	11.95	2.68	43	.001**	62.55
	Overall ^a	13.45	1.96	186	11.28	3.24	120	<.001**	175.93
Mutuality	Nov. 2014	18.44	2.37	16	15.47	5.22	36	.035*	50
	Feb. 2015 ^a	18.62	1.76	58	15.63	4.69	41	<.001**	47.97
	Apr. 2015	18.38	2.74	112	16.86	3.38	43	.005**	153
	Overall ^a	18.46	2.43	186	16.03	4.46	120	<.001**	165.29

Note. * significant at $p < .05$; ** significant at $p < .01$; ^a equal variances not assumed.

The total points available for the student-centered support subscale are 60. For each exam cohort, including the aggregate, students who scored their most influential preceptor higher on the student-centered support mentoring items passed more frequently

than students whose preceptors received lower scores on these items.

The total points available for the approachability subscale are 30. For the February and April cohorts and for the aggregate, students who scored their most influential preceptor higher on the approachability mentoring items passed more frequently than students whose preceptors received lower scores on these items. There was no significant difference in scores on the approachability subscale between students who passed on the first attempt and students who did not pass on the first attempt in the November exam window.

The total points available for the professional preparation subscale are 15. For each exam cohort, including the aggregate, students who scored their most influential preceptor higher on the professional preparation mentoring items passed more frequently than students whose preceptors received lower scores on these items.

The total points available for the mutuality subscale are 20. For each exam cohort, including the aggregate, students who scored their most influential preceptor higher on the mutuality mentoring items passed more frequently than students whose preceptors received lower scores on these items.

Research Question 3

To answer Research Question 3, “How do postbaccalaureate ATSS’ perceptions of preceptor mentorship differ from those of undergraduate ATSS,” the researcher performed a Chi-square cross-tabulation of ATPMTS items 1, 8, 9, and 11.

Table 21

Chi-square Analysis of Degree Level and Demographic Factors

		Value	df	Sig. (2-tailed)
Do you have a mentor?	Nov. 2014	.335	1	.563
	Feb. 2015	.016	1	.899
	Apr. 2015	.465	1	.495
	Overall	.003	1	.958
Job setting of most influential preceptor?	Nov. 2014	5.954	7	.545
	Feb. 2015	6.777	7	.452
	Apr. 2015	5.821	7	.561
	Overall	6.181	7	.519
Is preceptor your mentor?	Nov. 2014	1.575	1	.209
	Feb. 2015	3.000	1	.083
	Apr. 2015	.467	1	.495
	Overall	4.445	1	.035*

Note. * significant at $p=.05$.

Only one significant relationship appeared from this analysis. For the aggregate of all participants, there is a statistically significant relationship between degree level and recognition of the most influential preceptor as a mentor: $\chi^2 (1, N=306)=4.45, p=.035$. Undergraduate students more frequently recognized their most influential preceptor as their mentor 77% of the time, compared to 61% of graduate students. Table 22 below is the cross-tabulation of degree level and recognition of the most influential preceptor as a mentor.

Table 22

Cross-Tabulation of Degree Level and Recognition of Preceptor as Mentor

			Preceptor Mentor		Total
			Yes	No	
Nov. 2014	Degree	Undergrad	32 (68%)	15 (32%)	47
		Grad	2 (40%)	3 (60%)	5
		Total	34 (65%)	18 (35%)	52
Feb. 2015	Degree	Undergrad	63 (79%)	17 (21%)	80
		Grad	12 (60%)	8 (40%)	20
		Total	75 (75%)	25 (25%)	100
Apr. 2015	Degree	Undergrad	111 (79%)	29 (21%)	140
		Grad	10 (71%)	4 (29%)	14
		Total	121 (79%)	33 (21%)	154
Overall	Degree	Undergrad	206 (77%)	61 (23%)	267
		Grad	24 (62%)	15 (38%)	39
		Total	230 (75%)	76 (25%)	306

For the November cohort, 68% of undergraduate students recognized their most influential preceptor as their mentor, compared to 40% of graduate level students. Of the respondents in the February and April cohorts, 79% of undergraduate-level students considered their preceptor to be their mentor; while 60% of graduate students in February and 71% in April made the same recognition. One focus-group participant explained this result, saying,

You're still going through the same basic principles, like you're still learning the same things you might just be in a different setting of undergraduate versus graduate, you're going through the same experiences. So I think it makes sense that the numbers are the same because your experiences are comparatively the same. (Focus-Group Participant 2, May 13, 2015)

To answer Research Question 3, the researcher also performed a *t* test of degree level and ATPMTS subscale scores. Table 23 is the results of that *t* test. Presented

below are the mean, standard deviation, and number of respondents for each condition as well as the lower and upper limits of the confidence interval, the t value, and the degrees of freedom for each exam cohort.

Table 23

Degree Level and ATPMTS Scales t Test

		Degree Level						t	df
		Undergraduate			Graduate				
		M	SD	n	M	SD	n		
Student-centered support	Nov. 2014	47.49	13.52	47	51.20	5.54	5	.549	50
	Feb. 2015	49.49	11.80	81	52.79	7.85	19	.250	98
	Apr. 2015 ^a	52.58	7.68	141	49.71	12.84	14	.424	13.94
	Overall	50.77	10.39	269	51.45	9.66	38	.609	305
Approach.	Nov. 2014	24.13	7.03	47	28.60	1.52	5	.166	50
	Feb. 2015	25.59	6.12	81	27.21	4.60	19	.282	98
	Apr. 2015	27.09	3.76	141	26.43	6.47	14	.565	153
	Overall	26.12	5.32	269	27.11	5.07	38	.283	305
Profess. Prep.	Nov. 2014	11.68	3.55	47	12.40	1.52	5	.658	50
	Feb. 2015	12.05	3.14	81	12.84	2.67	19	.312	98
	Apr. 2015	13.13	2.25	141	12.29	3.24	14	.204	153
	Overall	12.55	2.86	269	12.58	2.74	38	.953	305
Mutuality	Nov. 2014	16.15	4.90	47	18.60	.89	5	.274	50
	Feb. 2015 ^a	16.99	4.24	81	18.16	2.46	19	.118	46.89
	Apr. 2015 ^a	18.05	2.73	141	17.00	5.04	14	.455	13.77
	Overall	17.40	3.73	269	17.79	3.51	38	.542	305
Likert total	Nov. 2014	99.46	28.13	47	110.80	7.19	5	.380	50
	Feb. 2015	104.12	24.60	81	111.00	17.14	19	.252	98
	Apr. 2015 ^a	110.85	15.58	141	105.43	27.00	14	.472	13.87
	Overall	106.83	21.57	269	109.92	20.30	38	.574	305

Note. ^a equal variances not assumed.

There is no statistically significant difference between undergraduate and graduate ATSS' perceptions of mentoring traits according to scale scores on the ATPMTS. According to Focus-Group Participant 2 (May 13, 2015), undergraduate- and graduate-level ATSS are accountable for the same knowledge under CAATE standards, so their perceptions of mentoring in athletic training should be the same.

Summary

This study was designed to investigate the relationship between ATSS' perceptions of mentoring by their most influential preceptor and first-attempt success on the BOC exam. This purpose was achieved using quantitative responses to the ATPMTS and focus-group discussions of the results. The researcher determined that a relationship exists between BOC exam success and all 25 of the mentoring traits when students recognize their most influential preceptor to be their mentor. Mentor recognition is most prevalent among traditionally aged students (20-24 years), but perceptions of mentoring do not differ between undergraduate- and graduate-level students less than 30 years of age. The implications of these results are the topic of Chapter 5.

Chapter 5: Discussion and Recommendations

The role of mentoring has been investigated in athletic training and in other medical fields such as nursing, physical therapy, and academic medicine; and has been associated with increased student self-efficacy for clinical skills (Crosby, 2002; Hayes, 1998; Neal, 2008), socialization into the profession (Hayes, 1998; Hudson, 2002; Panseri, 2005; Pitney et al., 2006), and critical thinking (Pitney & Ehlers, 2004). Pickard (1998, as cited in Pickard, 2003) observed that mentoring characteristics in athletic training are the same as mentoring characteristics in other fields. Curtis et al. (1998), Mazerolle et al. (2012), and O'Brien (2011) recognized that mentoring is a desirable characteristic of clinical instructors; and Burningham et al. (2010) observed that mentoring served as the foundation for the athletic training profession. Hughes and Berry (2011) suggested that mentoring to millennial students is necessary to their development into proficient practitioners.

This study examined the relationship between ATSS' perceptions of mentorship and success on the BOC exam. To accomplish this investigation, a mixed-method research design was used so that quantitative data from the ATPMTS are supported by qualitative data from focus-group interviews. Candidates who took the BOC exam in November 2014, February 2015, and April 2015 were invited to participate using email blast services offered by the BOC. The study sample included candidates who passed and failed the exam and who may have attempted the exam for the first time or a repeated attempt. This chapter is devoted to discussion of this study and implications for athletic training education.

Discussion

The present study adds to a body of literature investigating the role of mentoring

in academic medicine, nursing, physical therapy, and athletic training. This study used a mixed-methods approach to collect quantitative and qualitative data to contribute to the understanding of the relationship between mentoring and success on the BOC exam.

This section is a discussion of the results of the investigation.

The BOC e-mail blast service was utilized to distribute the ATPMTS to all candidates from the November 2014, February 2015, and April 2015 exam windows. This service typically sees response rates of 7.5%. Each survey window and the aggregate responses from this study exceeded this response rate. The demographic data collected from respondents indicate that all NATA districts, all NCAA affiliations, and undergraduate- and graduate-level ATPs were represented in the sample. Additionally, the rates at which candidates passed the BOC exam on the first attempt compares to historical pass rates for each cohort and for the national pass rate according to the BOC exam report (BOC, 2013). Fifty-nine percent of respondents were female and 41% were male. This mirrors the NATA membership statistics of 54% females and 46% males. These data indicate that the survey sample's performance on the exam mirrors the population.

Survey Instrument

This study is the first to collect data using the researcher-developed ATPMTS. The survey instrument was submitted to reliability analysis. Each of the ATPMTS subscales and the overall scale demonstrated acceptable reliability during each survey window as well as for the aggregate. The professional preparation subscale consistently demonstrated lower reliability than the other subscales. Focus-group discussion suggested that this might be a product of ATSS not recognizing the items on this subscale—modeling professional standards, developing the candidate's professional

network, and assisting the candidate with athletic training skill acquisition—as the responsibility of a mentor. Participants acknowledged that mentors may offer some support with professional network development but that ATSs must be accountable for their networking. Similarly, the focus group explained that students must also accept responsibility to practice their own athletic training skills because preceptors “can’t do it for you” (Focus-Group Participant 2, May 13, 2015). With the results of this analysis, the ATPMTS is found to be a reliable instrument.

Research Question 1

To answer Research Question 1, “To what extent do ATSs’ recognition of a mentoring relationship with their preceptor, according to the ATPMTS, associate with passing the BOC exam on the first attempt,” the researcher performed a Chi-square cross-tabulation using the dummy coded first-time pass variable and the athletic training mentor recognition variable. The analysis produced significant results. Athletic training candidates who recognize an athletic training mentor pass the BOC exam on the first attempt more frequently than candidates who do not recognize a mentor. Results of the Likert-total *t* test revealed that candidates who pass the BOC exam on the first attempt recognize more mentoring traits in their preceptor than students who do not pass the first time. These results suggest that strong clinical education which includes mentoring characteristics supports candidate success on the BOC exam. The focus group suggested that this association may be the result of increased student self-confidence because of the supportive nature of the mentoring relationship. As one participant explained, “if they support you and they have confidence in you, it builds your confidence within yourself in your skills” (Focus-Group Participant 3, May 13, 2015). Another participant elaborated that “When you have confidence then you’re more willing to do things on your own,

you're more willing to want to figure it out on your own so I think that helps your critical thinking and also your clinical skills" (Focus-Group Participant 2, May 13, 2015).

The relationships between respondent demographic factors and first attempt success and mentor recognition were studied as well. Chi-square analysis found significant relationships between first-attempt success and three variables: NATA district, respondent age, and the most recent semester in which the candidate completed clinical education with their most influential preceptor. Upon closer inspection, the relationship between the first-time pass status and NATA district is likely the result of a high number of respondents indicating they did not know their NATA district. Mentor recognition demonstrated significant associations with respondent age, the most recent semester in which students completed clinical education with their most influential preceptor, and recognition of the most influential preceptor as a mentor.

Students under the age of 30 passed on the first attempt more frequently than students over the age of 30. The differences in mentor recognition between older and younger students may have several contributing factors. First, older students may be more mature than younger students and may not require the support that younger students need. Also, older students may complete clinical education experiences with preceptors who are younger than the student. Students may have difficulty viewing a younger preceptor as a mentor. Preceptors may also lack training and experience to foster mentoring relationships with nontraditional students. Training in the application of adult learner theory principles may help preceptors better support nontraditional students.

The timing of clinical education experiences may also contribute to first-attempt success on the BOC exam. Of the respondents in this study, 60% of candidates who passed the BOC exam on the first attempt completed clinical education experiences with

their most influential preceptor in the last year of their education program. This suggests that having strong preceptors who exhibit mentoring traits in clinical education may contribute to success on the exam. This is supported by 75% of candidates recognizing their most influential preceptor as a mentor.

Research Question 2

To answer Research Question 2, “According to the ATPMTS, which characteristics of mentoring, if any, associate with passing the BOC exam on the first attempt,” the researcher performed a Chi-square test for association using each of the 25 Likert-type mentoring characteristics with the dummy coded first-time pass while recognizing the most influential preceptor as mentor variable. All 25 Likert-type items demonstrated significant relationships with first-attempt success on the BOC exam. This suggests that the student-centered support offered in mentoring relationships facilitates candidate readiness for the exam and supports previous findings that mentoring contributes to increased student self-efficacy for clinical skills and socialization into the profession. The November cohort, which also reported the lowest first-time pass rate, demonstrated the fewest associations between mentoring traits and first-attempt BOC exam success. The researcher offers no explanation for this but recommends future investigation of the relationship between mentoring and first-time success for this exam window. An independent samples *t* test was conducted to determine if candidates who pass on the first attempt perceive differences in mentoring traits. For all ATPMTS scales, students who passed on the first attempt scored their preceptors more highly on the mentoring traits assessment than students who were not successful on the first attempt. These results suggest that students who more strongly perceive mentoring from their preceptors will experience more frequent success on the BOC exam.

Research Question 3

To answer Research Question 3, “How do postbaccalaureate ATSS’ perceptions of preceptor mentorship differ from those of undergraduate ATSS,” the researcher performed a Chi-square cross-tabulation of ATPMTS items 1, 8, 9, and 11. Of all the demographic factors, only recognition of the most influential preceptor as a mentor demonstrated a significant association with degree level. Analysis of Research Question 1 revealed that students 20-24 years of age more frequently recognize mentors than older students. Otherwise, there is no significant difference in mentor recognition between undergraduate- and graduate-level students. This is supported by an independent samples *t* test which found no difference in ATPMTS scales.

The results of the present study suggest that ATSS who perceive mentoring characteristics in their preceptors are more successful on the BOC exam than students who do not perceive their preceptors as mentors. These results support existing mentoring literature that mentoring relationships with students may facilitate their development into confident and competent practitioners (Hughes & Berry, 2011).

Limitations of the Present Study

A notable limitation of the present study is that the study deviated from its original design. As proposed, the researcher intended to conduct focus-group interviews after each of the November, February, and April exam cohorts responded to the ATPMTS. Following analysis of the November and February survey data, the researcher scheduled focus-group discussions using a web-based meeting software. After waiting in the cyber meeting for 45 minutes on each occasion with no participants, the researcher decided to host one focus group to discuss the aggregate data from all three exam windows. A convenience sample was invited to participate in an on-site focus-group

discussion. While this may have eliminated some insight into the differences in the relationship between mentoring and BOC exam success experienced by candidates in the November cohort, this change was necessary to preserve the integrity of the mixed-method design.

A second limitation of the study is that the survey was not distributed with the same timing for each cohort and did not remain open for the same length of time for each exam window. November candidates received their survey invitation approximately two months after receiving their exam results. This delay was the result of the researcher applying for and receiving IRB approval to conduct research with human participants. Survey invitation recipients who, per email tracking utilized by the BOC e-mail blast service, had not opened the external hyperlink to the survey were sent weekly reminders for 4 weeks. At the conclusion of the fourth reminder, the survey had exceeded the average response rate for BOC e-mail blast surveys and was closed. February candidates received their invitations the day after their exam results were released by the BOC. These recipients were also sent weekly reminders for 4 weeks. This exam window saw the highest response rate. April candidates received their invitations the day after their exam results were released. A longer period of time elapsed between the close of the exam window and the release of exam results. This delay resulted in the survey invitation being sent during final exams for many colleges and universities. The average BOC response rate was exceeded within the first week of the survey. A reminder e-mail was sent a week later but saw a significant decline in response rate. In considering the timing necessary to submit another weekly reminder to increase the number of responses, the researcher decided to forgo another reminder in order to analyze results and to host the focus-group discussion before participants in the convenience sample graduated. This

may have reduced the number of possible responses from the April exam window and from the overall sample.

Comparison to Pickard's Study

Pickard (2003) appears to be the first to investigate the relationship between mentorship and success on the BOC exam. His study, which utilized the researcher-developed AT Mentor Questionnaire, examined mentoring relationships between ATs and head ATs or clinical coordinators to determine if mentorship is associated with success on the BOC exam. Pickard found no relationship.

The present study differs from the Pickard (2003) study in several notable ways. First, this study did not limit mentoring relationships to the head AT or the clinical coordinator. While the researcher recognizes that ATs in these positions may be considered mentors, other ATs on staff may also serve as mentors to students. Furthermore, changes in athletic training education and increases in administrative demands on clinical education coordinators often limit the availability of these ATs to practice clinically. Based on discussion in the focus group, however, the researcher recognizes that ATs who serve dual roles as clinicians and educators or education program administrators may certainly be viewed as mentors to students because "they get that relationship in the classroom and out of the classroom."

Additionally, the present study focused on different aspects of the mentoring relationship. Pickard's (2003) survey instrument contains many items related to developing career readiness, characteristics that align with Drago-Severson's (2009) coaching concept of mentoring. While these characteristics are important, they may not satisfy the strong interpersonal relationship of a mentoring role. In fact, the professional preparation subscale of the ATPMTS was consistently less reliable than other subscales

that focused more heavily on the interpersonal relationship between a mentor and mentee. The present study found that students may perceive their preceptors to be very influential and helpful to their professional development but may not consider their most influential preceptor to be their mentor in the absence of a strong interpersonal relationship. Focus-group participants added to the understanding that mentoring relationships differ from preceptorships because they adapt to the student's needs and facilitate self-confidence and self-esteem. These findings are consistent with current literature that mentoring contributes to student self-efficacy for clinical skills (Crosby, 2002; Hayes, 1998; Neal, 2008).

The present study also appears to be the first to investigate differences in this relationship between students in undergraduate- and graduate-level ATPs. This study found that undergraduate and graduate students perceive mentoring similarly and can both benefit from those relationships. An exception to this relationship may occur when the student is older than 30 years of age. Focus-group participants explained that mentoring relationships may be more difficult to develop with older learners because they may be more mature and less "needy" than younger students and because a nontraditional ATS's preceptor may be younger than the student. Overall, both studies contributed to the understanding of aspects of mentoring relationships that might facilitate first-attempt success on the BOC exam.

Connection to Adult Learner Theory

Adult learner theory provided the conceptual framework for the present study. The tenets of andragogy suggest that adult learners acquire knowledge as is necessary and relevant to them and their immediate goals. These principles, which were furthered by Knowles (1973) and were advanced by Ammon-Gaberson (1987) and Cyr (1999),

submit that adult learners desire to be respected as experienced adult learners and to have their needs considered throughout the educational process. The results of the present study support the principles of adult learner theory.

Adult learner theory principles were echoed in both the quantitative and qualitative portions of the present study. Traits such as trust, respect, accessibility, approachability, appreciation, and mutuality were associated with first-time success on the BOC exam. The student-centered support subscale is also associated with success. According to focus-group participants, these characteristics support student self-confidence and motivate candidates to succeed on the BOC exam. This supports findings by Weidner and Henning (2004) and by Hughes and Berry (2011) that preceptors can offer students nurturing and supportive relationships through the application of adult learning principles in clinical education.

Implications for Athletic Training Education

Mentoring in healthcare education programs has been demonstrated to facilitate critical thinking, skill acquisition, and confidence in students. Through these mechanisms, mentoring in athletic training clinical education can foster student preparation to pass the BOC exam and to enter the profession prepared to deliver competent care to patients. The results of the present study contribute to the understanding of the impact of the clinical education dyad on student success on the BOC examination. Because the findings of this study suggest that ATs, especially students of traditional college age, benefit from mentoring relationships with their preceptors, ATPs should consider selecting preceptors who exhibit many of these characteristic and should offer preceptor training to facilitate the development of these traits. These characteristics should be integrated into preceptor training and should be evaluated in preceptors.

Preceptor training should incorporate emphasis on recognizing the needs of adult learners as well as techniques for meeting those needs and for challenging the learner to grow. Drago-Severson (2009) offers useful information to support and challenge students' ways of knowing. Her pillar practices of teaming, providing leadership roles, collegial inquiry, and mentoring are applicable to both the preceptors and the students. By incorporating these practices into preceptor training, preceptors of all levels of experience are afforded opportunities to collaborate and to engage in shared reflection. By participating in these practices in preceptor training, clinical educators can learn techniques to incorporate adult learning principles into clinical education. By integrating andragogy into clinical education, preceptors will more fully engage ATs in their educational experiences and will foster environments in which positive educational relationships and mentorships may develop.

The researcher also recommends that preceptors cultivate characteristics that are conducive to the development of strong professional relationships in the clinical education setting. Many of these characteristics are identified in the ATPMTS and are included in the Evaluation of Athletic Training Approved Clinical Instructor assessment. The Evaluation of Athletic Training Approved Clinical Instructor tool (Weidner & Henning, 2004) provides a validated instrument for assessing these characteristics. Standards 2-6 of the evaluation tool contain several individual criteria which can be used to provide both student assessment of the preceptor as well as preceptor self-reflection. The criteria which are most directly related to the mentoring traits of the ATPMTS follow.

- **Criterion 2.2**—The ACI uses appropriate forms of communication to clearly and concisely express him/her to ATs, both verbally and in writing.

- **Criterion 2.3**—The ACI provides appropriately timed and constructive formative and summative feedback to ATSS.
- **Criterion 2.4**—The ACI facilitates communication with ATSS through open-ended questions and directed problem solving.
- **Criterion 2.5**—The ACI ensures time for ongoing professional discussions with the ATS in the clinical setting.
- **Criterion 2.6**—The ACI communicates with ATSS in a nonconfrontational and positive manner.
- **Criterion 3.1**—The ACI forms appropriate and professional relationships with ATSS.
- **Criterion 3.2**—The ACI models appropriate and professional interpersonal relationships when interacting with ATSS, colleagues, patients/athletes, and administrators.
- **Criterion 3.4**—The ACI is a positive role model and/or mentor for ATSS.
- **Criterion 3.5**—The ACI demonstrates respect for gender, racial, ethnic, religious, and individual differences when interacting with people.
- **Criterion 3.6**—The ACI has an open and approachable demeanor to ATSS when working in the clinical setting.
- **Criterion 4.3**—The ACI understands the ATSS' academic curriculum, level of didactic preparation, and current level of performance relative to the goals of the clinical education experience.
- **Criterion 4.7**—The ACI modifies learning experiences based on the ATSS' strengths and weaknesses.

- **Criterion 4.12**—The ACI communicates complicated/detailed concepts in terms that students can understand based on their level of progression within the athletic training education program.
- **Criterion 5.3**—The ACI encourages ATs to arrive at clinical decisions on their own according to their level of education and clinical experience.
- **Criterion 6.4**—The ACI approaches the evaluation process as constructive and educational.
- **Criterion 6.6**—The ACI and ATs participate in formative (i.e., ongoing specific feedback) and summative (i.e., general overall performance feedback) evaluations.

Preceptor training should not be limited to an annual event. Regularly scheduled training should allow ongoing opportunity for preceptors to reflect together on their own development as well as the development of their andragogical practices in clinical education settings. Continuing education modules on learning styles should be supplemented with supports and challenges consistent with Drago-Severson's (2009) ways of knowing. Support for timely, appropriate, and professional communication should be incorporated into preceptor education. Preceptors should be offered specific training related to ATS evaluation and the delivery of constructive feedback. This is important because, as one focus-group participant remarked,

If you took the constructive feedback in the wrong direction and took it as a negative thing . . . or if there was a lot of feedback that you were doing things wrong, that could make a difference [between someone being a preceptor but not a mentor]. (Focus-Group Participant 3, May 13, 2015)

The impact of strong preceptorship in clinical education should not be

overshadowed by mentorship, however. As one focus-group participant commented, “[Success on the BOC exam] is more related to the positive learning experience you had at the rotation as opposed to [the preceptor] specifically being a mentor” (Focus-Group Participant 1, May 13, 2015). This suggests that the integration of mentoring characteristics into clinical education may still be impactful even if candidates do not consider the relationship to be a mentorship. By recognizing and valuing the characteristics of ATs who enter roles in clinical education, ATPs can structure supportive and beneficial opportunities for development of effective preceptor and mentor skills.

Recommendations for Future Studies

While the current study provided insight into the relationship between mentoring and BOC exam success, future studies can expand this understanding. Several suggestions for future studies follow.

One recommendation is to repeat the current study with larger samples. This expansion will increase the applicability of the results to the population of all BOC exam candidates. This may be achieved by sampling candidates from more exam windows or by changing the method of inviting candidates to participate in the study.

Another recommendation is to study the impact of gender on mentoring and mentor recognition. Although the present study found no significant difference between the frequencies at which males and females recognize mentors, the differences should be investigated further. Researchers should examine more closely the rate at which opposite-sex preceptors are recognized as mentors and which, if any, contribute to these mentoring relationships. The investigation of this relationship might facilitate training so that preceptors are more able to facilitate meaningful professional relationships with all

students.

Since the number of graduate-level respondents for this study was low, the study should be repeated with emphasis on graduate-level candidates. None of the focus-group participants represented graduate-level ATPs, so qualitative investigation of mentoring with these students was not possible. While many undergraduate level ATPs are 3 years in length and may be 4 years in length if the program requires preadmission observation experiences, graduate-level programs are often 2 years in length. The impact of longevity of exposure to athletic training preceptors on mentoring in clinical education is worthy of examination. This investigation may greatly impact the impending elimination of the undergraduate professional program. The Strategic Alliance, which consists of representatives from BOC, CAATE, NATA, and the NATA Research and Education Foundation announced this decision in May 2015, with implementation of the change to take place in no less than 7 years (NATA, 2014). This timeline provides ample opportunity to identify effective mentoring characteristics in preceptors of graduate-level students.

Because students over the age of 30 do not recognize mentors as often as younger students, the researcher recommends a focused investigation of desirable mentoring characteristics for this population. This study should include factors that contribute to differences in mentor recognition among candidates aged 30 years and older, as well as identification of desirable mentoring traits in athletic training preceptors that might encourage the development of mentoring relationships with nontraditional students.

Summary

The many benefits of mentoring in clinical education exceed the scope of the present study. Not only has mentoring been demonstrated to facilitate ATS retention

(Hartsell, 2013), increased student self-efficacy for clinical skills (Crosby, 2002; Hayes, 1998; Neal, 2008), socialization into the profession (Hayes, 1998; Hudson, 2002; Panseri, 2005; Pitney et al., 2006) and critical thinking (Pitney & Ehlers, 2004); the present study found an association between preceptor mentoring to ATSs and first-attempt success on the BOC exam. The mechanism of this association appears to rest in the facilitation of student self-confidence which may be developed when preceptors practice supportive behaviors that are individual to the student needs.

While focus-group participants in the current study confirmed that preceptors can be influential while not being recognized as mentors, several interpersonal characteristics may render the development of mentorships more conducive. The defining difference appears to be one of “contract versus care.” A preceptor may provide superior clinical education experiences as they are contracted and expected to do but may not engage the student in a meaningful, professional interpersonal relationship. While students may recognize the skill of a superior preceptor, this person may not be considered a mentor. The recognition of a mentor depends on the perception of care—a mentor is someone students feel they can approach with questions about athletic training, about their future and career choices, and about life. The recognition and advancement of mentoring characteristics in athletic training clinical education can facilitate candidate preparation to pass the BOC exam, to enter the field of clinical practice, and to contribute to the delivery of competent patient care and to the growth of the rapidly expanding profession.

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Appendix A

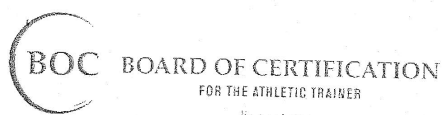
Mentoring Characteristics from Review of Literature

Mentoring characteristics from review of literature

Mentoring characteristic	Studies where characteristic is cited
Mutual learning	Haley-Andrews (2001); Hayes (2005); Neal (2008)
Mutual sharing	Haley-Andrews (2001); Hayes (2005)
Mutual growth	Haley-Andrews (2001); Hayes (2005)
Voluntary	Hayes (2005)
Supportive	Hayes (2005); Curtis et al. (1998)
Trust	Hayes (2005)
Friendship	Hayes (2005)
Socializing	Hayes (2005)
Accessibility	Pitney and Ehlers (2004)
Approachability	Pitney and Ehlers (2004); Mazerolle et al. (2012); Neal (2008)
Student-centered	Gallo and Siedow (2003); Phan et al. (2012)
Constructive feedback	Curtis et al. (1998); Hayes (2005); Laurent and Weidner (2001)
Modeling	Curtis et al. (1998); Laurent and Weidner (2001); O'Brien (2011); Neal (2008)
Explanation	Curtis et al. (1998); Neal (2008)
Interpersonal skills	Phan et al. (2012)
Dynamic	Neal (2008); Hayes (2005)
Professional networking	Ramanan et al. (2002)

Appendix B

BOC Email Blast Order Form



Email Blast/Mailing List Order Form

Fax all pages to (402) 561-0598

Contact Information:

BOC Provider #: 050602124

Email: sabrina.fordham@gmail.com

Phone #: 478-697-3022

Fax #: _____

(Please include area code)

(Please include area code)

Billing Information:

Company Name: _____

Shipping Information (if different):

Company Name: _____

Contact Name: Sabrina Fordham

Contact Name: _____

Address: 2727 Nottingham Lane

Address: _____

Apt. K

Monroe, NC 28110

(Please include city, state, postal code and country)

(Please include city, state, postal code and country)

List Options:

Email Blast sent by BOC on Your Behalf

1. Client supplies HTML and plain text version of email
2. Client supplies content and images and BOC creates email using a template
3. Client supplies content and images and BOC creates a custom email design

Provide content at least:

- 3 business days prior to scheduled date
- 3 business days prior to scheduled date
- 5 business days prior to scheduled date

Sender email address: sabrina.fordham@gmail.com

Subject Line: Survey Invitation - Mentorship and BOC Exam Success

Mailing Addresses

1. List sent via email to a mailing house
2. Pre-printed labels mailed to purchaser

Email Address: _____

One-Time Use Agreement:

Any mailing list you or your chosen mailing house receive is subject to a one-time use condition.

The recipient of the BOC list hereby agrees that the information provided will not be stored, duplicated, copied or reproduced in any manner, nor will it be used for any purpose other than a one-time mailing of the recipient's materials. Promotional materials must adhere to the aforementioned guidelines and be submitted to the BOC for approval at time of order.

BOC is not responsible for returned items due to incorrect mailing addresses or email addresses. The BOC relies on ATs to inform us of address changes, and the BOC stresses to all ATs the importance of notifying the BOC when an address has changed.

By completing the information below, you are indicating that you have read and understand the terms of use stated above.

Purpose of Email/Mailing: Study for doctoral dissertation

Date Mailing List Needed: _____

Signature: Sabrina Fordham

Or

Date of Email Blast: 1/20/2015

Date Signed: 1/15/2015

(Monday-Friday)

Email Blast/Mailing List Order Form

Fax all pages to (402) 561-0598

Email Blast/Mailing List Specifications:

- ☐ All Certified Athletic Trainers (ATs) – Approximately 32,000 ATs have opted to share their contact information
 If you would like to order a list of all ATs, check the box above.
 If you would like to order a list for a specific group of ATs, check one or more of the boxes below.

States

- | | | | | |
|---|--------------------------------------|---|--|---|
| <input type="checkbox"/> Alabama | <input type="checkbox"/> Alaska | <input type="checkbox"/> Arizona | <input type="checkbox"/> Arkansas | <input type="checkbox"/> California |
| <input type="checkbox"/> Colorado | <input type="checkbox"/> Connecticut | <input type="checkbox"/> Delaware | <input type="checkbox"/> Florida | <input type="checkbox"/> Georgia |
| <input type="checkbox"/> Hawaii | <input type="checkbox"/> Idaho | <input type="checkbox"/> Illinois | <input type="checkbox"/> Indiana | <input type="checkbox"/> Iowa |
| <input type="checkbox"/> Kansas | <input type="checkbox"/> Kentucky | <input type="checkbox"/> Louisiana | <input type="checkbox"/> Maine | <input type="checkbox"/> Maryland |
| <input type="checkbox"/> Massachusetts | <input type="checkbox"/> Michigan | <input type="checkbox"/> Minnesota | <input type="checkbox"/> Mississippi | <input type="checkbox"/> Missouri |
| <input type="checkbox"/> Montana | <input type="checkbox"/> Nebraska | <input type="checkbox"/> Nevada | <input type="checkbox"/> New Hampshire | <input type="checkbox"/> New Jersey |
| <input type="checkbox"/> New Mexico | <input type="checkbox"/> New York | <input type="checkbox"/> North Carolina | <input type="checkbox"/> North Dakota | <input type="checkbox"/> Ohio |
| <input type="checkbox"/> Oklahoma | <input type="checkbox"/> Oregon | <input type="checkbox"/> Pennsylvania | <input type="checkbox"/> Rhode Island | <input type="checkbox"/> South Carolina |
| <input type="checkbox"/> South Dakota | <input type="checkbox"/> Tennessee | <input type="checkbox"/> Texas | <input type="checkbox"/> Utah | <input type="checkbox"/> Vermont |
| <input type="checkbox"/> Virginia | <input type="checkbox"/> Washington | <input type="checkbox"/> West Virginia | <input type="checkbox"/> Wisconsin | <input type="checkbox"/> Wyoming |
| <input type="checkbox"/> District of Columbia | | <input type="checkbox"/> Guam | <input type="checkbox"/> Puerto Rico | <input type="checkbox"/> Virgin Islands |

NATA Districts

- ☐ District 1 (CT, MA, ME, NH, RI, VT)
☐ District 2 (DE, NJ, NY, PA)
☐ District 3 (MD, NC, SC, VA, WV, District of Columbia)
☐ District 4 (IL, IN, MI, MN, OH, WI)
☐ District 5 (IA, KS, MO, ND, NE, OK, SD)
☐ District 6 (AR, TX)
☐ District 7 (AZ, CO, NM, UT, WY)
☐ District 8 (CA, HI, NV)
☐ District 9 (AL, FL, GA, KY, LA, MS, TN, PR, VI)
☐ District 10 (AK, ID, MT, OR, WA)

Other

- ☐ Domestic (within US only)
☐ International (outside US only)
☐ Custom – ATs* Specify criteria such as Date Certified, ZIP Codes, Professional Setting, etc.

- ☒ Custom – Exam Candidates* Specify criteria such as Exam Date(s), First Time or Retake Candidates, etc.

275 candidates from November 2014 BOC
exam window.

*Additional charges may apply; please contact the BOC office to inquire.

Promotional Material/Research Guidelines:

- Attach materials with this order form.
- The following is the only statement that may be used to identify a BOC Approved Provider: "Company Name is recognized by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers."
- The BOC Approved Provider logo, which can be downloaded from the BOC website, is formatted as a perfect square (image height is equal to image width). The image should not be altered to be any other shape. Size adjustments can be made; however, the logo must remain proportionate. Please *Be Certain*.™ the logo is always in proportion to the original dimensions.
- The following are **NOT** permitted: statements regarding BOC requirements, BOC contact information, BOC corporate logos or other statements that insinuate BOC affiliation or endorsement. Those companies using BOC mailing/email lists that are not BOC Approved Providers may not use any statements or logos pertaining to the BOC. A separate agreement may be required for lists used to conduct research. Contact the BOC office to inquire.

Appendix C

Athletic Training Preceptor Mentoring Traits Survey

Athletic Training Preceptor Mentoring Traits Survey

This survey is intended to gain an understanding of the impact of preceptor mentoring characteristics on BOC exam success.

1. What is the degree type of your athletic training program?

- ☐ Undergraduate
- ☐ Master

2. What is the NCAA affiliation of your CAATE-accredited Athletic Training Program?

- ☐ NCAA Division I
- ☐ NCAA Division II
- ☐ NCAA Division III
- ☐ Other

Demographic Section

For this section, please respond based on your experiences as an athletic training student and BOC exam candidate.

3. In what NATA district is your CAATE-accredited Athletic Training Program?

- | | |
|----------------------------------|-------------------------------------|
| <input type="radio"/> District 1 | <input type="radio"/> District 7 |
| <input type="radio"/> District 2 | <input type="radio"/> District 8 |
| <input type="radio"/> District 3 | <input type="radio"/> District 9 |
| <input type="radio"/> District 4 | <input type="radio"/> District 10 |
| <input type="radio"/> District 5 | <input type="radio"/> I don't know. |
| <input type="radio"/> District 6 | |

4. What is your gender?

- ☐ Male
- ☐ Female

5. What is your age?

- ☐ 20-24 years
- ☐ 25-29 years
- ☐ 30-34 years
- ☐ 35-39 years
- ☐ More than 40 years

6. Was this testing window your first attempt at the BOC exam?

- ☐ Yes
- ☐ No

7. Did you pass the BOC exam on your first attempt?

- ☐ Yes
- ☐ No

8. Do you consider yourself to have a mentor in athletic training?

- ☐ Yes
- ☐ No

Preceptor Demographic Section

For this section, please think about the preceptor who has had the greatest influence on you.

9. What is the job setting of your most influential preceptor?

- | | |
|--|---|
| <input type="radio"/> NCAA Division I
College/University AT | <input type="radio"/> Other College/University AT |
| <input type="radio"/> NCAA Division II
College/University AT | <input type="radio"/> Clinical AT/Professor |
| <input type="radio"/> NCAA Division III
College/University AT | <input type="radio"/> High School AT |
| | <input type="radio"/> Sports Medicine Clinic AT |
| | <input type="radio"/> Other: |

Thanks!

7/27/14, 3:34 PM

Athletic Training Preceptor Mentoring Traits Survey

Thank you very much for your contribution to an understanding of athletic training clinical education. If you'd like to be considered for participation in an online focus group discussion related to this survey, please click on the following link to leave your email address.

https://docs.google.com/forms/d/1bMJuPIbsvKH2Hlk-zP_ybDTH8KT8bt4R1LfgBCJrNfk/edit

This form was created using Google Forms.
[Create your own](#)



Appendix D

Athletic Training Preceptor Mentoring Traits Survey Focus-Group Invitation

Athletic Training Preceptor Mentoring Traits Focus-Group Invitation

This is an invitation to participate in an online focus-group interview regarding the survey you just completed. By typing your email address below, you agree that the researcher may include your email address in a pool of potential participants for an online focus-group discussion. If you do not wish to be included in the pool of potential participants, simply exit this survey.

The researcher may contact me at the following email address regarding participation in a focus-group discussion related to the Athletic Training Preceptor Mentoring Traits Survey.
