

AN INVESTIGATION OF THE RELATIONSHIPS BETWEEN STUDENT PERCEPTIONS OF PRECEPTOR MENTORSHIP AND PASS RATES ON THE BOARD OF CERTIFICATION EXAM FOR ATHLETIC TRAINERS

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ABSTRACT

This study used an explanatory mixed-method design to investigate the relationships between preceptor mentorship in clinical education and success on the Board of Certification (BOC) exam for athletic trainers. The Athletic Training Preceptor Mentoring Traits Survey (ATPMTS) was developed by the researchers via a Delphi method following review of mentoring literature from nursing, athletic training, and academic medicine. Three hundred four athletic training students completed the survey during the last year of their training and before the BOC exam. Preceptor ratings were compared for students who passed the BOC on the first attempt ($n = 241$) and students who did not pass on the first attempt ($n = 63$) using t -tests of independent means. The results of the analyses indicated that ATPMTS composite and subscale scores of students who passed the BOC exam on the first attempt were significantly different (higher) from composite and subscale scores of students who did not pass the BOC on the first attempt. Additionally, 60% of students who passed the BOC exam on the first attempt learned with their preceptor mentor either the semester of taking the BOC exam or the semester before taking the BOC exam. The results of this study have important implications for the selection and training of athletic training preceptors.

Keywords: preceptor; athletic training students; Board of Certification Exam; mentorship; clinical training

Introduction

Mentorship is recognized as a mutualistic, individualized developmental process in athletic training education that facilitates learning, skill acquisition, and professional socialization for students (Mazerolle, Eason, Nottingham, & Barrett, 2016). In athletic training, students gain knowledge and skills by participating in coursework and completing clinical experiences. These clinical experiences are supervised by preceptors who are clinicians trained to prepare students to practice healthcare skills on patients as part of the patients' care team. Mentoring by preceptors is associated with students' increased self-efficacy and clinical skills (Hayes, 1998); improved socialization into the profession (Hayes, 1998; Mazerolle & Dodge, 2015; Pitney, Ehlers, & Walker, 2006); and reduced theory-to-practice gaps (Jokelainen, Turunen, Tossavainen, Jamookeah, & Coco, 2011). Additionally, mentorships can improve critical thinking skills (Mazerolle et al., 2016; Pitney & Ehlers, 2004) that are not easily practiced in the classroom. Preceptors can support learners' development of clinical skills and critical thinking by being approachable (Hayes & Gagan, 2005; Pitney & Ehlers, 2004) and by engaging in friendly interactions to promote confidence in the protégé (Hayes & Gagan, 2005; Mazerolle & Dodge, 2015). The goal of mentorship in athletic training is to develop knowledge, skills, and attitudes that enhance the transitions from student to clinician.

Brief Review of Literature

The individualized nature of mentorship lends itself to broadly-based definitions, but several behaviors are described in mentoring literature. Ragins and Kram (2007) identified mentorship as a developmental relationship that serves to guide learners through individualized support as they become effective professionals. Mentorships are further characterized as dynamic, learner-centered relationships in which skilled clinicians recognize, support, and

challenge novice learners in varying degrees as the students develop skills and confidence (Drago-Severson, 2009; Hayes & Gagan, 2005; Neal, 2008). The practice of offering differentiated support based on the learner's skill levels can be described by the Supervision, Questioning, and Feedback (SQF) model developed by Barnum, Guyer, Levy, and Graham (2009). In the SQF model, clinical educators use supervision, questioning, and feedback to support the students' development of competency. According to Barnum et al (2009), novice learners generally require higher levels of supervision, questioning, and feedback; advanced learners are typically more comfortable with autonomy and are open to questioning and feedback that challenge their thinking and decision-making. The mentors' support, questioning, and challenging actions are especially important among adult learners (Drago-Severson, 2009); in this model, a trusted educator creates a safe and constructive environment in which students feel comfortable sharing and reflecting with their mentors. In these "holding environments" the mentor grows to understand the strengths and limitations of the protégé's knowledge and skills and offers individualized supports and challenges to promote competency (Drago-Severson, 2009). To operationalize this process successfully, the mentor recognizes that the learner may feel more or less confident with regard to different skills and tasks; in those cases, the mentor can adjust the support offered for each situation. Supervising, questioning, and feedback behaviors are associated with mentorship (Passi, 2016); when preceptors incorporate these mentoring traits into clinical education interactions, students have the opportunity to learn in supportive and engaging environments, which hopefully lead to better integration of classroom-based knowledge into clinical practice.

Athletic Training Education and Practice

Athletic Trainers (ATs) are allied health professionals who are skilled in prevention, evaluation, diagnosis, and therapeutic intervention and rehabilitation of orthopedic injuries (National Athletic Trainers' Association [NATA], 2019). To earn the “Certified Athletic Trainer” (ATC[®]) credential, a candidate must graduate from an athletic training program (ATP) accredited by the Commission on Accreditation of Athletic Training Education (CAATE) and pass the Board of Certification (BOC) exam by earning a score of at least 500 on a scale from 200 to 800 (Board of Certification, 2019). Currently, learners may earn candidacy by being enrolled in the final semester of either an accredited baccalaureate- or graduate-level professional program or by meeting eligibility requirements under the Mutual Recognition Agreement between the Board of Certification, the Canadian Athletic Therapists Association, and the Athletic Rehabilitation Therapy Ireland (BOC, 2019). However, the Athletic Training Strategic Alliance, comprised of the National Athletic Trainers' Association (NATA), the CAATE, the BOC, and the National Athletic Trainers' Association's Research and Education Foundation, recommended that all ATPs should transition to the graduate level and remove baccalaureate-level study as an option by which candidates can earn eligibility (NATA, 2013, “Professional Education in Athletic Training”).

The BOC exam is designed to assess knowledge in the 5 Domains of Athletic Training:

- Domain 1: Injury and Illness Prevention and Wellness Promotion
- Domain 2: Examination, Assessment, and Diagnosis
- Domain 3: Immediate and Emergency Response
- Domain 4: Therapeutic Intervention
- Domain 5: Health Care Administration and Professional Responsibility

The BOC exam contains 175 questions, some of which in the format of multiple-choice questions, alternative question types such as multiple selection, drag-and-drop, other interactive items, and “testlets” that include scenarios followed by 5 questions (BOC, 2019). Candidates who exceed the passing point of 500 are awarded eligibility for the ATC[®] credential. Candidates who fail to pass are allowed to retake the exam as early as the next exam and within one year of receiving notification of their result; there are no restrictions on the number of overall attempts.

Athletic training curricula include pre-requisite knowledge in the sciences plus formal instruction in human anatomy and physiology; first aid and emergency care; prevention, assessment, and rehabilitation of illnesses and injuries; therapeutic modalities; and nutrition. Classroom-based learning is augmented by clinical education experiences in which students expand their knowledge and skills; clinical students provide care for authentic patients for at least two years while under the direct supervision of certified athletic trainers (CAATE, n.d.). During clinical education, preceptors offer formative and summative feedback to students using instruments and processes established by the athletic training program administrators. Students’ rates of first-time success on the BOC credentialing exam have major implications for athletic training programs (ATPs) because passing the exam influences accreditation and may influence future recruitment and enrollment among athletic training programs (Bowman, Hertel, & Wathington, 2015).

The Bureau of Labor Statistics (2017) projected 23% growth in the athletic training profession by the year 2026; this growth is attributed to increased attention to prevention and treatment of sports injuries (Bureau of Labor Statistics, 2017). The Centers for Disease Control and Prevention (CDC; nd) reported that 2.6 million youth in the United States receive emergency treatment for sports injuries each year. In addition, adults who are middle-aged and older

continue to lead active lifestyles (Bureau of Labor Statistics, 2017). As demand for ATs increases, so does the demand for ATPs to prepare competent professionals through high-quality instruction and clinical education. Because athletic training students participate in clinical education for more than half of their preparation (Weidner & Henning, 2002), a study of mentorship in clinical education is critically important and may influence programs' decisions regarding preceptor training and selection.

Purpose of the Study

Students have identified mentorship in clinical education as beneficial to their growth and success (Mazerolle, Bowman, & Dodge, 2012; Phan, McCarty, Mutchler, & Van Lunen, 2012; Pitney & Ehlers, 2004). In addition, ATPs must promote satisfactory first-time BOC pass rates for program accreditation purposes. As a result, investigation of the relationships between mentorship and first-attempt success on the BOC examination provides valuable information to practitioners. While mentorship in clinical education has been broadly studied in other healthcare education programs, a paucity of research exists regarding mentorship in AT clinical education. The purpose of this study was to investigate the relationships between student perceptions of preceptor mentorship in clinical education and first-time pass rates on the BOC exam. The following research question guided this explanatory sequential mixed method investigation: What is the relationship between athletic training students' perceptions of the mentoring traits of their preceptors and first-time pass rates on the BOC exam?

Methods

Participants

After receiving Institutional Review Board approval for the study, the researchers invited a total of 2,700 candidates for the Board of Certification (BOC) exam to respond to the Athletic

Training Preceptor Mentoring Traits Survey (ATPMTS). On behalf of the researchers, the BOC email blast service distributed the invitation to participate and a link to the online survey to candidates who had completed the BOC exam and who had received results within the previous six months. The BOC administrators issued an email reminder two weeks after the initial invitation to facilitate increased response rates. From the 2,700 candidates who were invited to participate, 304 respondents (11%) completed the survey. Table 1 depicts the self-reported demographic information of the respondents.

Table 1

Frequencies and Percentages of Athletic Training Students' Survey Responses

Demographic	<i>N</i>
Degree level of professional program	
Baccalaureate	265 (87%)
Post-baccalaureate	39 (13%)
Gender identity	
Male	123 (40.5%)
Female	181 (59.5%)
Age in years	
20 – 24	254 (83%)
25 – 29	36 (12%)
>30	14 (5%)

Instrumentation

The researchers developed the Athletic Training Preceptor Mentoring Traits Survey (ATPMTS; see Appendix A) for this study after a review of mentoring literature related to athletic training, nursing, and academic medicine. In order to create and refine the instrument's survey items, the researchers utilized a modified Delphi technique, which was originally developed by Norman Dalkey and Olaf Helmer (1963) for the RAND Corporation. The iterative

method employed by the Delphi technique was used to build consensus among content experts while ensuring that each panelist's thoughts were recorded for careful consideration between rounds of review (Sandrey & Bulger, 2008). Three athletic training program faculty members agreed to review the researchers' original survey using the iterative Delphi method. Each of the faculty members was experienced in clinical education either as a preceptor, program faculty, or both, and each was familiar with mentorship, desirable preceptor traits, and assessment of clinical educators. The panelists completed three rounds of review. During the first round, the educators expressed concern that the wording of some items might depict potentially inappropriate professional behaviors, particularly those related to interpersonal relationships between preceptors and students; the panelists encouraged revision of the phrasing of item prompts. For example, the original draft prompted respondents to consider the extent to which "My preceptor cared about me". After the first round of review and subsequent review of literature, the researchers revised this item to "My preceptor showed interest in my professional and personal wellbeing." The first round of review also highlighted items related to negative mentoring behaviors, such as considering learners to be "an extra set of hands"; embarrassing learners in front of peers or patients; hesitating to help the learner; and appearing disinterested in the learner. The panelists expressed concern that measuring these behaviors did not align with mentorship; subsequently, the researchers removed these items. Additionally, two redundant items were removed. During the first round of review, the educators identified the terms "approachability" and "accessibility" as redundant. After a review of mentoring literature, the researchers observed that these terms represented separate constructs and decided to include them in the next iteration of the survey.

The second round of review elicited concerns over the demographic section of the instrument. “Job setting” replaced “job title or position” to clarify the type of learning environment. The educators suggested minor edits to reflect recent changes in professional terminology in some items, but they approved the content of the Likert-type items. The panel of reviewers accepted the resulting *ATPMTS* consisting of 25 Likert-type mentoring items in the third round to establish construct validity of the instrument. Responses to the instrument were rated on a five-point scale, with five indicating “strongly agree” and one indicating “strongly disagree”.

After institutional review board approval, the researchers piloted the instrument using a sample of 11 athletic training students entering the final year of their athletic training program. After taking the survey, four students provided constructive feedback related to instructions for completing the survey. Several students in the pilot study noted a recurring concern that respondents might reflect on the mentoring behaviors of multiple preceptors without a clearer prompt to focus on the behaviors of one preceptor. In response, the researchers inserted the phrase “most influential preceptor” in the instructions to the survey in order to provide clarity and focus. The student panelists agreed that the instrument was easier to understand and interpret after revisions.

For the final step in instrument development, a sample of recent graduates from both baccalaureate and master level professional programs completed a second pilot test of the instrument. Thirty-three respondents completed the survey, and 11 offered feedback on the readability of the instrument and on the time to complete the survey. Respondents indicated they completed the survey in an average of seven minutes. During pilot testing, the instrument demonstrated acceptable reliability (Cronbach’s $\alpha = 0.979$).

Following finalization of the items on the *ATPMTS*, four athletic training preceptors collaborated to qualitatively organize the mentoring characteristics by theme. The four themes that emerged from the qualitative analysis then became subscales for the instrument – student-centered support, approachability, professional preparation, and mutuality (relationships that are beneficial to both mentor and protégé). Table 2 displays the thematic groupings of the mentoring traits.

Table 2

Item Numbers and Ranges for the ATPMTS Subscales

Category	Item Numbers	Subscale Score Range
Student-centered support	12, 13, 16, 17, 21, 22, 25, 26, 27, 29, 30, 35	12 – 60
Approachability	18, 20, 23, 24, 28, 31	6 – 30
Professional preparation	14, 32, 33	3 – 15
Mutuality	15, 19, 34, 36	4 – 20

The final *ATPMTS* instrument (see Appendix A) consisted of a demographic section, a preceptor demographic section, and 25 Likert-scale mentoring trait items. The survey also asked respondents to indicate whether or not they passed the exam and the number of times the exam was taken. These responses were compiled and used to determine the BOC pass rates described in the study. The actual BOC scores were not available to the researchers.

Data Collection

After obtaining IRB approval, the BOC administrators distributed email invitations containing a link to the online *ATMPTS* instrument. The email invitation also provided informed consent documentation. The instructions asked the respondents to rate their most

influential preceptor during athletic training. A notice at the end of the survey invited respondents to participate in an online focus group discussion to further investigate the research question and to gather qualitative data related to the study. Three volunteers participated in the focus group discussion led by the principal investigator.

Results

After data collection, the researchers calculated the reliability coefficients for the instrument and for each subscale. The researchers determined that the reliability scores were satisfactory. Table 3 contains a summary of reliability coefficients of the *ATMPTS*.

Table 3

Reliability Estimates of the APTMTS Subscales and Composite Score

	Student-centered support	Approachability	Professional preparation	Mutuality	Overall
Cronbach's α	.955	.944	.831	.926	.980

After establishing the reliability of the instrument, the researchers explored the responses to the mentoring trait items on the *ATPMTS*. Table 4 presents the results of the descriptive analyses of each mentoring item.

Table 4

ATPMTS Item Response Percentages, Means, and Standard Deviations

Item	Percentage of Responses					Means and Standard Deviations	
	SD	D	N	A	SA	M	SD
Helped me prepare for the BOC exam.	3.9	7.5	23.3	35.7	29.5	3.79	1.07
Appeared to want me to succeed.	2.0	.7	3.6	19.8	73.9	4.63	.77
Modeled the standards of the profession.	1.3	2.0	6.0	31.6	59.1	4.45	.81
Demonstrated respect for me.	3.0	0.0	3.6	26.4	67.0	4.54	.82
Provided support for my learning.	1.7	1.7	2.6	31.1	62.9	4.52	.78
Helped me develop critical thinking skills.	2.0	2.0	7.2	28.0	60.9	4.44	.86
Communicated clearly with me.	3.0	.0	6.3	34.4	56.0	4.40	.86
Demonstrated appreciation of me.	3.0	.7	6.2	29.8	60.3	4.44	.88
Was accessible.	1.7	1.0	5.9	31.4	60.1	4.47	.79
Carefully explained difficult concepts so I could understand them.	2.3	2.0	12.1	35.1	48.5	4.26	.91
Proclaimed my accomplishments to others.	2.0	9.9	22.0	30.3	35.9	3.88	1.07
Had an appropriate professional relationship with me.	2.3	.3	3.3	25.8	68.2	4.57	.78
Made time for me.	1.3	2.0	8.6	33.0	55.1	4.39	.83
Provided constructive feedback/evaluation of me.	2.0	1.7	5.3	33.7	57.4	4.43	.83
Supported me in front of patients.	3.3	.3	7.9	29.7	58.7	4.40	.90
Gave opportunity for and encouraged my creativity.	2.7	2.0	11.3	33.6	50.5	4.27	.93
Showed interest in my professional and personal wellbeing.	2.7	1.3	4.0	28.7	63.3	4.49	.86
Seemed to understand my academic strengths and weaknesses.	2.3	1.7	11.2	35.3	49.5	4.28	.90
Answered my questions thoroughly.	3.0	.3	7.6	35.9	53.3	4.36	.87
Was approachable.	2.6	2.0	5.6	29.0	60.7	4.43	.89
Helped me develop a professional network.	2.6	7.9	24.2	26.8	38.4	3.90	1.09
Helped me with athletic training skills and concepts.	2.6	1.0	5.6	29.1	61.6	4.46	.86
Demonstrated trust in me.	2.3	.3	6.0	27.2	64.2	4.51	.82
Enhanced my self-esteem.	3.6	1.6	8.6	29.9	56.3	4.34	.96
Seemed willing to learn with me and from me.	3.6	3.0	10.9	33.6	49.0	4.21	1.00

Note. $N = 304$. For coding purposes, *strongly disagree* (SD) was represented as 1; *disagree* (D) was coded as 2; *neither agree nor disagree* (N) responses were coded as 3; *agree* (A) was coded as 4; *strongly agree* (SA) was scored as 5.

The reader will notice that most respondents (76%) agreed or strongly agreed that their most influential preceptor demonstrated effective mentoring traits. This sample of ATP respondents viewed their preceptors positively. These results may assist preceptors to determine their strengths and areas for improvement as they review their individual results from students they supervise.

Perceptions of Preceptor Mentorship and BOC Pass Rates

The researchers conducted *t*-tests of independent means to determine whether significant differences existed between mean subscale and composite scores on the *ATPMTS* of candidates who passed on the first attempt ($n = 241$) and candidates who did not pass on the first attempt ($n = 63$). Table 5 presents the results of the *t*-test comparisons, all of which were significantly different. As described earlier, the maximum score for subscale 1 below is 60 points; for subscale 2, the maximum is 30 points; for subscale 3, the maximum is 15 points; for subscale 4, the maximum score is 20 points; and the maximum composite score is 125 points. Table 5 presents the results of the comparisons.

Table 5

Comparison Between ATPMTS Subscale and Composite Scores and BOC First-Time Pass Rates

	First-time Pass?						95% CI for Mean Difference		<i>t</i>	<i>df</i>
	Yes			No			Lower	Upper		
	Mean	<i>SD</i>	<i>N</i>	Mean	<i>SD</i>	<i>n</i>				
Student-centered Support	52.81	7.21	241	45.76	12.42	63	3.80	9.43	4.32*	73.27
Approachability	27.21	3.59	241	23.79	6.74	63	1.66	10.31	3.88*	71.44
Professional Preparation	13.09	2.16	241	11.10	3.23	63	1.13	2.86	4.59*	76.79
Mutuality	18.10	2.62	241	15.76	4.67	63	1.12	3.56	3.83*	72.51
Composite	111.22	14.62	241	96.40	26.36	63	7.92	21.68	4.29*	72.25

Note. Equal variances not assumed; *significant at $p < .001$

Further analysis by the researchers uncovered a significant relationship between BOC candidates who completed a clinical rotation with their most influential preceptor during the same semester in which they took the BOC exam and who passed the BOC exam on the first attempt: $\chi^2(6, n = 304) = 25.209, p < .001$. Of the 241 candidates who passed on the first attempt, 35% completed clinical education with their most influential preceptor during the semester they took the BOC exam. An additional 58 respondents (24%) learned with their most influential preceptor the semester before they took the BOC exam. Table 6 displays the results of the cross-tabulation of the first-time pass rates and the most recent clinical education with students' most influential preceptor.

Table 6

Frequencies and Percentages of BOC First-time Pass Rates and Semester with Most Influential Preceptor

Semester	Yes <i>n</i> =241	No <i>n</i> =63
Same semester BOC	85 (35.3%)	7 (11.1%)
1 before BOC	58 (24.1%)	12 (19.0%)
2 before BOC	31 (12.9%)	17 (27.0%)
3 before BOC	31 (12.9%)	8 (13.0%)
4 before BOC	12 (4.9%)	7 (11.1%)
> 4 before BOC	13 (5.4%)	10 (15.9%)
Never	11 (4.6%)	2 (3.2%)

Overall, 60% (*n* = 144) of candidates who passed the BOC exam on the first attempt participated in clinical education with their most influential preceptor in the final year of their

academic program. A focus-group participant explained this relationship, saying that the preceptor was:

“... 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.”

Another participant elaborated:

“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.”

Discussion

The purpose of this study was to examine the relationships between athletic training students’ perceptions of preceptor mentorship and first-attempt success on the BOC examination. Two significant relationships emerged in this study: the relationship between the most recent semester learning with the candidates’ most influential preceptors and BOC first-time pass rate; and differences between candidates’ first-time pass rates and composite and subscale scores on the *ATPMTS*.

In this study, 82% of the candidates who passed the BOC on the first attempt agreed or strongly agreed that their preceptor demonstrated mentoring traits whether or not the candidates considered that preceptor to be a mentor. An important note is that a mentor’s role is to help the protégé learn (Gisbert, 2017); preceptors act as mentors when they facilitate student development by engaging the student in active learning with an actual patient in an environment that is conducive to learning (Mazerolle et al., 2012). However, the responsibility to facilitate learning

may pose a challenge because most athletic training preceptors do not have formal pedagogical training (Mazerolle, Bowman, & Dodge, 2014). Many preceptors, especially those with less than three years of experience, report role strain and role incompetence because of inadequate preparation for delivering clinical education while adapting to their roles as clinicians (Henning & Weidner, 2008).

Athletic training program administrators can use regular and ongoing preceptor training to support preceptors' abilities to facilitate student learning (Mazerolle et al., 2014), but selection of preceptors who genuinely want to help students is an important factor to consider. This study found that high preceptor ratings on the *ATPMTS* were significantly related to first-time success on the BOC; these results highlight the importance of selecting effective preceptors who are committed to helping students learn. Preceptors who incorporate mentoring traits into clinical education can help create a supportive environment that may facilitate athletic students' success on the BOC exam. Focus-Group Participant 2 explained that a strong preceptor can support success despite not being designated a mentor:

I've had 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.

The results of this study suggest that high-quality clinical education of athletic training students with a preceptor who promotes the learner's confidence may facilitate success on the BOC exam, even in the absence of a mentoring relationship.

Learning with a preceptor who incorporates mentoring traits into clinical education may enhance candidates' success on the BOC exam if the clinical education experience occurs while

a candidate is preparing for the BOC exam. Of the 241 candidates in this study who passed the BOC exam on the first attempt, 144 (60%) learned with their most influential preceptor in the final two semesters of their athletic training program. Athletic training students, especially millennial learners, desire feedback and collaborative learning (Monaco & Martin, 2007). According to Mazerolle et al. (2016), students do not associate these traits with a preceptor's age or experience. Athletic training program personnel should support preceptors as they develop and apply adult learning principles to their interactions with students in clinical education. All learners should benefit from mentoring behaviors. This recommendation is consistent with those from previous studies that address adult learning in athletic training education as a way to offer nurturing and supportive educational relationships (Hughes & Berry, 2011; Weidner & Henning, 2004).

Preceptors should encourage students to apply their knowledge through involvement in care of patients with actual injuries; these authentic experiences combined with ongoing shared reflection with the preceptor support both critical thinking and skill development (Mazerolle et al., 2016). Careful consideration of the clinical education placement of athletic training students in their final year by assigning the student to a preceptor who coaches, supports, and guides them through knowledge and skill integration from classroom to clinic may help support student success on the first attempt of the BOC exam.

Mentoring relationships develop when the preceptor displays desirable traits such as approachability, accessibility, and concern for the student's success. Program administrators should consider students' preferences and the interpersonal dynamics of both the student and the preceptor when assigning clinical placements (Mazerolle et al, 2016). Athletic training students emphasize the value of relationships with their educators (Ali & Panther, 2008), and these

relationships facilitate the safe environment that helps students feel supported while being challenged (Drago-Severson, 2009). Athletic training programs may also choose to include support for mentoring behaviors in ongoing preceptor training.

Limitations

A limitation of this study is that all focus-group participants were part of a baccalaureate level professional program and all were traditional college students; master-level learners and learners over 30 years of age were not represented in the qualitative portion of the study. Additionally, participants self-reported their BOC pass results, and the researchers were not able to substantiate these results. While some respondents may have provided false results, the researchers accepted that the anonymous survey format provided no incentive for participants to be dishonest. In the qualitative portion of the study, the principal investigator led the focus-group discussion. While this procedure may have introduced bias, the researcher/moderator was able to engage more fully with the students' jargon of athletic training clinical education than an uninvolved moderator. This study examined the relationships between students' perceptions of mentorship by their most influential preceptor and first-attempt success on the BOC exam although other variables may have confounded the results. Previous literature on predictors of success on the computerized BOC exam has investigated factors such as overall grade point average (GPA) and GPA in athletic training coursework (Esparza, 2012), Division I football clinical education experience (Hickman, 2010), test anxiety (Breitbach, Downey, & Frager, 2013), and exam preparation using multiple practice exams (Butterfield, 2010); the present study did not explore these factors. Finally, the presence of relationships among variables does not imply causality, nor generalizability to other samples or populations.

Conclusions

The results of this study highlight the importance of the relationships between preceptors and learners in clinical education. Athletic training programs should carefully examine and monitor these important clinical education dyads as critical components of the students' overall success and subsequent professional conduct. In addition, most clinical educators supervise their interns using similar methods as the ones they experienced as learners. As such, modeling of mentoring and supportive behaviors combined with technical skills is crucial to overall student development as a professional. Athletic training programs can support student success by carefully considering the ages and interpersonal dynamics of clinical education dyads when assigning placements. Because mentoring relationships are mutualistic, program administrators may choose to consider students' preferences to learn with specific preceptors. Programs should also carefully consider the results of evaluations of preceptor performance and offer training and ongoing support to facilitate the development of impactful clinical education relationships. Matching students in clinical education with a preceptor who helps develop the student's confidence appears to be an important component of clinical integration and success on the BOC exam. Additionally, the results of this study indicate that the ATPMTS is a reliable instrument for measuring students' perceptions of their preceptors' mentoring behaviors.

Recommendations for Future Study

This study should be replicated to include master level learners in both the quantitative and qualitative components of the study. This recommendation is timely since the CAATE requirement for transition to the graduate professional degree must be implemented by 2022. Researchers should also investigate the influence of mentoring relationships in interprofessional educational settings. With the 2020 CAATE standards' becoming effective in July 2020, athletic

training programs must give focused attention to the learning opportunities that athletic training students share with other healthcare learners and practitioners. An investigation of cross-disciplinary mentorships on student learning would provide valuable information to decision-makers and practitioners.

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Appendix A

Athletic Training Preceptor Mentoring Traits Survey

This survey is intended to gain an understanding of your perceptions of preceptor mentoring characteristics. Please refer to your most influential preceptor when responding to the survey.

Respondent Demographic Questions

1. What is the degree type of your athletic training program?
 - a. Undergraduate
 - b. Master

2. What is the NCAA affiliation of your CAATE-accredited Athletic Training Program?
 - a. NCAA Division I
 - b. NCAA Division II
 - c. NCAA Division III
 - d. Other

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

a. District 1	g. District 7
b. District 2	h. District 8
c. District 3	i. District 9
d. District 4	j. District 10
e. District 5	k. I don't know.
f. District 6	

4. What is your gender?
 - a. Male
 - b. Female
 - c. Other
 - d. I prefer not to answer.

5. What is your age?

a. 20-24 years	d. 35-39 years
b. 25-29 years	e. More than 40 years
c. 30-34 years	

6. Was the most recent testing window your first attempt taking the BOC exam?

- a. Yes
- b. No

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

- a. Yes
- b. No

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

- a. Yes
- b. No

Preceptor Demographic Questions

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?

- | | |
|--|------------------------------------|
| a. NCAA Division I College/University | e. Clinical provider and Professor |
| b. NCAA Division II College/University | f. High School |
| c. NCAA Division III College/ University | g. Sports medicine clinic |
| d. Other College/University | h. Other: _____ |

10. In what semester did you most recently complete a clinical rotation with your most influential preceptor?

- a. Semester I took the BOC exam
- b. 1 semester before I took the BOC exam
- c. 2 semesters before I took the BOC exam
- d. 3 semesters before I took the BOC exam
- e. 4 semesters before I took the BOC exam
- f. More than 4 semesters before I took the BOC exam
- g. I never completed a rotation with this preceptor

11. Do you consider your most influential preceptor to be your mentor?

- a. Yes
- b. No

Preceptor Traits

For the following questions, please think about the preceptor who has had the greatest influence on you. Use the following scale to indicate the degree to which your preceptor demonstrates the characteristics and behaviors described in each item.

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree,
- Agree
- Strongly Agree

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 my 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.

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