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ORIGINAL RESEARCH

Perceptions of Leadership Competency Among Doctorate in Athletic Training Graduates

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Context: Within the athletic training profession, Doctor of Athletic Training (DAT) programs are expected to develop advanced practice leaders; however, little is known about whether this is achieved.

Objective: Assess DAT graduates' perceived importance and confidence in performing personal leadership competencies as well as the level of influence a DAT program had on the development of these competencies.

Design: Cross-sectional design.

Setting: A 73-item Web-based survey.

Patients or Other Participants: Seventy-seven DAT graduates, from a possible 205 graduates responded to the survey. Forty-five respondents completed the survey (21.9%) and were included in this study (age = 31.5 ± 6.1 years; years since graduating from DAT = 1.13 ± 0.90; years of experience = 8.69 ± 5.6; years employed at current job = 3.00 ± 4.04).

Intervention(s): Each participant completed a questionnaire with 7 demographic items and 66 items to assess perceived importance, confidence, and influence of the DAT on 22 personal leadership competencies. The questionnaire was adapted from the Leadership Development in Athletic Training instrument.

Main Outcome Measure(s): Descriptive statistics were used to characterize participant demographics and assess the perceived importance, confidence, and influence of the DAT program on leadership competencies. Partial data were included in the analysis.

Results: All competencies were rated as *important* or higher with *critical thinking* (mean = 4.84 ± 0.37) rated *very important* (mode = 5, n = 37/45, 82.2%). Graduates were *moderately confident* or higher on all competencies with *being credible* (mean = 4.5 ± 0.55) rated *extremely confident* (mode = 5, n = 23/45, 51.1%). Graduates indicated that the DAT was *extremely influential* on their being *future minded* (mean = 4.63 ± 0.58; mode = 5, n = 29/45, 64.4%).

Conclusions: Doctor of Athletic Training graduates' perceptions suggest that programs may be meeting the goal of developing advanced practice leaders. Respondents indicated higher perceptions of confidence in competencies they deemed as important. Respondents also indicated that DAT programs were influential in shaping their perceptions about certain leadership competencies. Other factors may influence graduates' perceptions outside of the DAT, such as previous education and experience.

Key Words: Leadership competence, advanced practice leadership, health care leadership

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Perceptions of Leadership Competency Among Doctorate in Athletic Training Graduates

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KEY POINTS

- Doctor of Athletic Training graduates rated similar leadership competencies such as credibility, open mindedness, critical thinking, and knowledge higher in importance and reported that they had greater confidence in performing those leadership competencies.
- Doctor of Athletic Training graduates rated their programs as more influential for competencies they considered more important.
- A variety of factors, both in and out of a Doctor of Athletic Training program, can affect perceptions of importance, confidence, and program influence of certain leadership competencies.

INTRODUCTION

Leadership is a quality that has been studied in a variety of professions and is considered especially important for health care and its advancement in individual patient care and communities.[1,2] While multiple definitions of leadership for health care exist, one commonality among them is influence and how influence is used to guide others in achieving a common goal.[3–5] Many positive outcomes with appropriate leadership include enhanced patient outcomes and increased ability to handle complex health care situations.[6,7] Understanding and developing leadership competencies can lead to attaining these desired outcomes and more.[6,7] Some health care disciplines such as occupational therapy, physical therapy, nursing, and pharmacy already have rich histories of leadership education and development.[7] While some leadership skills are transferable across different health care disciplines, others are more context specific,[7] and therefore, each health care discipline should carry out research on leadership competencies related to its specific body of knowledge and skill. In addition, as each health care discipline grows in its educational or training requirements, it is pertinent to continue researching and expanding necessary leadership competencies to fit advanced skills.

One health care discipline in particular, athletic training, has previously explored leadership competence development in professional-level programs, as leadership has long been established as an important role for athletic trainers (ATs).[7] The Board of Certification's *Practice Analysis*, 7th Edition, repeatedly emphasized the need for knowledge of leadership theory and style as well as leadership skills among various patient care situations and administrative duties in the athletic training profession.[8] Various studies[9,10] in athletic training have also established effective leadership as important for developing professional values and identity, fostering positive work environments that decrease turnover and increase job satisfaction, increase perceived importance of the athletic training profession, reinforce the profession's credibility and relationships among its communities and other health care disciplines, and improve the quality of the work environment and patient care. As leadership plays an integral role in an AT's responsibilities, we need to understand the perceptions and practices of leadership development within athletic training programs. Foundational and personal leadership competencies are often learned through controlled environments, such as professional athletic training programs, where the student has the opportunity to foster creativity, communicate appropriately, build trust, collaborate, and model desired ethics.[6,11–13] Historically, professional athletic training programs were completed at the baccalaureate degree level.[14] Once athletic training students completed their professional degree, they had the opportunity to gain experience by working or continuing into a postprofessional master's program, which gave them the opportunity to advance their education and training of foundational skills.[14] However, due to the recent transition of athletic training education, the professional level of education, which included attaining a baccalaureate degree, is ending, and the number of postprofessional master's programs is diminishing.[14] In their places, professional master's programs are providing professional athletic training education, while Doctor of Athletic Training (DAT) and residency programs serve as the predominant postprofessional pathways.[14]

The purpose of a DAT degree is different than a postprofessional master's degree in that it contains advanced coursework and research for progression of clinical expertise by broadening the level of knowledge and skillset for patient care and advancing clinical scholarship.[15–17] Altogether, completing the outcomes of a DAT degree may meet the objective of establishing advanced practice leadership within the practitioner.[15]

The development of advanced practice leadership has been studied within other health care disciplines, specifically nursing, since nursing's educational pathways previously transitioned in a similar manner as athletic training.[15,18,19] Throughout the late 1990s and early 2000s, the American Association of Colleges of Nursing recognized a need for advanced nurse preparation to meet the needs of the ever-changing complex clinical environment, which brought about the Doctor of Nursing Practice degree.[15] In a similar manner, the athletic training profession faces a challenge of transitioning its professional degree and must now educate ATs to a level of success in the dynamic environment of our health care system.[15] The DAT degree may be a solution in converging entry-level ATs to advanced practice clinicians and provide a smoother flow of knowledge among practitioners.[15] However, unlike the profession of nursing, advanced practice leadership in the postprofessional space of athletic training has not yet been examined. The purpose of this study was to assess the perceived importance of personal leadership competencies for DAT holders, the confidence that DAT graduates possessed in performing personal leadership competencies, and the level of perceived influence the DAT program had on developing personal leadership competencies.

METHODS

Design

We used a cross-sectional design to assess perceived importance and confidence toward certain leadership competencies for DAT degree holders, with 3 primary goals: (1) to identify perceived leadership competencies that DAT degree holders indicate are important, (2) to identify the level of confidence that DAT degree holders have to perform these personal leadership competencies, and (3) to identify the level of influence the DAT degree holders believe their degree program had on their perceived influence and confidence of the personal leadership competencies. The study was deemed exempt by the Indiana State University Institutional Review Board.

Participants

Participants were included if they were a credentialed AT (Board of Certification certified, state licensed, or both) and a graduate of a DAT program. If participants did not meet both inclusion criteria, they were excluded from the study. Before the start of data collection, participants provided informed consent to participate.

Instrument

We used a 73-item Web-based survey (Qualtrics). The survey included demographic questions (7 items) as well as a section focusing on personal leadership competencies (22 competencies). Each personal leadership competency was defined and had 3 associated items (Table 1). Definitions of each leadership competency were based off previous work in athletic training[7] and can be found in the Appendix. The first question asked participants to rate their perception of importance on each personal leadership competency. These questions were rated on a 5-point Likert scale ranging from (1) *unimportant*, (2) *somewhat important*, (3) *neither important nor not important*, (4) *important*, and (5) *very important*. The second associated item, listing the same leadership competency, asked participants to rate their confidence in performing the personal leadership competency. These items were also rated on a 5-point Likert scale: (1) *not at all confident*, (2) *slightly confident*, (3) *moderately confident*, (4) *very confident*, and (5) *extremely confident*. The final associated item asked what level of influence the DAT program had on participants' perceptions of importance and confidence in performing the personal leadership competency. The associated 5-point Likert scale was (1) *not at all influential*, (2) *lightly influential*, (3) *somewhat influential*, (4) *very influential*, and (5) *extremely influential*.

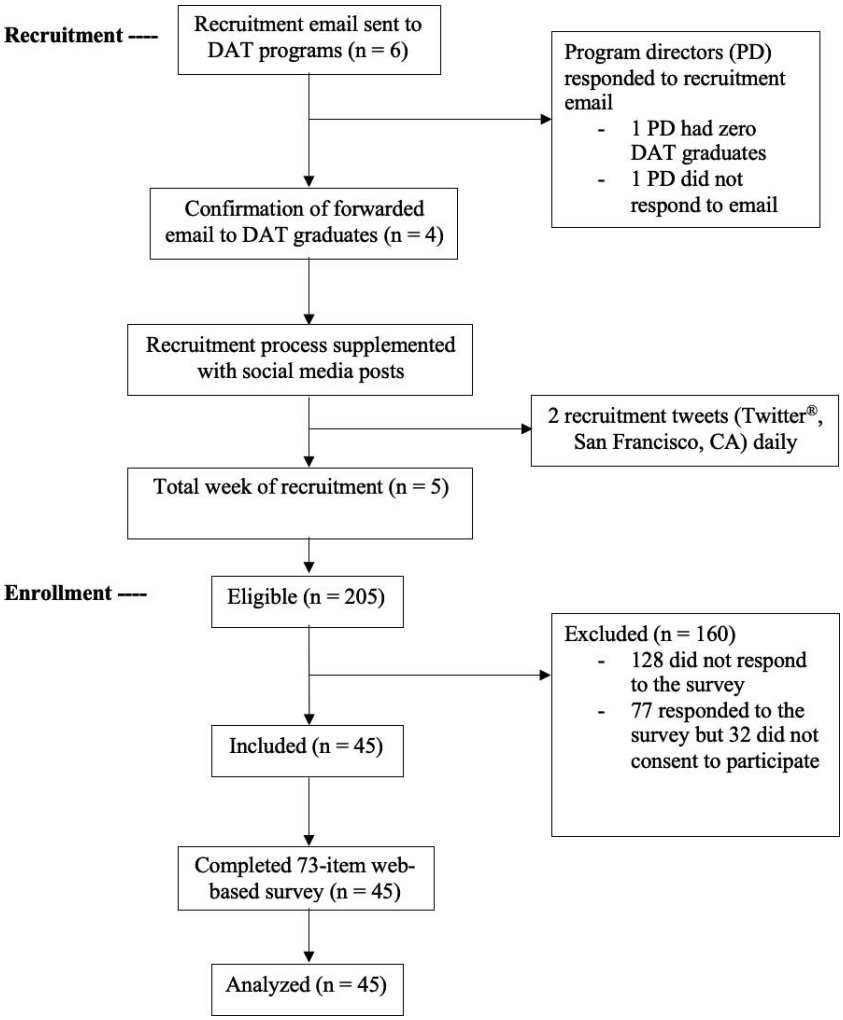
The 22 personal leadership competencies were adapted from the Leadership Development in Athletic Training (LDAT) instrument.[7] This instrument had been previously validated, consisting of a list of personal leadership competencies or competencies considered important for each level of athletic training education as well as research doctoral programs (Doctor of Philosophy [PhD] and Doctor of Education [EdD]).[7] Previous research of the LDAT indicated internal consistency at $\alpha = .83$–$.97$ and concurrent, construct, and convergent validity for the tool.[7] Validity of the LDAT was established in 2 phases of a Delphi technique in which phase 1 established content validity (through literature review and athletic training experts) and convergent validity which demonstrated a positive relationship between important leadership competencies for athletic training education and those important for clinical practice ($r = 0.74$, $P = .001$).[7] Phase 2 established convergent validity which demonstrated a strong relationship between important leadership competencies for athletic training education and those important for clinical practice ($r = 0.94$, $P = .001$).[7] Phase 2 also established construct validity (exploratory factor analysis, eigenvalues $\geq$ 1.0) and concurrent validity which established significantly varied levels of importance in leadership competencies within different levels of athletic training education (independent t tests, 1-way analysis of variance, repeated-measures analysis of variance, $P \leq .05$).[7] The personal leadership competencies chosen for this study consisted of those indicated as important for postprofessional master's programs in athletic training and academic doctoral programs (Appendix).[7] These leadership competencies were chosen because, at the time of creation of the LDAT tool, DAT programs were not included. Our adapted tool was content validated by 2 external reviewers not associated with the research team who have served as researchers and clinicians with expertise in leadership and survey development. The reviewers completed a content analysis rubric in which they provided comments on item modifications. We collected the feedback and made appropriate revisions to the survey. Internal consistency was calculated using Cronbach's α for each of the main outcome measures: importance ($\alpha = 0.895$), confidence ($\alpha = 0.876$), and influence of the DAT program ($\alpha = 0.917$).

Table 1. Example of a Leadership Competency[7] With the Competency Defined and Each of the 3 Associated Questions on Importance, Confidence, and Influence

Advocate: Takes responsibility for actions of others and defends actions of others, acts when appropriate as an advocate for others.	
Question 1	Rate your perception of importance of advocacy for a DAT degree holder. (1) Unimportant (2) Somewhat important (3) Neither important nor not important (4) Important (5) Very important
Question 2	Rate your level of confidence in performing advocacy. (1) Not at all confident (2) Slightly confident (3) Moderately confident (4) Very confident (5) Extremely confident
Question 3	What level of influence did your DAT program have on your perception of importance and confidence in performing the leadership competency mentioned above? (1) not at all influential (2) slightly influential (3) somewhat influential (4) very influential (5) extremely influential

Abbreviation: DAT, Doctor of Athletic Training.

Figure. Method flowchart from recruitment to enrollment of participants.



Procedures

Each of the current 6 DAT program directors (as of spring–summer 2019) were sent a recruitment e-mail that included a link to the informed consent and the survey. We asked the program directors to forward the email to graduates of their respective programs. The recruitment e-mail was sent out 2 weeks in a row. It was confirmed through e-mail that 4 of the 6 program directors forwarded the recruitment e-mail to their graduates. One program director indicated that he or she did not have any graduates at the time of the data collection, and 1 program director did not respond to our request to forward the e-mail and instrument. Since we did not have confirmation that the email was sent to all DAT graduates, we also posted on social media (Twitter) to supplement the recruitment process. Two recruitment tweets were used daily for 5 weeks to increase participation. The recruitment email contained information about the survey as well as a hyperlink to the survey. The survey was completed on a Web-based survey system (Qualtrics; Figure).

Statistical Analysis

Descriptive statistics were used to identify characteristics of central tendency (mean, mode, frequency) and variability (standard deviation) for the demographic characteristics of the participants and variables of interest. These variables included importance of leadership competencies, level of confidence in performing the competencies, and level of influence the DAT program had on perception of importance and confidence of competencies. Partial data analysis was conducted for items that participants chose to omit from the demographics section. All included participants completed the demographic items. However, some participants chose not to respond to select survey items, consistent with voluntariness in human subject research.

RESULTS

The total number of DAT graduates at the time of data collection was calculated by reaching out to program directors to identify the number of graduates from each program. There was a total of 205 DAT graduates of which 77 responded to the survey, and 45 of those who responded (45/77, 58.4% completion rate) consented to participate. Those 45 completed the survey (45/205, 22.9% response rate) and were included in the analysis (age = 31.5 ± 6.1 years; years since graduating from the DAT = 1.13 ± 0.90; years of experience = 8.69 ± 5.6; years employed at current job = 3.00 ± 4.04). When considering the level of importance of leadership competencies for DAT graduates, all 22 personal leadership competencies were rated as important or higher, with critical thinking rated as having the greatest level of importance (mean = 4.84 ± 0.37, mode = 5, n = 37/45, 82.2%; Table 2). Graduates

Table 2. Leadership Competencies Rated on Level of Importance for Doctor of Athletic Training Graduates With Associated Frequencies, Means, and Standard Deviations[a]

	Unimportant (1)	Somewhat Important (2)	Neither Important nor Not Unimportant (3)	Important (4)	Very Important (5)	*M*	SD
Critical thinker				7/44, 15.6%	**37/44, 82.2%**	4.84	0.37
Knowledgeable				9/42, 20%	**33/42, 73.3%**	4.79	0.42
Future minded		1/43, 2.2%		7/43, 15.6%	**35/43, 77.8%**	4.77	0.57
Open mindedness				10/40, 22.2%	**30/40, 66.7%**	4.75	0.44
Credible			1/44, 2.2%	10/44, 22.2%	**33/44, 73.3%**	4.73	0.50
Applies known and attained knowledge			1/45, 2.2%	11/45, 24.4%	**33/45, 73.3%**	4.71	0.51
Advocacy		1/45, 2.2%		11/45, 24.4%	**33/45, 73.3%**	4.69	0.60
Intentional leadership			1/43, 2.2%	12/43, 26.7%	**30/43, 66.7%**	4.67	0.52
Courageous leadership		1/45, 2.2%	1/45, 2.2%	12/45, 26.7%	**31/45, 68.9%**	4.62	0.65
Cultural sensitivity			2/44, 4.4%	13/44, 28.9%	**29/44, 64.4%**	4.61	0.58
Empowerment			1/43, 2.2%	16/43, 35.6%	**26/43, 57.8%**	4.58	0.55
Excellent written communication skills				18/43, 40%	**25/43, 55.6%**	4.58	0.50
Influencer			3/43, 6.7%	13/43, 28.9%	**27/43, 60%**	4.56	0.63
Crisis management		1/44, 2.2%	1/44, 2.2%	19/44, 42.2%	**23/44, 51.1%**	4.45	0.66
Utilizes appropriate leadership styles			2/40, 4.4%	18/40, 40%	**20/40, 44.4%**	4.45	0.60
Demonstrates scholarship			3/44, 6.7%	19/44, 42.2%	**22/44, 48.9%**	4.43	0.63
Improves morale				**25/43, 55.6%**	18/43, 40%	4.42	0.50
Disciplined			3/43, 6.7%	**23/43, 51.1%**	17/43, 37.8%	4.33	0.61
Ensures an awareness of mission		1/43, 2.2%	2/43, 4.4%	**22/43, 48.9%**	18/43, 40%	4.33	0.68
Willing to take appropriate risk			3/40, 6.7%	**21/40, 46.7%**	16/40, 35.6%	4.33	0.62
Delegates effectively		1/44, 2.2%	1/44, 2.2%	**26/44, 57.8%**	16/44, 35.6%	4.30	0.63
Leads quietly		1/41, 2.2%	7/41, 15.6%	**22/41, 48.9%**	11/41, 24.4%	4.05	0.74

[a] Items indicated in bold show where the associated leadership competency was rated the most along the Likert scale for importance.

indicated that they were moderately confident or more in performing personal leadership competencies while indicating that they have the most confidence in being "credible—to be believable, honest, trustworthy, and ethical in dealings with subordinates, peers, and supervisors" (mean = 4.5 ± 0.55; mode = 5, n = 23/45, 51.1%; Table 3). Lastly, graduates indicated that the DAT was somewhat influential or greater in influencing the perceptions of importance and confidence related to the personal leadership competencies. Doctor of Athletic Training graduates indicated that their program was extremely influential in their ability to be *future minded* (mean = 4.63 ± 0.58; mode = 5, n = 29/45, 64.4%; Table 4). Overall, our results suggest that some personal leadership competencies are considered more important for DAT graduates than others; those competencies considered more important were also influenced greater by the DAT program.

DISCUSSION

Previous researchers on leadership development in athletic training have focused on defining a timeline of leadership development and the importance of leadership competencies for athletic training practice and education.[6,11–13,20–22] Foundational personal leadership competencies are often learned within professional-level environments, where supervision and controlled situations are included.[6,11–13] The responsibility of teaching advanced leadership competencies is then assumed by postprofessional athletic training pathways, specifically DAT programs, as graduates should be prepared to advance patient care and athletic training education.[16,21,22] Certain leadership competencies are considered important for postprofessional education, specifically postprofessional AT master's programs and academic doctoral programs.[7] However, the increased opportunity and diversity of experiences in postprofessional education, including DAT programs and Commission on Accreditation of Athletic Training Education-accredited residency programs, have not been thoroughly examined. Therefore, the present study examined the perceptions of personal leadership competencies among postprofessional DAT graduates.

Each graduate rated their perceptions of importance and confidence of various leadership competencies as well as their perception of influence of their respective DAT programs on various leadership competencies. We found that DAT graduates indicated some leadership competencies were more important than others, and graduates specified greater confidence in those same leadership competencies that they indicated as more important. Leadership competencies rated higher in importance were also rated higher in DAT program influence.

Perceptions of Importance

In previous research, a delineation of leadership competencies has been found in which some are perceived as more or less important at various stages of AT education.[7] Some leadership competencies such as *advocate*, *credible*, *delegates effectively*, *disciplined*, and *applies known and attained knowledge* were considered important for inclusion within both professional-level and postprofessional master's of athletic training programs.[7] In addition, other leadership competencies like

Table 3. Personal Leadership Competencies Rated on Level of Confidence in Performance From Doctor of Athletic Training Graduate With Associated Frequencies, Means, and Standard Deviations[a]

	Not at all Confident (1)	Slightly Confident (2)	Moderately Confident (3)	Very Confident (4)	Extremely Confident (5)	*M*	SD
Credible			1/44, 2.2%	20/44, 44.4%	**23/44, 51.1%**	4.50	0.55
Open mindedness			3/40, 6.7%	16/40, 35.6%	**21/40, 46.7%**	4.45	0.64
Critical thinker			2/44, 4.4%	**24/44, 53.3%**	18/44, 40.0%	4.36	0.57
Knowledgeable			3/42, 6.7%	**21/42, 46.7%**	18/42, 40%	4.36	0.62
Cultural sensitivity			8/44, 17.8%	17/44, 37.8%	**19/42, 42.2%**	4.25	0.75
Applies known and attained knowledge			2/45, 4.4%	**31/45, 68.9%**	12/45, 26.7%	4.22	0.52
Leads quietly			7/41, 15.6%	**19/41, 42.2%**	15/41, 33.3%	4.20	0.72
Future minded			8/43, 17.8%	**19/43, 42.2%**	16/43, 35.6%	4.19	0.73
Advocacy		1/45, 2.2%	4/45, 8.9%	**27/45, 60%**	13/45, 28.9%	4.16	0.67
Disciplined			7/43, 15.6%	**22/43, 48.9%**	14/43, 31.1%	4.16	0.69
Empowerment		2/43, 4.4%	4/43, 8.9%	**25/43, 55.6%**	12/43, 26.7%	4.09	0.75
Excellent written communication skills	1/43, 2.2%		6/43, 13.3%	**23/43, 51.1%**	13/43, 28.9%	4.09	0.81
Improves morale		1/43, 2.2%	9/43, 20%	**20/43, 44.4%**	13/43, 28.9%	4.05	0.79
Demonstrates scholarship	1/44, 2.2%		11/44, 24.4%	**21/44, 46.7%**	11/44, 24.4%	3.93	0.85
Courageous leadership		1/45, 2.2%	15/45, 33.3%	**16/45, 35.6%**	13/45, 28.9%	3.91	0.85
Crisis management			14/44, 31.1%	**20/44, 44.4%**	10/44, 22.2%	3.91	0.74
Influencer		1/43, 2.2%	14/43, 31.1%	**17/43, 37.8%**	11/43, 24.4%	3.88	0.82
Intentional leadership			15/43, 33.3%	**20/43, 44.4%**	8/43, 17.8%	3.84	0.72
Ensures an awareness of mission		2/43, 4.4%	11/43, 24.4%	**22/43, 48.9%**	8/43, 17.8%	3.84	0.79
Willing to take appropriate risk			16/40, 35.6%	**15/40, 33.3%**	9/40, 20%	3.83	0.78
Utilizes appropriate leadership styles		3/40, 6.7%	10/40, 22.2%	**20/40, 44.4%**	7/40, 15.6%	3.78	0.83
Delegates effectively		1/44, 2.2%	22/44, 48.9%	**16/44, 35.6%**	5/44, 11.1%	3.57	0.73

[a] Items indicated in bold show where the associated leadership competency was rated the most along the Likert scale for confidence

critical thinking, *courageous leadership*, and *cultural sensitivity* were rated as more important for postprofessional master's programs than the professional level.[7] Similarly, within our study, DAT graduates rated some leadership competencies such as credible, *knowledgeable*, advocate, and applies known and attained knowledge as important. Other leadership competencies such as critical thinking, courageous leadership, and cultural sensitivity were rated even higher, indicating a greater level of importance for DAT graduates. Some leadership competencies considered important for AT education may be shared across the professional level, postprofessional master's, and DAT programs, as all 3 types of programs are focused on the clinical growth of an AT, whether foundational or advanced.[15]

Also, similarity exists among the leadership competencies rated important for DAT graduates and those considered important in other allied health professions. Critical thinking was thought to be the most important competency by the participants in this study, which has also been considered important for nurses and physicians.[4,23] Critical thinking was described as an essential skill that enhances nursing practice by leading to a more creative and meaningful decision-making process.[23] Critical thinking, whether used alone or in combination with other leadership competencies, helps give a more meaningful assessment of information and refines the solution process to specific problems when other solutions or interventions are not effective.[23] Other leadership competencies such as *being decisive*, *having a strong knowledge base*, *applying knowledge and evidence*, and *fostering vision* were also considered important for other health professions[3] at a rate like those described by the DAT graduates (knowledgeable, future minded, and applies known and attained knowledge). These similarities are expected, as leadership competencies may be transferable across a variety of health care disciplines. Shared leadership competencies across health care professions may be necessary, as effective collaboration is expected among health care providers.[24] As the number of ATs in health care administration continue to rise, it is imperative that DAT graduates share similar personal leadership competencies as leaders within other health care professions.[16]

While in this study, we show similarities of important leadership competencies across other stages of AT education,[7] variability is also present when comparing competency ratings between the DAT and academic doctoral programs.[7] While a few leadership competencies such as advocacy, applies known and attained knowledge, knowledgeable, and open minded[7] are shared among our results, differences remain in perceived importance of leadership competencies between academic doctoral and DAT programs. One competency, *demonstrates scholarship*, is rated important for academic doctoral programs[7] but was not rated as important among DAT graduates. This can be attributed to the different purposes of each degree, as academic doctoral programs are typically focused on research or education, while DAT programs advance a practicing clinician's level of knowledge and skillset to better their patient care.[15] The variability in perceived importance of leadership competencies between these 2 types of programs indicates a discipline-specific awareness of leadership that is necessary when creating program content and curricula. Within curricula, leadership competencies can be selected for a variety of reasons. Some reasons may include the program's accreditation standards, anticipated circumstances of the students,[25] career or professional expectations, and previous needs or outcomes assessments from similar

Table 4. Personal Leadership Competencies Rated on Level of Influence From Doctor of Athletic Training Program With Associated Frequencies, Means, and Standard Deviations[a]

	Not At All Influential (1)	Slightly Influential (2)	Somewhat Influential (3)	Very Influential (4)	Extremely Influential (5)	*M*	SD
Future minded			2/43, 4.4%	12/43, 26.7%	**29/43, 64.4%**	4.63	0.58
Demonstrates scholarship		1/44, 2.2%	3/44, 6.7%	13/44, 28.9%	**27/44, 60%**	4.5	0.73
Intentional leadership		1/43, 2.2%	3/43, 6.7%	16/43, 35.6%	**23/43, 51.1%**	4.42	0.73
Open mindedness		1/40, 2.2%	6/40, 13.3%	10/40, 22.2%	**23/40, 51.1%**	4.38	0.84
Knowledgeable		1/42, 2.2%	3/42, 6.7%	18/42, 40%	**20/42, 44.4%**	4.36	0.73
Applies known and attained knowledge			4/45, 8.9%	**21/45, 46.7%**	20/45, 44.4%	4.36	0.65
Critical thinker		2/44, 4.4%	2/44, 4.4%	19/44, 42.2%	**21/44, 46.7%**	4.34	0.78
Excellent written communication skills		1/43, 2.2%	3/43, 6.7%	**21/43, 46.7%**	18/43, 40%	4.30	0.71
Courageous leadership		1/45, 2.2%	5/45, 11.1%	**20/45, 44.4%**	19/45, 42.2%	4.27	0.75
Advocacy	1/45, 2.2%	1/45, 2.2%	6/45, 13.3%	16/45, 35.6%	**21/45, 46.7%**	4.22	0.93
Empowerment		1/43, 2.2%	9/43, 20%	16/43, 35.6%	**17/43, 37.8%**	4.14	0.83
Influencer			10/43, 22.2%	**18/43, 40%**	15/43, 33.3%	4.12	0.76
Credible		2/44, 4.4%	9/44, 20%	15/44, 33.3%	**18/44, 40%**	4.11	0.90
Utilizes appropriate leadership styles		1/40, 2.2%	9/40, 20%	**15/40, 33.3%**	**15/40, 33.3%**	4.10	0.85
Willing to take appropriate risk			8/40, 17.8%	**20/40, 44.4%**	12/40, 26.7%	4.10	0.71
Cultural sensitivity	3/44, 6.7%	3/44, 6.7%	8/44, 17.8%	6/44, 13.3%	**24/44, 53.3%**	4.02	1.29
Crisis management		3/44, 6.7%	11/44, 24.4%	13/44, 28.9%	**17/44, 37.8%**	4.00	0.96
Ensures an awareness of mission		2/43, 4.4%	13/43, 28.9%	**16/43, 35.6%**	12/43, 26.7%	3.88	0.88
Disciplined	1/43, 2.2%		15/43, 33.3%	**15/43, 33.3%**	12/43, 26.7%	3.86	0.92
Leads quietly		1/41, 2.2%	16/41, 35.6%	**14/41, 31.1%**	10/41, 22.2%	3.80	0.84
Improves morale		6/43, 13.3%	12/43, 26.7%	12/43, 26.7%	**13/43, 28.9%**	3.74	1.05
Delegates effectively		4/44, 8.9%	16/44, 35.6%	**17/44, 37.8%**	7/44, 15.6%	3.61	0.87

[a] Items indicated in bold show where the associated leadership competency was rated the most along the Likert scale for influence.

disciplines. While general leadership competencies may benefit graduates of both a DAT and academic doctoral program, adapting leadership curricula to the needs of the DAT degree may enhance the formation of an advanced clinical leader.

Perceptions of Confidence

We found that DAT graduates rated themselves higher in confidence on leadership competencies they perceived as more important. Such shared leadership competencies of credible, *open mindedness*, *critical thinker*, and knowledgeable were rated high in confidence and have also been associated with advanced practice leadership within nursing and physician practice.[4,23] Other leadership competencies, such as *ensures an awareness of mission*, *willing to take appropriate risk*, *utilizes appropriate leadership styles*, and delegates effectively were rated lower in confidence. Overall, the application of leadership competencies may affect confidence of performing said leadership competencies. While the sample in this study was only about 1-year post-DAT graduation, the graduates indicated several years of experience (8.69 $\pm$ 5.6) and years employed at current job (3.00 $\pm$ 4.04), which can be a factor in their levels of confidence with each leadership competency. The graduates may have had the opportunity to clinically practice while completing their DAT program, which in turn gives them the ability to practice emphasized leadership competence to one's work setting. This can provide an opportunity to either enhance or change leadership behavior[26] due to the variety of experiences. While we did not measure application of the leadership competencies in this study, positive correlations have been found between clinical experience and levels of confidence in other health care disciplines.[27] Experience allows for different leadership competencies to be used while facing adversity, being exposed to a variety of people, problem solving, making mistakes, and struggling with unfamiliar situations.[28]

Perceptions of Influence

Leadership training is often aimed at the ability to learn, differentiate, and refine different leadership competencies within different settings.[29,30] It is imperative to provide additional leadership development for both clinical and academic leaders in health care to better prepare them for new leadership roles.[29] Learning environments that incorporate effective leadership development strategies may have strong influence on individuals' perceptions and confidence of different leadership competencies. As previously mentioned, the purpose of the DAT degree is to develop clinical leaders, demonstrated by several DAT programs' mission statements. Programs describe themselves as a place to develop advanced practice leaders,[15,16,31] professional leadership,[32] and clinical or academic leaders.[33] Therefore, advancing leadership competence is an objective of DAT programs, and those programs should be influential in the leadership competencies they choose to emphasize.

One of the aims of our study was to explore the perceptions of influence of the DAT programs on leadership competencies, and differences between graduates' ratings existed. We found that graduates rated leadership competencies such as future minded, demonstrates scholarship, *intentional leadership*, open mindedness, and knowledgeable as more influenced by their DAT program than others. This result indicates that programs may have influenced a higher level of perceived importance and confidence for those leadership competencies.

One factor that may affect the DAT programs' influence on perceptions of certain leadership competencies is the use of their curricula and the incorporation of developmental strategies. In other health professions, specifically nursing, programs describe how specific leadership development strategies may begin at the novice levels and include team-building activities and quality improvement strategies.[34] Leadership development at the expert levels may incorporate close interaction with other departments and disciplines, hands-on experiences, advanced staff development skills, retention and recruitment skills, mentoring, etc.[34] Other general strategies that have been used in nursing, with or without a specific curriculum, have included structural and psychological empowerment framework strategies that helped nurses practice self-confidence, change leadership styles, change perceptions of staff recognition, and reflect on practices.[35] Activities such as mentorship, interprofessional collaboration, hands-on skill sessions, and reflection practices may all be ways to formally influence leadership competencies throughout DAT programs.

Another factor that may affect the influence DAT programs have on leadership competencies is the graduates' clinical experiences as they complete the program. Behavior modeling training (BMT) is like the social learning theory with an emphasis on the transition of learned behaviors to the work situation.[36] The strategy of BMT ensures meaningful practice and multidimensional context for leadership application by presenting guidelines for emphasized leadership competencies, creating environments of observation of effective modeling of said competencies, practicing with the opportunity for feedback, and transferring leadership competencies to the work setting.[36] Doctor of Athletic Training programs have the capability of using BMT as students are credentialed and can immediately apply emphasized leadership competencies in their work settings. However, the relationship between the program and the student's workplace is often tangential and out of the program's control. As such, formal leadership development activities should be incorporated throughout the curricula. To intentionally choose activities or content in curricula that can emphasize leadership competencies means that program faculty must understand what leadership competencies are perceived as most important for that level of AT education. Although the DAT degree is a novel degree and the potential of the leadership competencies in such programs may not have been fully realized in this sample, the results of this study can assist in providing a foundation for bettering leadership development for AT education.

LIMITATIONS AND FUTURE RESEARCH

In this study, the sample of graduates were only about a year post-DAT graduation. Therefore, the importance, confidence, and influence of DAT programs may not have been fully realized due to a lack of time to transition to clinical practice leadership roles. We also acknowledge that, in this study, we use perception data, and we were unable to verify if the participants' perceptions of their leadership competencies match the performance of said leadership competencies. Nevertheless, it is important to assess students' perceptions of their learning environment, as their environment can affect their behavior, academic progress, learning outcomes, and overall wellbeing.[37] Previous researchers have established that student perceptions of their learning environment can be reliable as well as predictive of their learning.[38,39] In this study, we have established DAT holders' perceptions of importance and confidence of performing various leadership competencies as well as their perceptions of their DAT program's influence of their perceived importance and confidence ratings. Understanding DAT graduates' perceptions of various leadership competencies may assist in exposing the level of success DAT programs have at emphasizing leadership qualities for clinical practice, even when there may be other influential factors involved. The results of these perception data can also aid in finding needs, problems, trends, and goals of the DAT learning environment as well as establish baseline data for future research or changes.[40] With that said, we encourage all researchers exploring leadership and leadership education in athletic training to push the measurement beyond perception into outcomes assessments of leader performance. Although these studies are more complex, they will better inform how to educate practice leaders.

Authors of future studies should investigate if importance ratings are a result of DAT curricula, market demands, other educational programs, or personal preferences. The relationship between building different levels of personal leadership competence to having different career opportunities should also be investigated in future research. Future researchers should also investigate the degree of influence of DAT programs on specific leadership competencies as well as specific strategies programs use to teach, emphasize, or both leadership development. Lastly, more research should be performed to examine organizational and systems leadership, as advanced practice in health care has an impact on not only patients but also the health care professionals themselves and their organizations.[19]

CONCLUSIONS

Graduates perceived certain leadership competencies as more important than others, of which some were shared across other levels of athletic training programs and other health care professions. Doctor of Athletic Training graduates also perceived greater confidence in leadership competencies they considered more important. However, we are not able to conclude that their DAT program was the only mechanism of developing confidence in the leadership competencies. A variety of factors such as immediate clinical application of learned leadership competencies and experiences may influence graduates' perceptions of confidence. Lastly, DAT graduates indicated their programs were influential in developing some leadership competence but more so with the leadership competencies they thought were important and for which they felt more confident. Altogether, with this study, we are the first to investigate leadership competency perceptions for DAT graduates, those aiming to be advanced practice leaders. This study serves as a starting point for leaders, educators, researchers, and regulators to continue to evaluate the purpose, desired outcomes, and benchmarks for success of DAT programs while also considering how to effectively develop leadership competence outside of the DAT through work experience.

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Appendix. Definitions of Each Leadership Behavior[7]

Advocate	Takes responsibility for actions of others and defends actions of others, acts when appropriate as an advocate for others.
Applies known and attained knowledge	Uses clinical evidence, research, and best practice in the promotion of the profession by professional communications (abstracts, poster presentations, lectures, etc), original investigations, and literature reviews.
Courageous leadership	Has strong convictions and holds to convictions when faced with challenges.
Credible	Is believable, honest, trustworthy, and ethical in dealings with subordinates, peers, and supervisors.
Crisis management	Effectively handles unforeseen crises and limits or corrects problems in a reasonable amount of time (via problem solving and dialogue) and deals with conflict by providing effective strategies for conflict resolution.
Critical thinker	Cognitive ability to make connections, integrate, and make practical application of different actions, opinions, and information.
Cultural sensitivity	Promotes diversity in multiple contexts and aligns diverse individuals by creating and facilitating diversity and provides opportunities for diverse members to interact in nondiscriminatory manner.
Delegates effectively	Appropriately gives responsibility and authority to others in accomplishing desired tasks.
Demonstrates scholarship	Contributes to professional advancement by promoting and participating in scholarly activity, such as conducting research, giving/hosting professional presentations, participating in peer reviews, or writing articles.
Disciplined	Is consistent and steady in performing unpleasant or mundane tasks that provide long-term benefits.
Empowerment	Uses influence and interpersonal ability to promote and encourage personal growth of others. Ensures transformation and development of others.
Ensures an awareness of mission	Understands and communicates how individual performance of others influences subordinate's, peer's, and supervisor's perception of how the mission is being accomplished.
Excellent written communication skills	Writes thoughts and ideas accurately, effectively, and succinctly to subordinates, team members, supervisors, other professionals, and collaborative community partners.
Future-minded	Has a forward-looking mentality and sense of direction and concern for where the organization should be in the future.
Improves morale	Facilitates and encourages a positive attitude in peers, subordinates, and supervisors toward their work and life.
Influencer	Uses interpersonal skills to ethically and non-coercively affect the actions and decisions of others.
Intentional leadership	Assess and evaluates own leadership performance and is aware of strengths and weaknesses. Takes intentional action toward continuous improvement of leadership ability.
Knowledgeable	Knows, understands, and is capable of performing the details and demands of tasks and roles specific to the profession.
Leads quietly	Moves patiently, carefully, and incrementally. Doing what is "right" for the organization while using modesty and restraint to accomplish goals.
Utilizes appropriate leadership styles	Demonstrates the ability to implement and transition between varieties of leadership styles (ie, transactional, charismatic, transformational, situational, servant, autocratic, laissez-faire, etc) when appropriate and when different situations dictate a diversity of leadership styles. Can identify when it is appropriate to transition between leadership styles with subordinates and peers and recognizes when superiors and other professionals are transitioning between leadership styles.
Willing to take appropriate risk	Willing to accept a degree of uncertainty for the sake of implementing an idea, needed value, or to see a goal accomplished.
Open-mindedness	Willingness to discard old ways of doing things when evidence fails to support them.