# Leadership is Positively Related to Athletic Training Students' Clinical Behaviors

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Context: Leadership development by health professionals positively affects patient outcomes.

**Objective:** To 1) determine if there is any relationship between demonstrated leadership behaviors and clinical behaviors among entry-level AT students (ATS);2) to explore if the level of leadership behavior changes between ATS level; and 3) to determine if preceptors and students rate leadership and clinical behaviors differently.

Design: Non-parametric quantitative, non-experimental exploratory.

Setting: Assessments of ATS in an entry level undergraduate AT education program.

Participants: Preceptors and Athletic Training Students.

**Main Outcome Measures:** Archived AT Student Leadership and Clinical Skills Evaluations (ATSLCSE) were analyzed from 2008 to 2010. After the ATSLCSE was assessed for internal consistency and validity, Spearman rho correlations were use to measure the relationship between leadership and clinical behaviors, Mann-Whitney U tests to measure differences between gender and preceptor and ATS ratings, and Kruskal-Wallistests to assess the differences between ATS levels.

**Results:** ATSLCSE had satisfactory internal consistency ( $\alpha$  = .91), with criterion-related predictive validity established with correlations ranging from r=.61 to .83(p<.01). The data showed a positive relationship between leadership and clinical behaviors(r = .80,P<.01), significant differences in clinical behaviors and demonstrates leadership behaviors between ATS levels ( $X^2_{(2, N=442)}$ =24.66, P=<.001 and  $X^2_{(2, N=442)}$ =41.00, P=<.001, respectively), that preceptors rated students'clinical behaviors higher than the students rated themselves (U=20924.500, Z=-.2.424, P=.015), and that females had higher attendance than males (U = 21095.000, Z = -2.08, P=.037).

**Conclusions:** Leadership has a positive relationship to clinical behaviors, with demonstrated behaviors increasing as the ATS progressed through the program. There was also a significant difference between preceptorand student ratings in terms of the students' clinical behaviors. Therefore, educators should consider leadership an important aspect of clinical preparation.

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## **INTRODUCTION & REVIEW**

Athletic training (AT) is maturing as a healthcare profession. Contributing to this maturation in both education and practice is the awareness that leadership behavior is important for entry-level practice,<sup>1-5</sup> and is not just the purview of those in management positions.<sup>5,6</sup> It has been said, that in providing greater leadership, athletic training can come to "complete professional maturation."<sup>7</sup> Leadership skills are imperative for today's athletic trainers to compete in the healthcare market,<sup>1</sup> because without leadership, the organizations that employ them could potentially lose their effectiveness.<sup>8</sup> Furthermore, athletic trainers from a variety of different work settings believe that leadership behaviors and related content are important for practice and inclusion in AT education.<sup>9</sup>

Unfortunately, educators and clinicians often marginalize nonclinical skills which are not directly associated with athlete healthcare (eg, leadership, management, professionalism, etc.).<sup>10</sup> This may inadvertently impede their instruction and evaluation. Adamson and colleagues reported that some healthcare practitioners have faulted their formal education for failing to adequately prepare them for many of their job's non-clinical demands (including leadership behaviors).<sup>11</sup> It is possible that this lack of concern or poor preparation is due to the affective nature of these behaviors<sup>12-13</sup> and their lack of direct relation to patient outcomes.<sup>10</sup> The perception that nonclinical behaviors are absent or are of less importance can create significant challenges for leadership development<sup>3</sup> and professional involvement. This perception, if true, is unfortunate, since the demonstration of leadership behaviors by clinicians has been identified as having numerous outcomes,14-22 including improving patient beneficial outcomes and satisfaction<sup>23-25</sup> and enhancing the ability to handle the complexities of the healthcare workplace,<sup>15</sup> and should be included in healthcare program curricula.<sup>15</sup>

Leadership behaviors have been found to enhance paramedics' clinical behaviors, <sup>19</sup> positively correlate to patient care quality in nursing, <sup>20</sup> and have a valuable and significant role in improving patient satisfaction.<sup>21</sup> McAlearney<sup>22</sup> concluded that quality of care and patient satisfaction improves when clinicians are offered opportunities to develop or improve their leadership. Given that scholars report other outcomes, such as improved organizational performance,23 better quality of care,14,20 and improved patient outcomes and patient satisfaction,<sup>21,25</sup> it is reasonable to assert that leadership behaviors demonstrated in AT settings may contribute to improved outcomes for the profession and our patients. To date, no research has explored leadership outcomes within athletic training. Since leadership is often introduced during entry-level education, it is necessary to begin to evaluate it at that time. Therefore, the aims of this investigation were threefold: 1) determine if there is any relationship between demonstrated leadership behaviors and clinical behaviors among entry-level Athletic Training Students (ATS); 2) to explore if the level of leadership

behavior changes between ATS level; 3) and to determine if preceptors and ATSs rate leadership and clinical behaviors differently.

# METHODS

# Participants

The participants in this study were athletic training students (N=64) and their preceptors (N=15) from one athletic training education program (ATEP). A majority of students were females (56%), 44% were males and their mean age was 20.7 years, range 18 – 26 years. Each of the preceptors (5 female and 10 male) completed clinical instructor training with the university's Clinical Instructor Educator. The NATA's membership database was used posteriori to calculate the preceptor's length of the experience in years, which ranged from 2 to 24 years, and averaged 8 years.

# Instrument

The Human subjects review board approved the analyses of previously completed Athletic Training Student Leadership and Clinical Skill Evaluations (ATSLCSE) from 2008 to 2010. The same version of the ATSLCSE was used for ATSs in different clinical settings (ie, university, high schools, community colleges, and rehabilitation clinics). In total, 442 ATSLCSE were analyzed (preceptor-rated N=198 and ATS-self-rated N=244). Forty-two percent of the ATS-self-rated ATSLCSE assessed males and 58% females. These were organized by level:

Level 1: evaluations of students enrolled in their third or fourth semesters within the ATEP (eg, sophomores);

Level 2: evaluations of students enrolled in their fifth or sixth semesters (eg, juniors); and

Level 3: evaluations of students enrolled in at least their seventh semester (eg, seniors).

Students in their first or second semester were excluded because they had not been formally admitted into the clinical education component of the ATEP.

The ATSLCSE was an in-house instrument used to evaluate ATS leadership and clinical behaviors. It contained two sections; section one measured eight general leadership behaviors and section two measured level-appropriate clinical abilities related to necessary clinical behaviors. The completed ATSLCSEs were further organized according to who completed it (eg, preceptor or ATS) and the student's level (ie, semester as an ATS) at the time conducted. Leadership and clinical behaviors identified in the scholarly literature supported the ATSLCSE's content validity, and content experts (clinical coordinators, program directors, and head athletic trainers) from two ATEPs reviewed it for appropriateness.

Table 1 Description of Leadership Behaviors measured by ATSLCSE								
Behavior	General Description	# of subscale items						
Professionalism	Develops and maintains professional relationships, is ethical, is emotionally mature and puts constructive criticism to use.	7						
Attendance	Is punctual in reporting to all clinical assignments and attentive during clinical instruction.	2						
Communication	Develops rapport with peers and professionals and is effective at communicating with others.	2						
Quality of Work	Is diligent and skillful in completing assigned tasks is reliable and dependable.	5						
Initiative	Shows desire to learn, takes initiative in performing needed duties without being asked. Is an effective time manager.	5						
Cooperation	Demonstrates the ability to interact and work well with others and is respectful of other's opinions.	3						
Attitude	Is generally upbeat and Is a good example for other students, demonstrates confidence and provides a conducive learning environment for peers.	5						
Shows professional interest	Is concerned about patient's well-being makes an intentional effort to learn about AT and clinical practice.	4						
Leadership Behavior	Collective (aggregate) mean score of the eight leadership behaviors.	33						

The ATSLCSE's eight general leadership behaviors were culled from the healthcare literature.<sup>23,26-28</sup> Subscale behaviors for the general leadership behaviors were created a priori. Leadership behavior was defined as the determinants of leadership that can be learned and are observable demonstrations of specific actions.<sup>30-31</sup> A total of 25 subscale items were added to the eight general leadership behaviors, resulting in 33 leadership behaviors (Table 1). An aggregate mean of the 33 leadership behaviors was used to determine overall leadership level (ie, demonstrates leadership behavior).

Clinical behaviors were defined as the psychomotor performance of specific clinical skills that did not require clinical decision making.<sup>29</sup> Clinical behaviors were identified using the 4th Edition of the Athletic Training Educational Competencies<sup>32</sup> and Developing Clinical Proficiencies in Athletic Training manual by Knight and Brumels.<sup>29</sup> Level appropriateness was determined based on consultation with faculty, reference manuals, and the ATEP's specific learning sequence. In total, Level 1 students were rated on 16 clinical behaviors, level 2 students on 28 clinical behaviors, and level 3 on 31 clinical behaviors (Table 2). Items in both sections were rated using a five point scale that ranged from 1 to 5 (1 = Unsatisfactory, fails to fulfill function at minimum)level of expected performance; 2 = Marginal, functions at marginally acceptable level of expected performance; 3 = Satisfactory, functions at generally satisfactory level of expected performance; 4 = Highly Satisfactory, functionsat generally high level of expected performance; 5 = Exceptional, functions at or near highest level of expected performance).

#### Procedures

The ATSLCSE that were analyzed in this study were collected over several semesters between spring 2008 and spring 2010. Access to the archived ATSLCSE was granted

to the primary researcher by the ATEP's program director. ATSs and preceptors completed the ATSLCSE twice each semester, at both mid-term (week 8) and end-of-term (week 16), giving each student four evaluations: two from a preceptor and two self-evaluations. Preceptors and ATSs completed the forms independently, then met to discuss their respective evaluations and submit them to the clinical education coordinator.

#### Analysis

Cronbach's Alpha was used to indicate internal consistency of the ATSLCSE. Because assumptions of normality were violated, non-parametric analysis was used posteriori. Spearman rho correlations were performed to determine criterion-related predictive validity of the ATSLCSE by measuring the relationship between clinical behaviors and demonstrated leadership behaviors. Mann-Whitney U tests were conducted to compare differences between gender and preceptor ratings to students' self-ratings ( $P=\le.05$ ). Kruskal-Wallis analysis, with post hoc Mann-Whitney with Bonferroni adjustments to reduce risk of Type 1 error were used to determine differences between the three levels of ATSs for demonstrated leadership behaviors and clinical behaviors. Data were analyzed using SPSS 19.0 (SPSS, Inc. Chicago, IL).

## RESULTS

When aggregating the ATS and preceptor ratings on the ATSLCSE, 37% were level 1 students (N=162), 47% were level 2 students (N=209), and 16% were level 3 students (N=71). The measure of internal consistency was excellent ( $\alpha$  = .91). Criterion-related predictive validity was established with Spearman rho correlations ranging from r=.61 to r=.83 (P=<.001) for all scale items (Table 3). Correlations between items ranged from r=.42 to r=.91 (P=<.001) for students' self-assessments (Table 4) and from r=.71 to r=.94 (P=<.001) for

Results for Aim 1: relationship between leadership and clinical behaviors

Spearman rho correlations for aggregate ratings of ATSLCSE revealed that there was a significant positive relationship between demonstrates leadership behavior and clinical behaviors (r=.80, P=.000). Furthermore, clinical behaviors was positively correlated with all eight of the leadership behaviors (r =.58 to r=.76, P=<.001). The strongest correlations with clinical behaviors occurred between professional interest (r=.76) and attitude (r=.75). Both students' self-rated ATSLCSEs (N=244) and preceptors' (N=198) ATSLCSEs showed a significant correlation between demonstrates leadership behaviors and clinical behaviors (r=.75, P=<.001 and r=.87, P=<.001, respectively). The aggregate data also revealed that only one general leadership behavior, attendance, was significantly different between genders, with females (mean rank=231.45) scoring higher than males (mean rank=206.81) (U = 21095.000, Z = -2.08, P=.037).

Results for Aim 2: leadership behaviors according to ATS level.

Kruskal-Wallis analysis of the aggregate ATSLCSE ratings indicated that there were significant differences in clinical behaviors between the three ATS levels  $(X^2_{(2, N=442)}=24.66, P=.000)$ . Mean ranks progressively increased from sophomore (193.39) to junior (222.23) to senior (283.49) year. A similar increase was seen across ATS levels with demonstrates leadership behaviors (X<sup>2</sup>, N=442)=41.00, P=<.001), where mean ranks progressively increased from 182.82 by sophomores to 225.24 for juniors, and finally 298.73 for seniors. Post hoc analysis using Mann-Whitney with a Bonferroni adjustment set at P=.016 found that seniors scored significantly higher than sophomores in all ATSLCSE scale items for leadership behavior and clinical behaviors(P=<.001). Seniors were also significantly higher than juniors in all ATSLCSE general leadership items (P≤.005) except attendance (P=.047). Juniors were significantly higher than sophomores in attendance, professionalism, communication, quality of work, initiative (P $\leq$ .002), but not in cooperation(P=.019), attitude(P=.044), or interest (P=.026). Furthermore, juniors were higher than

sophomores in leadership behaviors(P=.002), but not in clinical behaviors (P=.039).

Results for Aim 3: preceptors and ATSs rating of behaviors.

There were significant differences between the preceptors' ratings and students' self-ratings on clinical behaviors. Preceptors rated their students' clinical behaviors significantly higher than the students rated themselves (U=20924.500, Z=-.2.424, P=.015), with mean ranks of 237.82 to 208.26, respectively. There were no significant differences found between preceptor and ATS ratings for demonstrate leadership behaviors.

# DISCUSSION

The aim of this investigation was threefold: 1) to determine if there is any relationship between demonstrated leadership behaviors and clinical behaviors among entry-level AT students; 2) to explore if the level of leadership behavior changes between ATS level; and 3) to determine if preceptors and ATSs rate leadership and clinical behaviors differently. The ATSLCSE instrument was found to have satisfactory measures of validity and internal consistency. The following discussion is organized according to the three aims of this investigation.

This investigation determined that there is a positive relationship between demonstrated leadership behaviors and clinical behaviors of entry-level AT students, it remains unclear if clinical behaviors precede leadership behaviors or vice versa. However, the current literature supports the notion that leadership enhances clinical behaviors and not the other way around.<sup>19-22,25,33</sup> Leadership outcomes have been identified in other healthcare professions, but are not yet reported for AT specifically. For example, higher levels of clinical behaviors have been shown to improve patient outcomes in nursing.<sup>34</sup> Therefore, it is plausible that leadership behavior may ultimately contribute to better patient outcomes in AT. While leadership is important and useful in AT,<sup>9,24,36-37</sup> why leadership is important still remains unclear. The findings of this investigation may imply that

Table 2: Sample of	f clinical abilit	ies related to clinical behaviors according to Student Level	
Student Level	Total # of skills	Sample of Clinical behaviors in one ATEP and a Midwestern University	
ATS Level 1	16	Demonstrates competence in applying splints Demonstrates competence in writing SOAP notes Demonstrates competency with taping applications Demonstrates general knowledge of therapeutic modality (E-Stim) Demonstrates proper procedures when caring for open wounds	
ATS Level 2	28	Demonstrates ability to accurately test/assess joint range of motion Demonstrates ability to fit knee braces Demonstrates ability to treat environmental illnesses Demonstrates general knowledge of cryotherapy Demonstrates knowledge of lumbar stabilization techniques	
ATS Level 3	31	Demonstrates appropriate use of massage Demonstrates knowledge of functional progression Demonstrates understanding of progressive resistive exercises Demonstrates knowledge of neuromuscular coordination exercises Demonstrates general knowledge of neurological assessment	

Table 3: Aggregate Means and Correlations of ATSLCSE completed by preceptor's and ATS-self (N = 442) Spearman Rho Correlations for Leadership Behaviors and Clinical behaviors of AT Students

	Means±	SD	Professionalism	Communiction	Quality of Work	Initiative	Cooperation	Attitude	Professional Interest	Attendance	Demonstrates Leadership Behaviors
Communication	3.66	±.674	.73**								
Quality of Work	3.70	±.637	.80**	.73**							
Shows Initiative	3.49	±.629	.79**	.70**	.80**						
Cooperative	3.92	±1.55	.76**	.65**	.74**	.69**					
Attitude	3.59	±.599	.84**	.69**	.80**	.80**	.79**				
Professional Interest	3.66	±.666	.78**	.71**	.80**	.82**	.76**	.83**			
Attendance	3.76	±.701	.68**	.64**	.68**	.67**	.61**	.66**	.67**		
Demonstrates Leadership Behaviors	3.65	3.65	.92**	.81**	.90**	.90**	.84**	.92**	.90**	.76**	
Demonstrates Level Specific Clinical behaviors	3.38	±.607	.72**	.63**	.73**	.73**	.67**	.75**	.76**	.58**	.80**
	** Corre	elation is a	significa	nt at the	0.01 lev	el (2-tai	ed)				

# Table 4: Student's Self Evaluations (N = 244)

Means (SD) and Spearman Rho Correlations for Leadership Behaviors and Clinical Behaviors of AT Students

Means±SD			Professionalism	Communiction	Quality of Work	Initiative	Cooperation	Attitude	Professional Interest	Attendance	Demonstrates Leadership Behaviors
Communication	3.64	±.628	.69**								
Quality of Work	3.67	±.604	.79**	.73**							
Shows Initiative	3.44	±.560	.77**	.68**	.77**						
Cooperative	3.93	±2.03	.69**	.60**	.69**	.64**					
Attitude	3.56	±.563	.80**	.68**	.79**	.79**	.75**				
Professional Interest	3.64	±.617	.74**	.68**	.78**	.83**	.73**	.83**			
Attendance	3.72	±.635	.50**	.51**	.52**	.54**	.40**	.54**	.57**		
Demonstrates Leadership Behaviors	3.61	±.521	.90**	.80**	.90**	.89**	.79**	.91**	.90**	.62**	
Demonstrates Level Specific Clinical behaviors	3.30	±.598	.66**	.58**	.66**	.69**	.60**	.71**	.73**	.42**	.75**

\*\*Correlation is significant at the 0.01 level (2-tailed)

Means (SD) and Spearman Rho Correlations for Leadership Behaviors and Clinical behaviors of AT Students											
	Means±SI	)	Professionalism	Communiction	Quality of Work	Initiative	Cooperation	Attitude	Professional Interest	Attendance	Demonstrates Leadership Behaviors
Communication	3.68	±.728	.77**								
Quality of Work	3.74	±.676	.81**	.73**							
Shows Initiative	3.55	±.702	.83**	.73**	.83**						
Cooperative	3.91	±.739	.83**	.71**	.79**	.73**					
Attitude	3.62	±.641	.88**	.70**	.82**	.81**	.83**				
Professional Interest	3.68	±.722	.82**	.75**	.81**	.82**	.77**	.83**			
Attendance	3.80	±.775	.85**	.77**	.83**	.79**	.79**	.78**	.77**		
Demonstrates Leadership Behaviors	3.68	±.629	.94**	.82**	.91**	.91**	.89**	.92**	.90**	.89**	
Demonstrates Level Specific Clinical behaviors	3.48	±.605	.80**	.71**	.81**	.78**	.79**	.81**	.80**	.76**	.87**
	**Correla	tion is sig	nificant	at the (	).01 lev	el (2-ta	ailed)				

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leadership may contribute to better patient outcomes due to its relationship to clinical behaviors. This may provide some initial insight as to "why" leadership is important in AT, which has intrinsic heuristic value. In other words, this helps to answer the question of "why" leadership may be important in athletic training and offers one of many possible reasons leadership development should be an intentional component to entry-level athletic training education, advanced athletic training education, and included in continuing education programming. However, further studies should be conducted to explore the implication that leadership behavior may have a positive impact on clinical behaviors and ultimately improved patient outcomes, as well as the determinates of those leadership behaviors.

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The findings of this investigation suggest that a majority of leadership behaviors are incrementally higher among subsequent levels of ATS (eg, sophomore to junior to senior). Whether or not these incremental changes can be construed as a sequential increase over time by the same students is unknown. However, these finding imply that leadership may be learned over time, and that ATSs appear to demonstrate leadership behaviors more effectively as they advance through their education. This supports other athletic training research<sup>9,37-38</sup> that found that the importance of leadership behaviors in athletic training practice increases as one advances in their education and AT career. It also supports nursing theory which states that expertise and its preceding levels of ability are built on accumulating meaningful experiences.<sup>39</sup>

This investigation provides evidence that leadership is being demonstrated by ATSs in their introductory clinical education settings, thereby establishing the necessity of leadership behavior early in entry-level preparation. While this not only supports Laurent and Bradney's<sup>40</sup> assumption that

leadership can be learned and that at least some leadership is learned at the entry-level, it also adds credibility to other health care literature that speculates that leadership can and should be learned early in professional education.<sup>15-18</sup> One explanation may be that exposure to leadership increases as students advance through their education. Platt-Meyer<sup>24</sup> suggested that as situational leaders, clinical instructors' behaviors directly impacts students' behaviors. It is possible that, as ATSs progress through their clinical experiences and become more familiar to their preceptors and the preceptors themselves become more comfortable with students, that the preceptor may demonstrate additional "non-clinical" behaviors (eg, leadership), which may ultimately foster ATS leadership. This implies leadership can be more prominent in higher level students, given their increased exposure to preceptors, which is consistent with our findings. Future studies should explore determinates of demonstrates leadership behaviors by ATSs in all levels.

It is necessary to point out that demonstrating leadership behaviors in an entry-level clinical setting should not be confused with clinical competency or construed as readiness for administrative or management positions. The undergraduate setting is reported to be ideal for introducing and developing leadership competency in healthcare.<sup>15</sup> However, preparing practicing professionals for leadership roles is generally the purview of graduate and advanced practice programs.<sup>21,41-42</sup> Athletic trainers with masters' degrees in AT reported leadership competencies to be more important for clinical practice than athletic trainers with masters' degrees in a discipline other than AT.<sup>9</sup> Therefore. entry-level athletic trainers should be encouraged to further develop their leadership in graduate programs that specialize in AT. This may better promote athletic training by contributing to improved patient outcomes and satisfaction,

as opposed to pursuing a graduate degree in another discipline, which may not contribute in the same way to professional maturity and leadership development relative to the needs and expectations of AT or their patient outcomes. The implications for educators and preceptors are to be sure to include and evaluate leadership competency in the regular evaluation of students at their clinical site and encourage ATSs to pursue graduate degrees in AT.

There were significant differences between preceptor's ratings of clinical behaviors, but not leadership behaviors when compared to the ATSs' ratings. These findings indicate that preceptors may think more highly of the students' clinical behaviors than the students themselves. It also suggests that students may predict their subjective level of leadership behavior more accurately. On the other hand, students are less consistent with their preceptor in their objective assessment of their clinical behaviors. Consequently, it may be necessary for educators to instruct students on how to better evaluate their own performance in light of expectations and needed skills.

An unexpected finding was that preceptors' evaluations of ATSs indicated a stronger relationship between leadership behaviors and clinical behaviors than the ATSs' selfevaluations. Therefore, it may be necessary for educators to help ATS understand the role and value of leadership in professional development and clinical practice.

#### Limitations

The ATSLCSEs analyzed in this study were of students and preceptors from a single institution, and therefore, the generalizability of these findings may be restricted. Future studies on leadership should endeavor to have a larger representative sample. The concept of leadership is difficult to define.<sup>43</sup> This study also suffered from that ambiguity. The leadership items identified in this study were taken from the literature in nursing, pharmacy, physical therapy, medicine, business, and AT. Hundreds of items related to leadership have been identified, and whether or not the specific items chosen for this leadership investigation actually are exclusive leadership behaviors and do not overlap with similar constructs such as professionalism or management necessary for athletic trainers to "practice leadership" is unknown. Therefore, future researchers should endeavor to identify and assess leadership behaviors specific to AT that are independent of similar constructs and delineate those behaviors in respect to clinical behaviors and patient outcomes. It should also be noted that the Bonferroni adjustment was conservative and increases the risk of a Type Il error; therefore, it is possible that cooperation, attitude, interest and clinical behaviors may be significant. The risk of this error may also have masked differences in leadership behaviors between ATS levels (eg, junior to sophomore). Finally, it is necessary to note that since the ATSLCSE were analyzed from a predefined range of dates, ATSs were not all evaluated the same number of times. For example, the ATSLCSE of ATSs who were level 1, 2, or 3 during spring 2010 where only analyzed once; whereas students who were level 1 in spring 2008 had data for all three levels. Therefore, determinates of learning leadership overtime cannot be ascertained. However, it does not diminish the

significance of the findings that each successive level was rated higher in their leadership behavior than the previous level. While this progressive improvement is expected of clinical behaviors, until now, a similar progression has not been reported of leadership behaviors in AT. This study is the first to report this phenomenon. Future studies should investigate if leadership is learned, in fact, over time by AT students, and whether that it is a direct outcome of the AT specific curriculum, the general university-based curriculum, or some other intervention.

# CONCLUSION

Overall, leadership behavior has a positive relationship to clinical behaviors and patient outcomes. Leadership behaviors of ATSs increase over time, and may be a direct result of increasing exposure to preceptors. Preceptors also perceive that leadership behavior has a stronger relationship to clinical behaviors than students do, marked by a significant difference between how preceptors rate students compared to how students rate themselves. Therefore, educators should consider enhancing formal didactic leadership behavior has a direct influence on patient outcomes, if it can be learned over time, and its relationship to preceptor exposure.

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