

Meaning Making Among Professional Master's Athletic Training Students

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Context: New approaches to education and pedagogy are needed in athletic training education to better support developmental benchmarks that cultivate skills for lifelong learning.

Objective: Explore and understand students' perceptions of their education and how those perceptions support their development toward self-authorship through the complexity of their meaning making.

Design: Qualitative, grounded theory.

Setting: Division I Commission on Accreditation of Athletic Training Education athletic training programs.

Patients or Other Participants: Twelve participants (9 female, 3 male; age = 24 ± 2 years) in their second year of athletic training education were recruited for the study. Of the 12 participants, 11 were engaged in an immersive clinical experience.

Data Collection and Analysis: Participants engaged in a semistructured video conference interview. Data were analyzed using grounded theory approach to understand the complexity of students' ways of making meaning cognitively, intrapersonally, and interpersonally. Data saturation, peer review, member checks, and theoretical triangulation were used to establish credibility.

Results: Participants exhibited meaning making in 2 distinct ways: (1) external guidance and (2) movement toward internal guidance. The categories were further broken down by theme. Placing responsibility for knowledge on authorities, need for step-by-step guidance, and seeking approval marked the themes of external guidance. Building confidence and role identity development marked themes of movement toward internal guidance.

Conclusions: Participants who were reliant on external guidance required external authorities for knowledge acquisition and learning. Some participants demonstrated deeper meaning making when discussing their experiences with clinical education.

Key Words: Self-authorship, role identity, athletic training education

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KEY POINTS

- No participants demonstrated meaning-making consistent with self-authorship.
- A majority of participants relied on external guidance to form their meaning-making.
- Participants that demonstrated meaning-making consistent with movement toward internal guidance did so through building their confidence and addressing their role identities, typically within their clinical education experiences.

INTRODUCTION

Empirical evidence spanning over 20 years¹ suggests college education is “insufficient for mature adult functioning.”² The implication for athletic training education, especially because medicine is constantly evolving, is that it must encourage athletic training students to develop not only successful strategies for classroom learning, but also those that can apply to lifelong learning. We as educators know athletic training programs (ATPs) prepare students to be competent practitioners in the present day; however, we have a limited understanding of how students apply learning strategies to be successful now and in the future.

The Commission on Accreditation of Athletic Training Education (CAATE) 2020 Standards³ are the current guidelines for both didactic and clinical course content around which ATPs build their curricular framework. This document undergoes periodic revision to allow for educational practices to meet the demands of the profession. For example, recent revisions to the CAATE 2020 Standards document specifically addressed diversity, equity, inclusion, and social justice to further enhance the cultural competence requirement that is inherently housed within Standards 56 through 60.⁴ The need for lifelong learning skills is paramount to athletic trainers, as there has been, and will continue to be, consistent change in the professional skill set to adapt to emerging best practices. The COVID-19 pandemic further highlighted the need for health care professionals to possess the ability to find ways to learn through an evolving situation with unknown outcomes. Health care is often unpredictable and does not always follow a checklist format. If students are never afforded the opportunity to develop lifelong learning skills, it is possible they may struggle with novel health care situations or completion of educational requirements beyond their formal education, such as those described above, and their athletic training practice may become stagnant or outdated.

To avoid the aforementioned stagnation, and to better prepare students for continued growth throughout the longevity of their athletic training career, instructors need to understand students' holistic development. One theory of holistic development that is particularly applicable to adult learners is Baxter Magolda's⁵ theory of self-authorship. Self-authorship is a developmental theory that focuses on how a

person is making meaning of the world, not what they think. King⁶ highlighted this difference through an example of voting: although 2 people may vote for the same candidate (what they think) the reasoning behind their choice could be vastly different (how they make meaning).

Kegan⁷ developed several orders of mind (0–5) that develop throughout an individual's lifespan, with order 4 being the “self-authoring mind.” Each successive order of mind increases in complexity and depth of perspective and develops as individuals adapt to new demands they face; Kegan argued that the self-authoring mind is necessary to effectively meet the demands of lifelong learning. Within the self-authored mind, 3 interrelated dimensions exist: cognitive, intrapersonal, and interpersonal. The cognitive dimension addresses how someone views and constructs knowledge. The intrapersonal dimension addresses how someone views and defines their identities. Finally, the interpersonal dimension addresses how someone views relationships and interactions with diverse others. Self-authorship involves a shift in one's meaning making from outside the self, or based on external influences, to inside the self in each of the dimensions. Baxter Magolda^{5,8} built upon Kegan's theoretical work by studying how individuals' orders of mind develop during college and beyond. Through a longitudinal study that followed individuals from their first year in college into their 40s, Baxter Magolda^{5,8} identified 4 developmental milestones associated with self-authorship: external formulas, crossroads, self-authorship, and internal foundation.

A person operating at following external formulas defines themselves primarily by others' opinions, seeks approval from others, sees others as sources of knowledge, and holds strongly to the notion that knowledge is dichotomous (ie, right or wrong). However, someone using meaning making consistent within the crossroads can recognize the need to establish their own sense of self, realizes the importance of creating authentic relationships, and holds a desire to become more internally grounded. As individuals move from the crossroads toward self-authorship, they gain increasing confidence in their ability to create knowledge, define their identities, and develop interdependent relationships. In essence, they can more effectively and consistently decide how to filter external influences to enact their beliefs and values. At the internal foundation level, individuals routinely make decisions based on an internal set of beliefs and values while remaining open to revising their beliefs and values based on new information.⁹

To understand a student's holistic development, it is important to identify how they are making meaning in all 3 dimensions (cognitive, intrapersonal, interpersonal). For example, in the cognitive dimension, educators can consider if a student relies heavily on external authorities (such as a teacher) or rather seeks out and synthesizes various sources of information. Educators also can consider if a student values a right/wrong answer to questions, not fully understanding that

shades of gray may exist, or rather views knowledge as contextual, understanding that there might not be one right answer. These types of considerations should be made in all dimensions, as someone cannot be self-authored in one dimension but not the others.⁵

Research examining self-authorship has often explored the baccalaureate student experience; however, the theory itself does not have specific parameters based upon age and has been researched among adults in their 30s and 40s.¹⁰ Therefore, we determined that using the theory to understand graduate students' ways of making meaning was appropriate. A small portion of research exists providing recommendations on self-authorship development within medical education,^{2,11–13} but this student development theory has not been examined exclusively among ATPs. DelPrato¹¹ described challenges in nursing education such that nursing graduates were seeking the “right” answer, often given to them through the opinion of an authority, and looked to authority figures to make decisions for them. DelPrato postulated that nursing graduates “would not be able to function independently or make decisions in uncertain situations and would likely assume a subordinate role among physicians and other authorities.”¹¹ Therefore, the call for nursing education reform was made, with a focus on helping students develop self-authorship and thus gain the ability to make internally grounded decisions in complex patient situations (intrapersonal dimension), advocate for the patient even if that goes against an authority's opinion (interpersonal dimension), and evaluate evidence-based literature to advance their clinical practice (cognitive dimension).

Direct links between self-authorship development and nursing are clearly defined. Given that athletic training falls under the health care umbrella alongside nursing, it is important to understand the differences, if any, between ATP education experiences and those in other medical professions such as nursing, as the athletic training profession continues to grow and evolve. Understanding where ATP graduate students are in their journey toward self-authorship will allow educators to better design curriculums, course activities, and assignments to meet students' needs and foster lifelong learning. Therefore, the purpose of this study was to examine students' level of holistic development based on the ways in which they made meaning of educational experiences.

METHODS

Research Design

A constructivist-based, grounded theory methodology was selected for this study,^{14,15} as the topic of meaning making among professional master's (PM) athletic training students had little exploration within the existing literature. Examining data through this lens allowed for a shift away from discovering a truth, as in a positivist paradigm, and toward a development of understanding.¹⁴

Recruitment and Participants

After we gained Institutional Review Board approval from University of Connecticut, we recruited participants by emailing program directors from 51 National Collegiate Athletic Association (NCAA) Division I PM ATPs requesting

student participation. Division I ATPs were chosen as there were 51 PM ATPs listed in good standing¹⁶ at the NCAA Division I level at the time of recruitment, significantly more than in any other category (Division 2 = 27, Division 3 = 23, National Association of Intercollegiate Athletics = 5).¹⁷ Targeting PM ATPs at the NCAA Division I level provided a robust sample of the PM athletic training student population. Given that the NCAA division level is a key factor in the organization and scope of an institution's athletic programs, and, by extension, students' experiences related to athletic programs, it is a key consideration for transferability of these findings. Students enrolled in PM ATPs at NCAA Division I institutions will have experience in the Division I setting and are also likely to have experienced additional settings. In qualitative research, transferability involves the ability to apply the findings in new contexts and requires readers to gauge the degree to which the new context aligns with the context of the study.¹⁸ For this study, participants' meaning making of athletic training knowledge and skills occurred, at least in part, within the Division I context. Thus, the Division I context was a key contextual factor that influenced the findings of this study. Among the participating institutions, 3 of the PM programs had less than 6 years of experience operating at the graduate level, 2 had between 7 and 10 years, and 2 had more than 10 years. Twelve students were recruited. Participants verbally self-identified their age, sex, and race to establish demographic information. Participants were, on average, 24 ± 2 years old. Nine females and 3 males were recruited. Further participant demographics, including participants' pseudonyms, are included in Table 1.

All participants were in the fall semester of their second year of athletic training education. This selection was purposeful as researchers wanted students to reflect on learning experiences without potential influences of adjusting to the new role of a graduate student. All were engaged in various clinical experiences, many of which were further identified as immersive clinical experiences. The definition of *immersive clinical experience* was adopted from the CAATE 2020 standards:³ “practice-intensive experience that allows the student to experience the totality of care provided by athletic trainers.”

Data Collection

All participants completed videoconference interviews, guided by an interview protocol that was piloted and validated through peer review. The questions were designed to better understand participants' ways of making meaning. For example, the interview protocol involved not only asking a participant to identify a valuable learning experience, but also following up and allowing a description of how that experience affected the participant or influenced their thinking. Questions from the interview guide for more specific examples are provided in Table 2. Each interview lasted approximately 45 minutes, and all were conducted by the same researcher for consistency in the interview sessions among all participants. Field notes were taken during the interview (S.L.M.). These notes were taken when participants began to discuss topics they felt strongly about and resonated with them personally, as well as when the interviewer noticed developmental cues, to capture the interviewer's real-time interpretations of the described experiences. Examples of developmental cues were verbal cues such as “This experience

Table 1. Individual Demographic Information

Pseudonym	Age	Sex	Race	Type of Clinical Experience	Clinical Setting
Antonio	25	M	Hispanic	Immersive	Professional hockey
Brianna	25	F	White	Immersive	Professional soccer
Christina	24	F	Native American	Immersive	Public high school
Diego	23	M	White	Immersive	Private high school
Ella	25	F	White	Immersive	Division I athletics
Fiona	23	F	Black	Immersive	Division I athletics
Gwen	23	F	White	Immersive	Division I athletics
Hannah	26	F	White	Traditional integrated model	Public high school
Ivan	24	M	Asian American	Immersive	Division I athletics
Jade	23	F	White	Immersive	Public high school
Kala	25	F	White	Immersive	Division I athletics
Lexi	24	F	Pacific Islander	Immersive	Division I athletics

made me think differently,” paraverbal cues such as hesitant speech or difficulty articulating thoughts, and nonverbal cues such as the participant appearing worried or anxious. These field notes accompanied the transcribed interviews for analysis. All participants were identified by pseudonym. An external transcription company transcribed the audio recording from all interviews, and participant member checking of transcribed interviews occurred before analysis.

Data Analysis

Researchers (S.L.M., K.B.T.) analyzed the interview transcripts using a grounded theory approach, a method of qualitative research analysis, using constant theoretical comparison throughout data collection, affording comparisons at each stage of analysis.¹⁹ Line-by-line analysis of the transcripts was completed as an initial in vivo open coding process to identify and gain an understanding of each participant’s experiences by assigning a word or label to specific lines of segments of the transcript, for example “confidence” or “hands-on.” Subsequent readings of the

transcripts were completed to identify examples of ways participants were making meaning of those experiences through focused coding.²⁰ If a participant discussed an example of more complex meaning making, researchers further reviewed the transcript to explore the process or experience that prompted the deeper meaning making. The experiences that prompted deeper meaning making were initially termed “deeper understanding” and “thinking differently.” Researchers coded these responses as such if participants described them as transformative to learning, which is to say that an experience in a participant’s education prompted them to think a different way or hold a new perspective.¹⁰ For example, if a participant used phrases like “I never thought of it that way before” or discussed using the mindset of a practicing clinician, those would be coded as a way students were making meaning. Codes were examined individually, compared with other codes from the focused coding phase, and grouped based on relationships to create categories.¹⁹ Further groupings and categorizations occurred to reduce redundancy until core categories emerged that were as holistically representative of the data as possible. For example, codes labeled “specific instructions,” “how to get an A,” and “tell me what you want” were grouped together and labeled “need for step-by-step guidance.” These groupings were examined to determine where the influence of meaning making was occurring. What emerged was 2 distinct categories: examples of meaning making that were heavily influenced by external authorities and examples of meaning making that were beginning to be cultivated from within the self. Once the researchers formed the codes and categories, the lead author consulted with existing literature on student development and found the resulting core themes aligned well with key tenets of the early phases of self-authorship development: following external formulas and the crossroads⁵ (Figure).

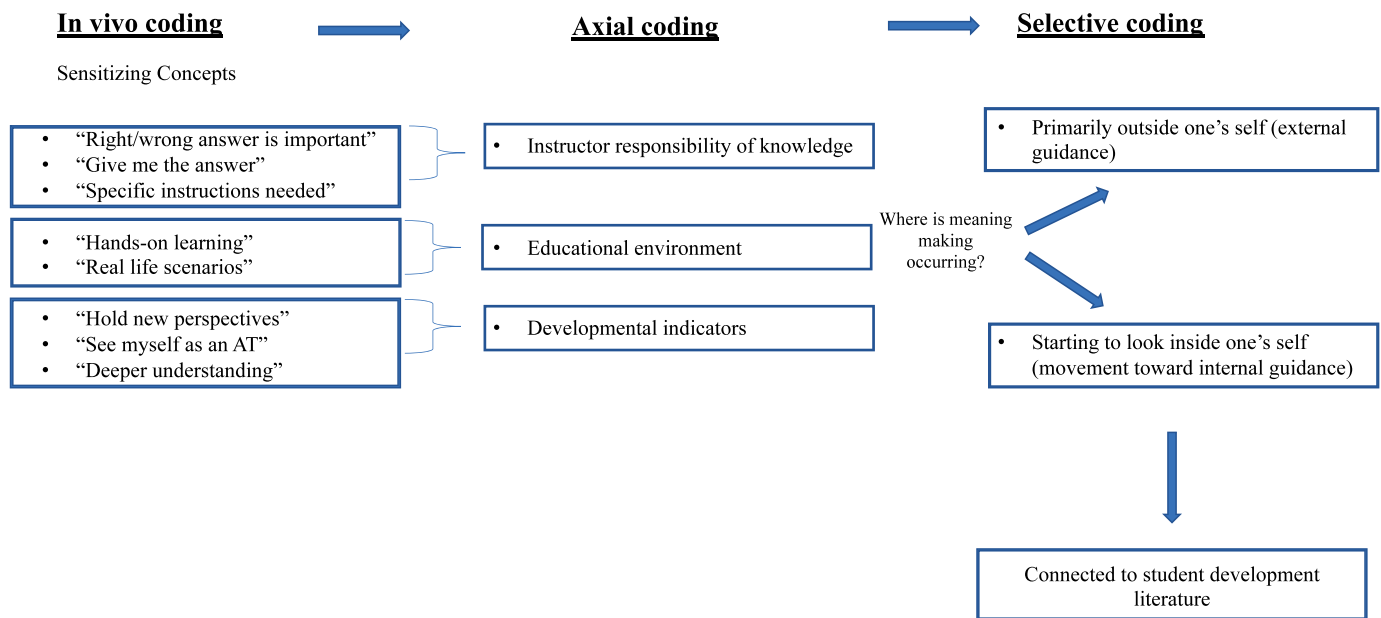
Credibility Strategies

Three credibility strategies were used to establish rigor and trustworthiness. A coauthor of this manuscript (S.M.S.) with expertise in athletic training qualitative research methods provided a peer review of the raw data, coded transcripts, and subsequent categories and subcategories that the lead researcher developed. The review yielded agreement between the lead researcher and reviewer regarding the identified categories. A second coauthor (K.B.T.), an expert in self-authorship, completed triangulation to blend the athletic

Table 2. Sampling of Interview Guide Questions

1. What learning experiences this semester are you finding to be the most valuable?
Probing follow-up questions:
a. How did the experience affect you?
b. Can prompt to discuss clinical vs classroom experiences
2. What learning experiences this semester are you finding to be the least valuable?
Probing follow-up questions:
a. What would make these experiences more valuable?
b. How did this experience influence your learning?
c. Can prompt to discuss clinical vs classroom experiences
3. If you could design a way to maximize learning in the class you enjoy the least, what might that look like?
Probing follow-up questions:
a. Why would that be helpful/valuable to you?
b. Attempt to clarify if it is the content or the process (or both) of the course the student is not enjoying
4. Did any other experiences stand out to you as something that changed the way you approach your learning that I have not yet asked about?

Figure. Methodology flow chart.



training education perspective with a developmental psychology perspective. The lead researcher (S.L.M.) also invited each participant to complete a member check by reviewing the full transcript and a brief synopsis of the interview; 3 participants provided the requested feedback. The responding participants confirmed the respective transcript and synopsis were true to their experiences. We used theoretical sampling during the recruitment process to allow for saturation to occur.²¹ Saturation occurred with 12 participants. Furthermore, the study was designed and evaluated in accordance with the COREQ²² checklist as a quality assessment tool.

RESULTS

To identify shifts in meaning making and thus understand how and why transformation occurs, educators need to understand where students are starting their developmental journeys. Data analysis showed that participants primarily were making meaning through external guidance but demonstrated they were on the cusp of and ready to begin exploring the crossroads. This readiness was evident through their desire to apply knowledge and develop their role identities.

The researchers determined that 11 of the 12 participants demonstrated ways of making meaning relying on external guidance, 8 of whom also articulated more advanced ways of making meaning. The 12th participant was classified as already making meaning in a way that was more advanced than relying on external guidance but had not yet achieved self-authorship meaning making.

External Guidance

Most participants (11 of the 12) described learning experiences in which they placed responsibility of knowledge on classroom or clinical educators, sought out approval from authority figures, and needed right or wrong answers, which were strong indicators of participants making meaning from external guidance.

Placing Responsibility for Knowledge on Authority.

The 11 participants identified as making meaning based on external guidance described expectations of the educator, or authority figure, to transfer knowledge to them as students. A reliance on these authorities for knowledge was discussed. That is to say, the participants perceived the need for explicit directions from the instructor about what information was critical, what was right or wrong, instead of deciding for themselves what was important to know. Kala noted that she preferred that the instructor provide a road map for success that outlined what information was important, so she could spend less time studying.

[Having a PowerPoint] would allow me to focus more on applying what exactly I need to know from the class. And then just having the condensed PowerPoint will also help me be able to manage my time a little and be less time consuming when I'm trying to study for other classes as well. And then while I'm at clinical sites, that's all I think about sometimes is like, oh my goodness, now I have homework to do later and it's always for this class.

Hannah described her likelihood of using information or skills in the future if the instructor was able to provide explicit context and direct applicability of that knowledge. "If the professors can show exactly how I'm going to use this as a clinician, or in what situations would be best to use this ... I'm more likely to utilize it later." Fiona identified wanting a definitive statement about her performance. "How do I know I'm doing things right if I don't get feedback? I want people to tell me it's right or wrong." The responsibility for knowledge was placed on external authorities. Participants saw it as the teacher's job to give knowledge and explain exact situations in which the knowledge would be applied, rather than seeking it out on their own.

Need for Step-by-Step Guidance. In addition to relying on authorities for knowledge, some participants took that thought a step further and described their preference for

instructors to provide a step-by-step guide to acquiring knowledge or achieving success.

Diego discussed having trouble with time management and wanting his instructor to change the assignment structure of the course to keep him from procrastinating.

I feel like it would be more beneficial if I had assignments due throughout the week. That way I could really hold myself accountable of continuously reviewing the material. I have weekends off, I just kind of leave it towards the weekend to do it. So, I'm having to play catch up rather than if I was to have to maybe do an assignment every other day or something, I would be able to keep that material fresh.

Christina identified struggling to make connections among course concepts. She would prefer the instructor make those connections for her to make her class experience more beneficial to her learning.

I feel like they never said, "Okay, this is exactly what we're talking about after we talked about A, B, and C." They just gave us A, B, C, D, and E and said, "Okay, now you put them all together." So, I think, if they kind of helped bring those together, that's what I would add to the class.

Gwen preferred her previous semester's experience of instructor-led, step-by-step learning as opposed to this semester, which seemed to be more rooted in self-directed learning, and discussed feelings of stress related to uncertainty of what might appear on an exam.

For our classes last semester, [I liked that] we were getting a sheet with everything and then you had to remember everything, and we went over everything in class and then we were tested on everything. What it seems like now, is [the professor] gives us the sheet... we haven't gone over everything and I think she wants us to learn on our own and then be tested on it. I mean, we can ask questions, and we did go over some of the palpation stuff, but it's not like she's going through it one by one. It's more of a surprise for a test instead of knowing what we're going to do, which as a student, it's nice to know what you're going to be tested on ... Someone asked today, "Oh, what's our practical going to be on next week?" [The professor] said like, "Anything." ... It's stressful as a student.

The participants wanted a road map for success from an authority figure, in this case an educator. Their developmental level prevented them from being able to self-direct their own learning.

Seeking Approval. There was a desire among participants to gain approval from their instructors. Participants discussed feelings of anxiousness as well as nervousness when they were unclear about what the instructor wanted, and therefore worried their grade would be impacted negatively. For example, Kala detailed her feelings when she was unclear about the instructor's expectations and implications on her grade:

I get anxiety. I'm like, okay, well it could be any of these things. What specifically is it? So, I guess it just comes down to knowing what the professor wants and then yeah, it just makes me nervous not knowing exactly what they want. So then therefore maybe it will impact my grade or maybe it's

not what they want or maybe I missed the whole concept of the unit as a whole.

Brianna discussed receiving vague instructions and, instead of doing what she felt was right, taking extra time to try to figure out what the instructor wanted.

I found that the instructions that they gave us weren't super clear, and I couldn't really understand what they were trying to have us do. And so, I would be like taking extra time to try and figure out what it is [the instructor] wanted from us on this assignment or certain projects or assignments that they wanted us to do.

Gwen desired more feedback from authorities to confirm whether her performance was adequate. "More feedback [would be helpful] just to make sure that we're doing it right." It was important to the participants to know exactly what their teachers wanted so they could gain approval in the form of a good grade. Having a concrete checkpoint, such as a grade, allowed students to feel validated.

Movement Toward Internal Guidance

Most participants (8 of 12) were able to make meaning on a deeper level and articulate not only which learning experiences were valuable, but also how those experiences were transformative to their learning. Participants demonstrated more complex meaning making by describing experiences that helped them build confidence and explore their professional roles and identities.

Building Confidence. Participants recognized the importance of building confidence and applying their confidence in their clinical setting. As students built confidence, they developed a stronger sense of self, created authentic relationships, and sought out opportunities for autonomy.

Diego described how he gained confidence through his current clinical placement at a high school:

The secondary school setting, it has really helped me build my confidence. You need to have that sense of confidence to where you don't establish any doubt [with the athletes]. They need to trust you. So, you need to trust yourself. Trust is an important piece to my learning because it allows you to find your true self.

Gwen also demonstrated a greater degree of confidence as she engaged in her clinical education experience. She shared,

If you get a good grade that might boost your confidence, but you want your athletes or patients to trust you. So, if you're just kind of making a decision for the first time, or like, "Well I've written an assignment about this, but I haven't actually used it." I feel like getting results in person is better. That helps build your confidence, which helps the athletes trust you or you trust yourself.

Ivan identified using hands-on practice in the classroom to reinforce clinical skills, which helped build his confidence and therefore allowed him to gain trust from the athletes.

Our profession as an athletic trainer is very hands-on. It's important to practice on each other, so we do it wrong in the classroom, and then we get it right in the clinical setting so that way when we're working with the patient, we gain their

trust, and we're confident in our clinical skills because I don't think any patient that we work with wants to be with an athletic trainer that's not confident in what they're doing. And so that's why I think it's really important just to have that hands-on experience inside the classroom, so we can make mistakes there, correct them, and get it right in the classroom, or get it right in the clinical setting.

Hannah described her need for autonomous practice to build her confidence in decision making as a future practicing clinician:

... going out into the real world and having to work independently as a clinician. As much practice as I can get being autonomous just helps with that confidence and helps with my ability to be confident in my own decisions.

By gaining confidence, participants began to see themselves as capable of creating knowledge and gaining trust among clients.

Role Identity Development. Some participants also demonstrated more complex ways of making meaning by discussing intentional exploration of and reflection on their long-term professional goals.

A student being able to practice the lived experience of their future intended profession, in this case working as an AT, indicated a shift in their meaning making from the perspective of a student toward that of a practitioner. For example, Fiona discussed the value of reframing her perspective:

Now we're entering the mindset of actually being an athletic trainer, and how to pretty much run a site, like run your area of setting. This is more effective to us. We learn about budgeting; we learn about the staff. How to create a vision and mission for your program.

Gwen discussed classroom experiences, like practical exams, and how practicing unpredictable scenarios can prepare her as a future athletic trainer. The stress Gwen described regarding a practical exam that was not straightforward was a sign she was still exhibiting ways of making meaning consistent with needing external guidance. However, because she was able to recognize the value of practical application of knowledge, she was moving toward navigating situations that are less structured by an authority figure. "It is more stressful because [practicals] are not as straightforward, I guess, but I would say it's a strength because it's more work... like real-life work emulated."

Christina described a shift in ways of making meaning from feeling self-doubt and needing constant support from authorities to taking on the challenge of working autonomously. A change in her clinical rotation allowed her to obtain a new perspective, transforming her learning by affording her greater responsibility, independence, and opportunity to gain foresight as a future clinician.

At the end of my last year, especially with regards to my clinical rotation, I was feeling very unconfident in my skills, and I didn't really know how to do things without constantly getting affirmation from my preceptor or from my professors. I told my preceptor that, and he said that that is normal after your first year, but now, being in a site where my preceptor's like, "Yeah, whatever you think, or you can do that however you feel is the best way" is different. It's challenging, but I've

really enjoyed it. It's important that I develop that skill [of working autonomously] so that I'm ready [to be an athletic trainer] when I graduate. Being placed at a different clinical site has made the most difference in me applying my skills. I didn't get to do that as much at the site that I was at. So, this year I've really had the opportunity to kind of dive in more and have more independence at my clinical site, which has made a big difference for me.

Ivan was able to think beyond this clinical rotation because of the experience challenging him to consider his future in a new way.

This [clinical] experience really taught me where I'm at now as athletic trainer is just where I want to be in 10 years, let alone 20 years. And so, I looked into a doctorate of athletic training programs, PhD programs, or even getting a dual cert[ificate] to be a PT [physical therapist] as well. And so, these clinical experiences really kind of push me like, "Do I want to stop at my master's or do I want to keep going on to get my doctorate?"

Students who deepened their role identity as a clinician moved away from external guidance toward realizing the importance of internal guidance.

DISCUSSION

Students who participated in this study demonstrated strong feelings about what they need for optimal learning, but their perception of educational need was connected to their level of development. Almost all participants made meaning by relying on authority figures for knowledge, seeking out approval from authority figures, and needing right or wrong answers. This way of making meaning aligns with the developmental phase Baxter Magolda⁵ labeled "following external formulas." The need for approval and reassurance during their professional development provides a better understanding of why mentorship is identified as an important aspect of the learning process. Participants viewed learning in real time with a clinical instructor as an important part of the learning process, as it helped them formulate a professional identity. This finding is consistent with previous research²³ that indicates that clinical education affords students opportunities to explore new skills or ideas that are intellectually challenging while grounded in a strong support system (clinical preceptor) and allows students practice in taking responsibility for their knowledge. These characteristics of clinical education provide a framework for helping students build confidence and develop their role identities.

Because clinical education experiences are required of CAATE-accredited programs, incorporating them as valuable learning experiences is not a new concept. However, what the findings from this study contribute to the discussion is that the clinical experience can do more than merely reinforce clinical skills. The clinical experience can help to provide students opportunities to explore uncertain situations, for which there might not be a right/wrong answer, in which there is not a scripted step-by-step road map to success. The challenges of the clinical work, if structured with student development in mind, can provide the space for a student to have transformative learning experiences that not only deepen their understanding of athletic training material (cognitive dimension), but also how to navigate conversations with preceptors

and athletes (interpersonal dimension), as well as how they view themselves as a future clinician (intrapersonal dimension). Addressing all the dimensions of self-authorship in a clinical experience can provide the opportunity for a student to make meaning more deeply. Other examples of helping students move away from external guidance and toward internal guidance highlighted in the literature were prompting students to reflect on complex meaning-making moments and encouraging students to consider new ways of knowing.²³ By developing and enacting the tenets of self-authorship through graduate education, students can enter their careers with the skills necessary to engage in lifelong learning. Infusing the athletic training community with professionals who demonstrate self-authorship, or at least have learned the skills to continue working toward meaning making consistent with self-authorship, can have profound positive impacts on the profession: for example, it can continue to fuel the driving force of change and improvement specific to health care best practices.

External Guidance

In the following external formulas phase of self-authorship development, students rely heavily on external sources, as supported by our findings in the external guidance category. Athletic training students look to their instructors to disseminate the essential information, they view knowledge as right or wrong, and they need approval from others to affirm their choices. Students in this phase are reliant on authorities for knowledge acquisition and do not possess the meaning-making skills to decide for themselves what is important to know. An example of this phase was found among the participants as needing a road map for success, a clearly detailed directive from the instructor about expectations for what the instructor deemed important. Students operating at this phase of development would likely prefer a more traditional classroom education model. This model is teacher centered: the educator states the information, the student memorizes it, and little practical application occurs. For a student following external formulas, the teacher-centered model of education perpetuates the perception that educators are responsible for giving knowledge; students are passive learners, and they memorize only the information the educator believes important. Although students may prefer this model of education, as detailed by our participant responses, it does not effectively promote their development because it does not challenge them to make meaning in more complex ways.

Participants voiced anxiety about lack of clarity from instructors about expectations or grading. This anxiety is consistent with making meaning in the following external formulas phase of self-authorship because individuals in this phase tend to be very concerned with how others perceive them, seek approval from authorities, and place heavy emphasis on tangible benchmarks, such as a grade. Although research questions for this study were not developed specifically to examine male versus female perspectives, the seeking approval theme appeared to be most prominent among our female participants, whereas the other themes were well represented by both sexes. Women often feel the need to prove themselves in college, as stereotypes exist supporting the belief that women are best suited for at-home childcare or traditionally female-dominated careers like nursing or teach-

ing.²⁴ Women comprised the majority of the sample in this study, and it is not surprising that they sought approval from instructors, as literature supports women often have more difficulty developing confidence in their internal voice than men, especially men with other dominant social identities in terms of race, social class, sexual orientation, etc.²⁵ Legitimization occurs as students gain confidence in their emerging professional identity²⁶ and perhaps female participants' marginalized gender identity led to their having lower levels of confidence than their male peers and thus requiring a greater need for affirmation from others.

Traditional didactic delivery of content such as lectures with little to no student interaction does not allow for thinking partnerships and mutual construction of knowledge.¹¹ Del-Prato¹¹ explained, "When students are never called upon to know, what is subtly communicated to them is that they need not question knowledge presented by authorities."¹¹ Mitchell²⁷ stated that in order for students to develop new ways of making meaning, educators must progress away from giving answers to students and exercising authority over them. Instead, teachers must attempt to encourage questions from and share authority with students. Baxter Magolda¹ highlighted the need for educational practices to allow for students to change the question from "How *you* know" to "How *I* know." Additionally, Baxter Magolda¹ concluded that learners had difficulty reaching self-authorship because they were provided formulas for success rather than experiences that allowed students to navigate challenges that fostered development toward knowing how they know (cognitive dimension), how to engage in authentic relationships (interpersonal dimension), and who they are (intrapersonal dimension).^{1,11,28}

Movement Toward Internal Guidance

Participants demonstrated more complex ways of meaning making when discussing their clinical experiences. The deeper meaning making was noted when participants mentioned clinical experiences helping them build confidence, practice autonomously, and wanting and/or appreciating performing the role of an athletic trainer. These responses demonstrated readiness to move away from following external formulas and closer to the crossroads, which is a developmental point at which students realize the need for internal guidance.

According to findings from this study, participants were able to move toward the crossroads phase of self-authorship by engaging in a learner-centered model as opposed to the previously discussed traditional teacher-centered education model.¹¹ Barr and Tagg²⁹ termed this shift as a change from an "instructional" paradigm, in which teachers tell students what they need to know, to a "learning" paradigm, which stresses the importance of designing active learning environments that promote unique idea development on the part of the learner. In a learner-centered model, students are encouraged to construct a point of view based on their own experiences and in collaboration with educators. Learners shift their thought process from knowledge being absolute, right or wrong, to understanding that many possible answers could exist. In clinical education, students can navigate these many possible answers through activities like injury evaluations. Gathering information from the exam and arriving at multiple differential diagnoses based on available evidence is

an example of how students could begin to explore a learner-centered model in clinical education. They could then engage in meaningful discussion about their findings with their clinical preceptor or other students in the same clinical rotation. Educators working to foster self-authorship would not ask students to recite information from rote memorization, but instead would engage them in discussion of multiple perspectives.¹¹

In athletic training literature, confidence has been cited as an important factor to address, as it can increase student motivation for learning.³⁰ Active learning strategies in athletic training education, such as problem-based learning, game-based learning, and flipped classrooms, are supported as ideal teaching strategies to foster soft skills³¹ like critical thinking, problem-solving, and confidence, especially among PM athletic training students.³² In adjacent literature related to confidence, researchers suggested individuals with more confidence would be less likely to become discouraged when faced with obstacles.³³ Additionally, gaining confidence is critical to self-authorship development, and oftentimes success breeds confidence. Creating opportunities for success while challenging a student could be transformational to their learning and allow them to view their world with a deeper, more complex perspective. The participants described examples of being afforded opportunities to build confidence and examples of how they built their confidence through their clinical experiences. Similarly, confidence of a clinical preceptor was viewed by students as a helpful clinical teaching characteristic. Observing confidence may in turn allow students to practice developing their own confidence. Modeling desirable attributes of an athletic trainer for students, such as confidence, could allow them to envision their future and to better develop their role identity. This modeling of professional behavior, confidence in particular, was identified in the literature as the most helpful category of clinical instructor characteristics in student learning as perceived by students and preceptors.³⁴

Geisler articulated the importance of helping students to construct a professional identity by noting,

*Allied health educators need to go beyond teaching their students how to “do” athletic training, nursing, or medicine ... but teach aspiring healthcare providers how to “be” athletic trainers, nurses, and physicians by modeling expert practice, and teaching them how to think like duly experienced clinicians think.*³⁵

Development of a professional identity role fits most directly within the intrapersonal dimension of self-authorship. Exposing athletic training students to practicing clinicians can help foster professional identity development through opportunities to become partners in practice with a focus on problem-solving, reflection, and discussion.³⁶ Surrounding athletic training students with experienced clinicians may help foster aspects of self-authorship, such as challenging learners to be independent thinkers while still affording the opportunity to mutually construct knowledge with experts.³⁷ The outcomes of a focus on self-authorship are highly positive for both the learner and educator, as described by Baxter Magolda:

Students consistently report learning a great deal about themselves, collaborating effectively with others, learning to critically analyze multiple perspectives, and self-authoring

*their own professional beliefs. Faculty also report continuing learning from their mutual partnerships with students.*²

Recognizing and Fostering Development

Combining the results of this study with existing literature on student development, it is apparent that if educators effectively recognize the developmental level of their students, they can in turn identify and implement effective educational practices that provide an appropriate balance of challenge and support for students. For example, if a student is operating in the following external formulas phase of self-authorship and views the responsibility of knowledge on authorities, providing that student with an assignment that requires self-exploration of knowledge may be ineffective or perceived negatively, because it creates too much challenge. Negative perceptions of coursework could potentially lead to frustration, lack of effort, or placing blame on the educator for their failures. This is not to say that educators should not challenge students, as challenges are shown in the literature as a catalyst for a shift in meaning making³⁸; however, instructors should use their best judgment on knowing how much to push and when to pull back. Some educators may currently be untrained in recognizing meaning making in their students. Specific to this study, the results showcase that educators should lean in on experiences that promote building confidence and role identity development, especially when a student begins to display cues associated with arrival at the crossroads. Sometimes these cues from the student are verbal (“I was surprised...”), but more often the cues are paraverbal (speech becomes hesitant) or nonverbal (the student appears nervous or worried).¹³ The educator should probe the student with follow-up awareness questions such as “Why does that surprise you?” in an attempt to allow the student to acknowledge this crossroads experience and practice grappling with conflicting information. Further, the educator should allow for a reflective period, formal or informal, soon after an awareness-raising moment. The educator could engage in discussion about how the student will use this new information in the future, setting the stage for the learner to construct their own meaning of the event and future applications to practice. The medical educator should provide feedback that is timely and related not just to outcomes, but to the process as well. Educators hoping to align their own practices with strategies for promoting self-authorship should consider the following questions²³:

1. What characteristics do your students bring to your environment?
2. What experiences do you offer?
3. How can these experiences be tailored to students who are externally defined to promote their growth?
4. How can these experiences be tailored to students who use a mixture of external and internal self-definitions to promote their growth?

Ultimately, the development of knowledge for an athletic training student often begins in the classroom and extends to the clinical setting. Many of our participants (7 of 12) were on the edge of external guidance, beginning to explore a deeper level of meaning making at the crossroads. Based on these findings, classroom and clinical educators alike should consider ways to spark deeper meaning-making opportunities.

For example, to encourage new ways of knowing, an educator can provide multiple sources of information, as opposed to one textbook. Highlighting established peer-reviewed journal articles with different results or types of research for a given topic, incorporating diverse guest lecturers with unique perspectives or real-world experiences, finding examples of injuries or case studies that do not have a clear-cut right/wrong answer, and allowing students to discuss the merit of multiple perspectives is also beneficial for deepening meaning making. This practice aligns well with an evidence-based practice approach to education in that students are not relying on only one source (the instructor) for their information, but instead are able to triangulate multiple data points for the same topic or concept and evaluate which sources of evidence are strongest. Additionally, educators can encourage as much variety among instructors' and clinicians' viewpoints as possible and provide opportunities for critical thinking. For some students who are still following external formulas, this can be challenging; however, an educator can demonstrate an example of how they move from point A to point B through asking themselves a series of questions, talking about each consideration made along the way before allowing students to perform a similar task in groups, and then on their own. Asking students to reflect on the things that were valuable about that exercise and how they can use that skill in future clinical practice (or their current clinical experience) can be beneficial for students who are ready for deeper meaning making but might need extra support before being developmentally ready to handle that type of autonomous thought processing.

LIMITATIONS AND FUTURE DIRECTIONS

The study was conducted on a small sample. None of the participants exhibited complex ways of meaning making that would be consistent with self-authorship, which is not surprising as it is estimated that only 2% of graduating college seniors have obtained this developmental benchmark.³⁹ Development is a uniquely individual process, and thus, no 2 people are ever at the same level of development. Therefore, we are unable to compare any 2 participants directly. This study captured a single time point in development, which is an ongoing lifetime process. Future studies could be created in a longitudinal fashion to gain a more holistic view of development and examine the journey toward self-authorship over time. This study did not explicitly seek out to examine differences among the participants in regard to race, sex, or other intersectionalities and how those identities influence development. Future studies could isolate specific identities to examine their influence, if any, on athletic training student development toward self-authorship. Additionally, because many of the participants (11 of 12) were engaged in their immersive clinical experience, we were not able to draw definitive patterns for nonimmersive experiences. Therefore, future research could examine the perceived effectiveness of the clinical education experience in traditional clinical education models as compared with the immersive clinical experience. The study was conducted from a sample of ATPs housed within NCAA Division I institutions. Although this allowed for the largest potential transferability of the results given the number of programs that existed within that setting at the time of recruitment, further exploration is needed to determine if the student experience differs at the Division

II or III level. Furthermore, examining potential differences among the Carnegie Classifications would be appropriate for future research as well.

CONCLUSIONS

The importance and benefits of becoming a self-authored clinician cannot be overstated. Strong connections exist between a self-authored clinician and expert practice, the goal of any health care professional. Expert clinicians are driven by an internal framework guided by their own values and beliefs, not following external formulas or authorities. The tenets of self-authorship, such as developing confidence and seeking out opportunities to continuously develop their professional identities, among others, are fully embodied in an expert clinician and easily observed during the expert's clinical practice. Athletic training educators, both in the classroom and in the clinic setting, can foster self-authorship by providing learning opportunities to students that will afford them confidence, autonomy, and models of expert clinical practice. Educating with self-authorship development in mind will set the foundation for athletic training students to be constantly evolving practitioners, well on their way to following a life and career journey of their own design, rooted in their individual beliefs and values.

REFERENCES

1. Baxter Magolda M. *Making Their Own Way: Narratives for Transforming Higher Education to Promote Self-Development*. Stylus; 2001.
2. Baxter Magolda MB. *Self-Authorship: The Foundation for Twenty-First-Century Education*. Jossey-Bass; 2007.
3. Commission on Accreditation of Athletic Training Education (CAATE). 2020 standards. Published 2018. Accessed September 26, 2022. <https://caate.net/Portals/0/Documents/Standards%20and%20Procedures%20for%20Accreditation%20of%20Professional%20Programs.pdf>
4. Commission on Accreditation of Athletic Training Education (CAATE). Statement on developing new accreditation standards regarding diversity, equity, inclusion, and social justice. Published 2020. Accessed September 24, 2022. <https://caate.net/wp-content/uploads/2020/12/DEI-Standards-Messaging-Dec2020.pdf>
5. Baxter Magolda M. Three elements of self-authorship. *J Coll Stud Dev*. 2008;49(4):269–284.
6. King P. Principles of development and developmental change underlying theories of cognitive and moral development. *J Coll Stud Dev*. 2009;50(6):597–620.
7. Kegan R. *The Evolving Self: Problem and Process in Human Development*. Harvard University Press; 1982.
8. Baxter Magolda M. *Authoring Your Life: Developing an Internal Voice to Meet Life's Challenges*. Stylus Publishing; 2009.
9. Barber JP, King PM, Baxter Magolda MB. Long strides on the journey toward self-authorship: substantial developmental shifts in college students' meaning making. *J High Educ*. 2013;84(6):866–896.
10. Kegan R. *In Over Our Heads: The Mental Demands of Modern Life*. Harvard University Press; 1994.
11. DelPrato DM. Transforming nursing education: fostering student development toward self-authorship. *Int J Nurs Educ Scholarsh*. 2017;14(1):20170004. doi:10.1515/ijnes-2017-0004

12. Pizzolato JE. Creating crossroads for self-authorship: investigating the provocative moment. *J Coll Stud Dev*. 2005;46(6):624–641.
13. Sandars J, Jackson B. Self-authorship theory and medical education: AMEE guide no. 98. *Med Teach*. 2015;37(6):521–532.
14. Watling CJ, Lingard L. Grounded theory in medical education research: AMEE guide No. 70. *Med Teach*. 2012;34(10):850–861.
15. Brunero S, Ramjan LM, Salamonson Y, Nicholls D. A constructivist grounded theory of generalist health professionals and their mental health work. *Int J Ment Health Nurs*. 2018;27(6):1816–1825.
16. Commission on Accreditation of Athletic Training Education (CAATE). Search for accredited programs. Accessed September 24, 2022. <https://caate.net/search-for-accredited-program/>
17. National Collegiate Athletic Association (NCAA). Schools. Accessed September 24, 2022. <https://www.ncaa.com/schools-index>
18. Lincoln YS, Guba EG. *Naturalistic Inquiry*. Sage Publications; 1985.
19. Strauss AL, Corbin JM. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 2nd ed. Sage Publications; 1998.
20. Jones S, Torres V, Arminio J. *Negotiating the Complexities of Qualitative Research in Higher Education: Fundamental Elements and Issues*. 2nd ed. Routledge; 2014.
21. Morse JM. The significance of saturation. *Qual Health Res*. 1995;5(2):147–149.
22. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349–357.
23. King P, Baxter Magolda M, Barber J, Kendall Brown M, Lindsay N. Developmentally effective experiences for promoting self-authorship. *Mind Brain Educ*. 2009;3(2):106–116.
24. Wood W, Eagly A. Biosocial construction of sex differences and similarities in behavior. In: Zanna M, Olson J, eds. *Advances in Experimental Social Psychology*. Vol 46. Academic Press; 2012:55–123.
25. Brooks AK. *Women as Learners: The Significance of Gender in Adult Learning*. Jossey Bass; 2000.
26. Klossner J. The role of legitimization in the professional socialization of second-year undergraduate athletic training students. *J Athl Train*. 2008;43(4):379.
27. Mitchell R. Emanation and generation. *About Campus*. 2006;11(5):29–30.
28. Pizzolato JE, Ozaki CC. Moving toward self-authorship: investigating outcomes of learning partnerships. *J Coll Stud Dev*. 2007;48(2):196–214.
29. Barr B, Tagg J. From teaching to learning: a new paradigm for undergraduate education. *Change*. 1995;27(6):13–25.
30. Mensch JM, Ennis CD. Pedagogic strategies perceived to enhance student learning in athletic training education. *J Athl Train*. 2002;37(4 suppl):S199–S207.
31. Davlin-Pater C, Rosencrum E. Promoting soft skill development in preprofessional athletic training students. *Athl Train Educ J*. 2019;14(1):73–79.
32. Harris N, Welch Bacon C. Developing cognitive skills through active learning: a systematic review of health care professions. *Athl Train Educ J*. 2019;14(2):135–138.
33. Szafran R. The effect of academic load on success for new college students: is lighter better? *Res High Educ*. 2001;42(1):27–50.
34. Laurent T, Weidner TG. Clinical instructors' and student athletic trainers' perceptions of helpful clinical instructor characteristics. *J Athl Train*. 2001;36(1):58–61.
35. Geisler P, Lazenby T. Clinical reasoning in athletic training education: modeling expert thinking. *Athl Train Educ J*. 2009;4(2):52–65.
36. Peer KS. Professional identity formation: considerations for athletic training education. *Athl Train Educ J*. 2016;11(3):125–126.
37. Taylor K, Haynes C. A framework for intentionally fostering student learning. *About Campus*. 2008;13(5):2–11.
38. Barber JP, King PM. Pathways toward self-authorship: student responses to the demands of developmentally effective experiences. *J Coll Stud Dev*. 2014;55(5):433–450.
39. Baxter Magolda MB. Students' epistemologies and academic experiences: implications for pedagogy. *Rev High Educ*. 1992;15(3):265–287.