Development of an Expert Clinical Instructor: A Theoretical Model for Clinical Teaching in Physical Therapy

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INTRODUCTION

The current model of physical therapist (PT) clinical education has become a controversial model, with some authors raising concerns regarding its effectiveness.1,8 In existing approaches to clinical education, physical therapists have volunteered to serve as clinical instructors (CI) with no required training in clinical teaching.9 Anecdotaly, clinical educators are aware that some PTs are talented as CIs and that others lack teaching effectiveness. To address the need to train PTs to be CIs, the American Physical Therapy Association (APTA) developed the Clinical Instructor Education and Credentialing Program (CIECP).10 However, outcome studies seeking a positive association between the completion of the CIECP and improved CI teaching have been inconclusive.11-14 Among the unanswered questions in determining how to effectively provide clinical education to students are 3 that frame our study: (1) How does the physical therapy profession identify “expert CIs”? (2) How do expert CIs acquire skills as clinical teachers? (3) What are the expert CIs’ approach(es) to student learning? We theorized that answers to these questions might inform clinical educators in meaningful ways to enhance the effectiveness of clinical teaching and ultimately improve students’ preparation to enter a doctoring profession.

Review of the Literature

While the existing needs within the structure of PT clinical education have inspired alternative models,6,8,9 it is likely that any model of PT clinical education will continue to rely on clinicians to facilitate student acquisition of clinical competence.5 The literature on clinical instruction, in PT and in other health professions,6,15-26 articulates important facets of an effective CI’s approach to clinical teaching. These include instructional,6,16,17,22,24,25 interpersonal,6,14-16,18-20,22,24,25,27 professional,6,18,22,26,28 and evaluative6,14-16,20,25,26 skills. Only one case study28 articulated the characteristics of an exemplary CI as a “teacher who encouraged active learning, reflection, and critical thinking in students.” An extensive literature review failed to define expertise in clinical instruction, or to detail how PTs develop CI skills.

In contrast, expertise in PT clinical practice has been defined and studied extensively by Jensen et al.29,30 These authors have articulated the core dimensions of knowledge, clinical reasoning, virtue, and movement in
a model of expert PT practice.30 We postulate that expert CIs possess both expert clinical practice skills and an expert ability to effectively teach those skills to student learners.31 The expert CI might be highly skilled as a clinician and embody the instructional, interpersonal, professional, evaluative, and reflective tenets described in the literature. The motivation for this study came from a desire to determine how some PTs become highly skilled, or “expert,” at clinical teaching.

In Phase 1 of the project, we refined our techniques and determined an initial theory. We conducted semi-structured interviews with 3 participants. The interviews were transcribed and analyzed.31 The findings are articulated as the Model for Acquisition of Expert Clinical Instructor Skills (Figure 1) and published as a pilot study.31 Briefly summarized, the data revealed an expert CI as a reflective individual who identifies a teaching or learning need, actively seeks a strategy from one or more resource categories of professional development, teaching and learning, and relationships, and then applies that strategy to continually improve clinical skills as a PT and teaching skills as a CI. The personal and professional characteristics of the CI and active, ongoing reflection were identified as central phenomena to the development of expert CI skills. The overlapping depiction of the 3 themes represents the interrelation of knowledge and experiences used to develop expertise. While engaged in data analysis, we also noted that the expert CIs’ stories of how they developed expertise were intertwined with how each interacted with students. During Phase 2 of the project, we sought to interview additional expert CIs to validate or refute the pilot findings and to further examine the expert CIs’ approach to clinical teaching.

Participants

In order to establish inclusion and exclusion criteria for our sample, we first sought to define the expert clinical teacher. Collectively, we agreed that expert CIs had exceptional clinical and teaching skills. Since the attainment of expert clinical practice skills by PTs had been articulated by the work of Jensen et al.,29-32 we focused our review of health care literature to studies of expertise in clinical teaching in order to identify characteristics we could seek in potential participants. We located 1 study: In the field of nursing, Scanlon32 identified reflection, intuition, problem solving, and hypothesizing as key elements nurse educators use to understand and improve clinical teaching. The dearth of expert clinical teaching literature necessitated examination of the literature on exemplary28 and effective clinical supervision.13-18 This provided a comprehensive list of characteristics and behaviors of clinical supervisors that resonated with our personal experiences and the anecdotal reports of students who had described similar characteristics in CIs they viewed as expert.

We then developed a questionnaire (Appendix) for potential study participants that included these teaching characteristics and those of expert PT clinicians as described by Jensen.28-32 We theorized that CIs who self-assessed characteristics that were congruent with those on the questionnaire might be considered expert CIs. To verify this operational definition of an expert CI, we shared the self-assessment questionnaire with experienced clinical and academic members of the New York New Jersey Physical Therapy Education Consortium (NY/NJPTCEC). This peer group clarified our hypothesis that a CI who acknowledged these traits might be considered an expert CI if that CI were known to consistently provide high-quality clinical education to students. In summary, we propose that for the purposes of this paper, an “expert CI” be defined as a CI who via self-assessment, embodies both expert PT practice skills and exemplary or effective teaching characteristics as described in the literature, and is identified as “expert” by 2 or more members of the NY/NJPTCEC.

Sampling

To recruit CIs for this study, NY/NJPTCEC members were asked to nominate CIs known to consistently incorporate the characteristics detailed in our self-assessment questionnaire. Nominees with 2 or more recommendations were seriously considered. To be included in the study, the participants needed to be active CIs, be geographically accessible to the researchers, submit a current résumé, self-assess highly effective teaching behaviors on the questionnaire,31 and provide informed consent. Three participants were selected in our initial round of data collection and analysis in which we “developed a provisional set of relevant categories.”33(p169) The next participants from our pool served as a theoretical sample33,34 “to develop our emerging categories and to make them more definitive and useful.”33(p170) During this constant comparative technique of data collection, analysis, and further data collection, we sought to develop depth in our initial categories and were sensitive to new concepts and patterns. When data analysis revealed new significant ideas, we revisited previously coded transcripts with selective codes to clarify concepts and retain only those that were identified consistently across cases. After 9 participants’ interviews had been analyzed, no new variations34 were revealed and the data gathered “fit into categories already devised.”33(p20) We reflected on the findings and felt that considerable depth and breadth of understanding the expert CI had been achieved, and determined that saturation had been reached.

METHODS

Study Design

Qualitative grounded theory techniques were selected for our study design to allow us the opportunity to sensitively interact with expert CIs and to find meaning in their descriptions of clinical teaching. Corbin and Strauss34 describe qualitative method as an exploratory research process that is ideal for generating a hypothesis or discovering a process within the studied population (ie, expert CIs). They articulate that sensitive qualitative researchers are capable of identifying concepts and the connections between concepts that the participants reveal. Creswell35 elaborates “the intent of a grounded theory study is to generate . . . an abstract analytical schema.
of a phenomenon that relates to a particular situation."(p55-56) (ie, expertise in clinical instruction). We applied strategies consistent with Charmaz’s33 stance on grounded theory: simultaneous collections and analyses of data, a 2-step data coding process, comparative methods, memo writing aimed at the construction of conceptual analysis, theoretical sampling, and integration of the theoretical framework. In addition, we acknowledged the continuum of objectivist and constructionist33 approaches and chose to balance our role as objective interpreters of the data with that of our knowledge as experienced clinical educators who were able to identify important concepts during data analysis.

At the time of the study, each researcher brought a depth of clinical education experiences to the project. Each was a director of clinical education (DCE), had completed the Advanced CIECP course, and had served as a CI to multiple students. While we acknowledge the value of our professional perspectives, we wanted to objectively obtain the expert CIs’ stories and interpret as important only those concepts clearly articulated in the data. To create this balance between objective and inductive interpretive strategies, each investigator bracketed36 prior to data collection “to put aside assumptions so that the true experiences of respondents are reflected in the analysis and reporting of research.”(p407) Each investigator detailed in writing her perceived process of how a CI acquired expert attributes, then reviewed and discussed concepts with the team to heighten our awareness of our own perspectives. During data collection, we were sensitive to what the participants revealed, followed hunches to seek depth in each interview, and identified significant recurring patterns during data analysis. As stated by Corbin and Strauss,34 we wanted our findings to be a “product of data plus what the researcher brings to the analysis.”(p33) We used the constant comparative technique33 of simultaneous data collection and analysis to refine our questions and codes after each interview and build our findings based on accumulated understanding of the phenomenon of expertise in clinical instruction.

Data Collection
A semi-structured interview process was used to capture the information richness of each participant’s story. We theorized that detailed examination of expert CI stories might reveal the processes each used as expert teachers. The initial interview guide31 was developed to provide a loose structure to data collection. It consisted of key, open-ended questions intended to solicit the participants’ descriptions of their development as clinical teachers. Consistent with Glesne’s37 description of interviewing, we prompted discussion of pertinent topics, and were responsive to the nuances of discovery by developing questions to follow-up on new ideas. We actively listened for significance and probed deeply to understand how each subject had attained expert teaching skills.

The one-on-one interviews occurred at a location convenient and comfortable for the subject. At the initial meeting, the investigator reviewed the study with the participants and obtained informed consent. Audiotaped interviews began by prompting the subject to identify items on their résumé that were relevant to their acquisition of CI skills and to sort relevant items into high, medium, and low importance categories. The investigator facilitated the expert CIs to fully “tell their story” and to provide thick descriptions of their experiences as clinical teachers. Consistent with constant comparative technique, the investigators met following each interview to debrief, discuss emerging concepts, and continually refine questions and techniques for subsequent interviews to “add new perspectives”33(p154) and “help focus and improve data collection.”38(p185) This sensitivity34 allowed us to identify significance and meaning in our interpretation of the data. The interviews averaged 75 minutes in length, were

<table>
<thead>
<tr>
<th>Category</th>
<th>Conditions</th>
<th>Social context</th>
<th>Consequence</th>
</tr>
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<tbody>
<tr>
<td>Professional Development</td>
<td>Continuing education course participation</td>
<td>Impressed by the instructor’s ease, methods, techniques</td>
<td>New strategies are learned regarding how to effectively present material to a student in the clinic</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Previous student feedback is received</td>
<td>Personal desire to improve motivations to synthesize feedback received</td>
<td>Concrete steps are taken to alter performance with the next student</td>
</tr>
<tr>
<td>Relationships</td>
<td>Works in an environment supportive of student learning</td>
<td>Develops positive relationships with coworkers across disciplines</td>
<td>Additional learning opportunities are harnessed for students</td>
</tr>
</tbody>
</table>
assisted in diagramming the connections between themes. We created visual representations of the findings, challenging each draft with rigorous discussion until a final version was created that was inclusive of all concepts and represented the connections between concepts clearly. We identified quotations representative of each category and asked participants to review our findings. All members supported the accuracy of our interpretations.

RESULTS

Table 2 summarizes the demographics of the 9 participants interviewed. The expert CIs in this study represented a broad scope of clinical experience, professional development, and experience as CIs.

A Theory for Acquisition of Expert Clinical Instructor Skills

The data from the full set of 9 participants supported the Phase 1 central phenomenon and the themes articulated as a model for Acquisition of Expert CI Skills (Figure 1). Consistently, the expert CIs revealed personal characteristics and reflective self-assessment as central phenomena guiding their acquisition of expert teaching skills. Across cases, the participants confirmed their reliance on strategies from the categories of professional development (resources in clinical practice, clinical and didactic teaching, continuing education courses, and research), teaching and learning (implicit and explicit opportunities to experience teaching and to apply feedback received from students, peers, and mentors to their role as a clinical teacher), and relationships (positive relationships with colleagues, mentors, patients, and students provided opportunities to learn teaching skills and to develop learning opportunities) to gain knowledge and improve their effectiveness as clinical teachers.

Analysis of the full data set revealed the dynamic process of acquiring expertise as a CI that had not been recognized in the pilot. The refined Acquisition of Expert CI Skills (Figure 2) visually represents the complexity of the reflective process the expert CIs described. The participants sought continual improvement in both clinical practice and teaching skills through reflection on their needs and an internal assessment of their effectiveness as a CI. When a need was identified, these expert CIs actively sought a solution from their resources in the categories of professional development, teaching and learning, and relationships. Additionally, the expert CIs described that while participating in personal and professional activities not overtly related to clinical education, they often reflected on the teaching techniques of others, identifying approaches that could be integrated into their own teaching style. This ongoing flow of reflection, participation, and
application enhanced the CIs’ acquisition of expertise and is the central phenomenon of our theory of how expert CIs acquire teaching skills. The expert CIs prepared for their student encounters, identified needs and solutions in real time, and analyzed outcomes to drive future improvements. Therefore, the linear nature of the pilot model (Figure 1) has evolved to a more continuous and dynamic theory representing the ongoing nature of the process the participants described (Figure 2).

Clinical Instructor Expertise in Action Model

While we were immersed in data analysis, themes articulating how the expert CI engaged with students and what the expert CI does to promote student learning crystallized.33 The expert CIs employed a problemsolving process analogous to the APTA’s Patient Client Management Model30 during clinical teaching. Adapted with permission, we present a Clinical Instructor Expertise in Action Model (Model) that redefines the familiar elements of examination, evaluation, diagnosis, prognosis, intervention, and outcomes in terms of a teaching and learning episode (Figure 3). We define the teaching episode as any opportunity that either addresses a student’s psychomotor, cognitive, or affective learning, or is an opportunity for the growth of the PT as a clinical teacher. Teaching episodes range from discrete interactions with a patient to summative feedback sessions. The central phenomenon to each teaching episode is the expert CI and the student. The expert CI creates a safe and open environment in which the student is comfortable and actively participates in setting goals and developing learning activities. Note that integral to the Model is the theory of Acquisition of Expert CI Skills. The expert CI is seeking continual self-improvement of teaching skills while preparing for, engaging in, and reflecting upon interactions with students.

Reflection

Reflection emerged as a strategy that the expert CIs employed to identify his or her own instructional needs and the needs of the learner during each element of the process. It is by engaging in ongoing reflection that the expert CI moves with the student through each of the 6 elements of examination, evaluation, diagnosis, prognosis, intervention, and outcomes. The expert CIs seek knowledge and strategies to improve teaching skills from the themes of professional development, teaching and learning, and relationships throughout the teaching episode.

The expert CIs engage with the students in an ongoing, fluid process of reflecting for, in, and on action1 during each element of the episode. The expert CI participants reflect for action by preparing and organizing for students, preparing the environment for optimal learning, and designing appropriate learning activities. The expert CIs reflect in action by engaging in continual self-assessment of their own effectiveness as a clinical teacher, and by conducting real-time student performance assessment specific for a learning episode. Reflection provides the means to track progress over time and to facilitate the acquisition of higher-order skills based on student readiness. Reflecting in action, the expert CIs perform ongoing analysis of their needs and use resources from professional development, teaching and learning, and/or relationships to shape, improve, modify, and expand their clinical instruction skills.

Additionally, the expert CIs reflect on action by analyzing successes and challenges and in turn, modifying teaching strategies based on outcomes achieved or abandoned after the episode of learning. They use student feedback to consider their own needs and seek opportunities to enhance effectiveness as a clinical teacher during the next episode of learning or with the next student placement. The following quotes articulate the strong reflective nature of these expert CIs:

I try for every single learning experience to be a pivotal experience...I don’t follow things blindly. I look at it closely. If it is something that appears to really have a value to it, I apply it. (CI 6)

I do things wrong all the time, but I also try to recognize when I can do those things better, and the next time I have that situation presented, take from my previous experience and do a better job the next time. (CI 1)

The Model articulates a reflective process of clinical instruction that can be applied across all levels of student learning regardless of the curricular content or clinical setting. The tenets of each category of this clinical teaching model follow with examples and illustrative quotations from the study participants.

Examination

The CI analyzes self, student, and the environment in preparation for student success; teaching and learning needs and opportunities are identified. Reflecting for action prior to the student arrival, the expert CI may self-examine readiness for the student and the learning opportunities available in the environment during the time frame of student placement. The expert CI considers
the student’s level of preparation and potential for success in a given learning situation. Additionally, the expert CI identifies his or her own personal availability and teaching needs when designing opportunities for the student. During the examination phase, the CI may reflect on action by considering successes and challenges of previous students and incorporate “lessons learned” into planning for the student.

There were a couple of times in my personal life when I wanted very much to still take a student but I knew I did not have the focus . . . what I smartly did do was get the other therapists around me for support and said look, can you handle this aspect, I need you to get this aspect because I’m just not there right now . . . (CI 7)

I know a lot about the different learning styles and being able to present information that works with each type . . . [I] customize [my] approach to students. (CI 4)

Evaluation

The process of synthesizing information gathered from examination to design optimal opportunities for teaching and for learning. The CI determines how to facilitate and optimize the learning experience using critical thinking and a problem-solving approach. The CI may internally ask, “What can be done to meet the teaching and learning needs I have identified?” The CI will use evaluation to design learning opportunities that more directly meet the student’s and CI’s needs.
based on the examination phase. This evaluation may happen during a preparatory phase (reflection for action), in real time (reflection in action), or at the conclusion of the learning episode (reflection on action).

. . . what their comfort level is, do they need to see you do things before they go and do them, or are they the type that just wants to take things and run with it. You know, structure your learning experience around them. (CI 8)

. . . how to take [students] and put them in the proper circumstance. Something that's just enough challenging to build their confidence and not destroy it and then to . . . take them from a point of lack of understanding and skill to a point of high skills. The gradual process of confidence building, encouragement, and challenge at the same time. (CI 6)

Diagnosis
The identification, prioritization, and clustering of identified teaching and learning strengths and needs. The expert CI identifies, prioritizes, and clusters his or her teaching strengths and needs and the student's learning strengths and needs to develop the optimal teaching/learning approach. For example, an expert CI may evaluate the situation and determine that a mismatch in learning styles is causing less than optimal effectiveness in the teaching episode, or may identify significant concerns regarding a student's performance level based on the student's academic preparation. This diagnosis aids the expert CI to effectively move to the next element of prognosis and begin to develop an accurate approach to the situation.

I think I'm better able to understand that . . . maybe I shouldn't have put them in that situation right then. I can see [the student's] uncomfortable here, so we've got to do something and maybe step back a little bit. (CI 5)

There's just the rare occurrence that a student is just not making it when you have to call in the school to come and have a conference. (CI 9)

Prognosis
The identification of the CI's optimal approach, the collaborative establishment of objectives and activities, and the determination of the student's potential to accomplish objectives in established time frames. During this phase, the expert CI identifies the most advantageous teaching style for the student and analyzes the instructional skills needed for the given situation. The expert CI analyzes the student's potential to accomplish set objectives within time frames available, prognosticating the student's potential for success. The prognosis is guided by a series of questions the CI may ask and reflect upon. For example, is the student prepared sufficiently to succeed in meeting the learning objectives set for this rotation? During this learning episode, is the student progressing toward set goals and demonstrating appropriate skills for a successful outcome? Are set goals achievable in the time remaining? Answers to these prognostic questions guide the expert CI's choices in the intervention phase.

I think [having had many students] it's easier for me to pick out things that I need to improve . . . . [following a safety incident] the indication to me [was] that I needed to be more clear with my physical therapy student as far as . . . the skills she needed to work on and focus on. (CI 1)

[CI talking to student] Some things that you're really struggling with, you need to take a day . . . and focus on what [you are] doing, [w]hat you could or couldn't do, [w]hat you would really struggle with, and what is the reason? Are you just not confident, do you truly not know the muscle insertion, or do you not know the settings? (CI 7)

Whereas . . . you really want to see someone develop their own approach and avenue to it . . . now that we've got this avenue we are going to go down, what things do you need to be in place in order to be successful with the tasks you have chosen for that student. (CI 1)

Intervention
A skilled set of interactions between CI, student, and others to facilitate student progress. The CI engages in ongoing reexamination to modify teaching methods and identifies the need to consult with others in regard to student performance. Applying the element of intervention, an expert CI facilitates a set of skilled interactions between teacher and student to advance student learning. These may include instruction in communication or clinical skills, or structured learning activities to facilitate student progress. It may include subtle or dramatic modification of the CI's style of teaching. For example, based on the CI's prognosis, the CI may implement a more directive or a more consultative style of supervision or modify the schedule for CI–student communication or planning time.

Intervention may include implementing written weekly learning objectives or consulting with the center coordinators of clinical education (CCCE) or DCE to develop strategies to support or enhance student performance. During intervention the CI provides comprehensive performance feedback to the student in both formative and summative manners.

. . . provide good feedback too . . . these are the specific areas that are doing well. This is what they need to work on. (CI 4)

I brought in the school because I felt like after trying repetition and trying to listen to him, why did he think he was struggling? he didn't actually think he was struggling. I brought in the school for help because I really felt like I was going to be failing him . . . in not giving him what he needed at that point. (CI 5)

Then you make changes. I had a student who simply never problem solved on [his or her] own. Came to me with every single question, and I literally had to write up a contract . . . it was very, very helpful to write it down, to have a timeline, and a specific goal. (CI 7)

Outcome
The CI assesses specific learning opportunities and the overall clinical education experience in terms of self, student, and the environment to meet set objectives. The expert CI assesses the specific learning episode as well as the overall clinical education experience during the outcome portion of the Model. The expert CI engages in a self-assessment of teaching skills, student success in meeting set objectives, self and student satisfaction with the learning episode, and environmental influences on the experience. Reflection during this phase is primarily on action as the expert CI analyzes components that went well and will be repeated in future episodes of learning, as well as those that did not go as well as anticipated and could be modified to improve results.

I hope by this time next year I am exponentially better in my understanding than I am now. That's the way I look at it. I can look back each year and truly say that I've grown every year in that area [clinical teaching and learning], I hope to never stop. (CI 6)

I think maybe the first time . . . I really leave them alone and see how it goes; or, the first day off that I have . . . and they're treating the caseload, coming back and hearing how things went, what was going on, and what do we have to work on? What do they have questions with? Hearing the peer feedback from a clinical standpoint and hearing their feedback from the student standpoint [is critical]. (CI 8)

I've learned that the earlier on you set expectations the better off you are because if you get 4 weeks into a 6 week clinical affiliation and you try to adjust expectations . . . it's a lot harder to correct that situation. (CI 1)
The Teaching Episode Wheel

As we continued to reflect on the data, we became aware of the responsiveness of the expert CIs’ interactions with students. A detailed examination of the cases revealed a multifaceted process the expert CIs used during a teaching or learning episode. The Teaching Episode Wheel (Figure 4) visually represents the real time cycle of reflection, information seeking, and application that the expert CI applies during an episode of teaching. With the CI and student at the core, the 3 concentric wheels are aligned as the CI reflects on a specific situation. The innermost wheel is close to the CI and student, providing easy access to resources from the themes of professional development, teaching and learning, and relationships that the expert CI uses to enhance teaching effectiveness. The wheels rotate by the reflection of the CI and continually shift based on a skilled understanding of self and student to seek, secure, and apply knowledge or techniques that enhance the teaching moment. The elements of the Model do not occur in sequence or in isolation during the episode of teaching; rather, there is a multi-directional process with concurrent thinking and an interrelation of the elements. In general, the CI-student team moves from examination to outcome during a teaching episode, but will frequently revisit elements based on the novelty or complexity of the situation. The fluidity is clearly articulated by one of our participants: “[I’m] constantly [reevaluating]. It’s seamless. It doesn’t happen on a daily, or weekly, or an hourly [basis]. It’s all the time.” (CI 6)

DISCUSSION AND CONCLUSION

Through qualitative research methods, we defined and selected expert CIs, conducted semi-structured interviews, and were immersed in data analysis to identify key components of expert clinical teaching. First, PTs were identified as expert CIs based on nomination by experienced clinical educators and confirmed by self-assessment of characteristics reported in the literature. Second, in the development of expertise, these CIs described an iterative process of self-reflection, needs identification, and application of relevant strategies drawn from categories of professional development, teaching and learning, and relationships. Third, during an episode of teaching, the expert CIs reflected on their own needs and those of the student throughout the 6 elements of the Model. The dynamic process of needs identification and problem resolution articulated by these participants was evident regardless of experience, practice setting, or advanced training. The findings presented are supported by previous studies that investigated the efficacy of clinical educators. Consistent with Scanlan’s29 work on expertise in nursing education, the expert CIs used reflection, intuition, problem solving, and hypothesizing to understand and improve clinical teaching. In addition, the nurse educators and our expert CIs advanced clinical teaching skills by incorporating feedback from others, reflecting on their own experiences as students and reflecting on teaching while at conferences, reading literature, or participating in research.32 The findings of Delany and Bialocerkowski32 describe a clinical educator’s self-efficacy in accessing and integrating information regarding clinical education as key to success in clinical teaching. Clearly, our expert CIs were self-motivated to improve teaching skills for self and student satisfaction. The expert CIs drew from personal characteristics6,28,32 such as open-mindedness, keen communication skills, and intuitive teaching strategies to develop quality interactions with students. The highly reflective nature of our expert CIs has been previously described in expert PT clinicians,29,30 expert nurse educators,32 and an exemplary CI.28 The expert CIs incorporated reflection for, in, and on action41 to drive self-improvement and student learning during the examination, evaluation, diagnosis, prognosis, intervention, and outcome elements of each teaching episode. Trustworthiness was established throughout the study. Our qualitative methods adhered to established recommendations.33-36 We relied on literature to structure the selection of participants and to identify topics for interview discussion. Sampling was triangulated through peer nomination, inclusion criteria, and CI self-assessment to identify participants representative of CI expertise. We used bracketing to consciously review our biases in an effort to maintain objectivity34 and verify that our findings remained true to interview content and context. We used open-ended questions in a semi-structured interview format, in order to minimize the participants’ tendencies to provide a “correct” answer. In addition, constant comparative technique allowed us to refine data collection sessions and to identify emerging constructs during data analysis. Establishment of Kappa (κ) agreement determined internal validity of our initial coding. In addition, we verified accuracy of our findings through member checking of the transcriptions and the outcomes. Sample selection was partially reliant upon CI self-assessment and was limited geographically for efficiency of data collection. Although we reached theoretical saturation with no new concepts revealed in these 9 participants, it is not known if a larger, national sampling might have revealed something not yet discovered. By the nature of qualitative research and our conscious effort to embrace investigator experience without imposing bias, we acknowledge that the findings ar-
ticated in this paper are one interpretation of the data that may be “incomplete or inconclusive.” Future research might challenge the Model with a larger data set or seek triangulation of our findings via direct observation of CI–student interactions. Our findings were identified in each expert CI across practice settings, whether or not the subject was an APTA member, had completed the CIECP, or had obtained specialty certifications. While novice and experienced CIs may apply the Model presented here to enhance teaching effectiveness, the reader should be aware that the findings are not generalizable.

We have constructed interpretive models grounded in data that represent the phenomena of the expert CIs’ development of teaching skills and their interaction with student learners in the clinical environment. The Model depicts a fluid, multidimensional process that may be applied to address teacher and learner needs. This approach to PT clinical education may actively engage the CI and the student and promote collaborative teaching that leads to optimal learning. CI training programs could include content that incorporates the models articulated in this paper to provide interested PTs with a systematic approach to developing expert CI skills.

If you do what you love and you get to do it every day, and if it’s multifaceted, life can’t be anything but full and rich. I want to instill that passion into the people that I teach, my students. (CI 6)

ACKNOWLEDGEMENTS

We would like to acknowledge the generous consultation of field experts Laurita Hack, PT, DPT, PhD, MBA, FAPTA, Gall Jensen PT, PhD, FAPTA, Ernest Nalette, PT, EdD, and Gary Brooks, PT, DrPH, CCS, whose contributions and support for our work have made this project possible. Finally, we would like to thank our clinical instructors for their willingness to share their thoughts, their skills, and their commitment to the advancement of clinical education.

REFERENCES

Appendix. Characteristics of the Exemplary/Effective Clinical Instructor

Please identify which of the characteristics\textsuperscript{1,3,5,6} listed below you feel you utilize or identify with regularly. Mark the boxes of all that apply to your role as a clinical instructor. Write in behaviors that you use but are not listed on the lines provided. Please return the completed self-assessment to your investigator of choice by email, fax, or mail.

<table>
<thead>
<tr>
<th>A. Teaching Behaviors:</th>
<th>D. Professional Competence:</th>
</tr>
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<tbody>
<tr>
<td>❑ Delivers explanations clearly</td>
<td>❑ Provides a variety of effective orientation methods</td>
</tr>
<tr>
<td>❑ Demonstrates a dynamic, multidimensional knowledge base: patient-centered and using therapist reflection</td>
<td>❑ Employ clinical skills and judgment</td>
</tr>
<tr>
<td>❑ Teaches in a style appropriate for the adult learner</td>
<td>❑ Provides useful and constructive feedback</td>
</tr>
<tr>
<td>❑ Determines student learning goals/needs</td>
<td>❑ Uses clinical reasoning embedded in a collaborative, problem-solving process with the patient</td>
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<tr>
<td>❑ Establishes student-led weekly goals</td>
<td>❑ Provides a central focus on functional movement assessment</td>
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<tr>
<td>❑ Encourages self-assessment of performance</td>
<td>❑ Models professional behaviors</td>
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<tr>
<td>❑ Facilitates clinical reasoning</td>
<td>❑ Displays confidence</td>
</tr>
<tr>
<td>❑ Demonstrates a broad-based appreciation of alternative learning styles and strategies</td>
<td>❑ Manages clinical emergencies well</td>
</tr>
<tr>
<td>❑ Develops individual learning experiences for the student</td>
<td>❑ Works effectively with the team</td>
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<tr>
<td>❑ Provides opportunities for practicing</td>
<td>❑ Maintains rapport with the patients</td>
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<tr>
<td>❑ Designs skilled remediation scenarios</td>
<td>❑ Consults with others on the health care team</td>
</tr>
<tr>
<td>❑ Teaching skills are valued by the employer</td>
<td>❑ Facilitates clinical reasoning</td>
</tr>
<tr>
<td>❑ Other: ______________________________________________________</td>
<td>❑ Encourages active learning</td>
</tr>
<tr>
<td></td>
<td>❑ Thinks out loud</td>
</tr>
<tr>
<td></td>
<td>❑ Is flexible</td>
</tr>
<tr>
<td></td>
<td>❑ Has earned clinical expertise in his/her area of practice</td>
</tr>
<tr>
<td></td>
<td>❑ Is a role model</td>
</tr>
<tr>
<td></td>
<td>❑ Is appropriately involved with professional associations</td>
</tr>
<tr>
<td></td>
<td>❑ Continues lifelong learning-advanced degree courses; In-service/continuing education courses</td>
</tr>
<tr>
<td></td>
<td>❑ Welcomes research experiences</td>
</tr>
<tr>
<td></td>
<td>❑ Other: ______________________________________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Interpersonal Relationships:</th>
<th>E. Evaluation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Demonstrates enthusiasm for teaching</td>
<td>❑ Shows objectivity and fairness in evaluating student performance</td>
</tr>
<tr>
<td>❑ Demonstrates sensitivity to patient needs</td>
<td>❑ Corrects students tactfully without belittling</td>
</tr>
<tr>
<td>❑ Creates and maintains an open collegial relationship</td>
<td>❑ Provides specific input for improvement</td>
</tr>
<tr>
<td>❑ Encourages open communication</td>
<td>❑ Rates student performance based on PT programs’</td>
</tr>
<tr>
<td>❑ Provides clear expectations</td>
<td>expectations of entry-level competencies</td>
</tr>
<tr>
<td>❑ Seeks feedback from students and colleagues on desired CI behaviors</td>
<td>❑ Other: ______________________________________________________</td>
</tr>
<tr>
<td>❑ Feels valued by employer</td>
<td></td>
</tr>
<tr>
<td>❑ Appropriately encourages independence</td>
<td></td>
</tr>
<tr>
<td>❑ Other: ______________________________________________________</td>
<td></td>
</tr>
</tbody>
</table>

| C. Personality:                                                                                           |                                                                 |
| ❑ Demonstrates friendliness toward student                                                               |                                                                 |
| ❑ Finds time. Makes extra time for the student                                                           |                                                                 |
| ❑ Models consistent virtues of caring and commitment to the patient                                      |                                                                 |
| ❑ Other: ______________________________________________________                                           |                                                                 |

| REFERENCES                                                                                               |                                                                 |