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Abstract

Occupational therapy academic programs are tasked with preparing occupational therapy assistant (OTA) students to develop and use clinical and professional reasoning in practice. A component of this academic education, Level II fieldwork (FW), develops clinical and professional reasoning by allowing students to practice this skill. Although numerous studies have investigated this topic in occupational therapy students, only one small study has previously investigated this in OTA students during Level II FW. Thus, we designed a mixed methods study of OTA students during Level II FW (n = 58) to confirm and expand our knowledge of learning experiences that develop clinical and professional reasoning skills. Six major aspects of Level II FW were identified by participants as contributing to the development of their clinical and professional reasoning skills: "hands-on experience," "thinking on your feet," "the value of community-based placements," "the supervision approach of the FW educator," "application of evidence-based practice," and "interprofessional interactions." Three of these themes were novel as they did not emerge from the previous study. According to most participants their clinical and professional reasoning development was positively impacted when their FW educator chunked information (88.5%), modeled best practice (84.6%), asked questions (84.6%), or engaged in story-telling (84.6%), with the latter two being perceived as most impactful. The study results suggest that the development of clinical and professional reasoning may be highly individualized and driven by what students experience.

Keywords

Occupational therapy assistant, clinical reasoning, learning experiences, Level II fieldwork, professional reasoning

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Clinical and Professional Reasoning Development in Level II Fieldwork: Occupational Therapy Assistant Students' Perception

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ABSTRACT

Occupational therapy academic programs are tasked with preparing occupational therapy assistant (OTA) students to develop and use clinical and professional reasoning in practice. A component of this academic education, Level II fieldwork (FW), develops clinical and professional reasoning by allowing students to practice this skill. Although numerous studies have investigated this topic in occupational therapy students, only one small study has previously investigated this in OTA students during Level II FW. Thus, we designed a mixed methods study of OTA students during Level II FW (n = 58) to confirm and expand our knowledge of learning experiences that develop clinical and professional reasoning skills. Six major aspects of Level II FW were identified by participants as contributing to the development of their clinical and professional reasoning skills: "hands-on experience," "thinking on your feet," "the value of community-based placements," "the supervision approach of the FW educator," "application of evidence-based practice," and "interprofessional interactions." Three of these themes were novel as they did not emerge from the previous study. According to most participants their clinical and professional reasoning development was positively impacted when their FW educator chunked information (88.5%), modeled best practice (84.6%), asked questions (84.6%), or engaged in story-telling (84.6%), with the latter two being perceived as most impactful. The study results suggest that the development of clinical and professional reasoning may be highly individualized and driven by what students experience.

Introduction

Clinical reasoning is the term used to describe the process by which medical professionals identify client health problems and determine the best treatment plans to move each client toward a state of increased healthfulness (Coker, 2010; Mattingly, 1991). Professional reasoning in occupational therapy is defined as the process used by practitioners to plan, direct, perform, and reflect on client care (Márquez-Álvarez et al., 2019). The term "clinical reasoning" often refers to the reasoning process as it applies to medical settings while "professional reasoning" can be used as a broad term to encompass reasoning that occurs in all settings (American Occupational Therapy Association [AOTA], 2020). For the purpose of this paper, the phrase "clinical and professional reasoning" will be used regardless of whether the term "professional reasoning" had been defined when the source was published, given the inter-relatedness of the two terms.

When occupational therapists develop and modify treatment plans to achieve self-determined goals, their clinical and professional reasoning involves a holistic approach that considers the client, the client's environment, and the task demands (Coker, 2010; Mattingly, 1991; Naidoo & Van Wyk, 2016; Shafaroodi et al., 2014). Five different types of clinical and professional reasoning are recognized within occupational therapy: narrative, procedural, interactive, conditional, and pragmatic (Fleming, 1991). Occupational therapy practitioners (OTP), including occupational therapists (OT) and occupational therapy assistants (OTA), must use the appropriate type of clinical and professional reasoning, or combination of types, in each interaction with a client (Mattingly, 1991).

Clinical and professional reasoning is at the core of occupational therapy practice, and thus is an essential part of OTP education. Occupational therapy academic programs are tasked with preparing OTP students to develop and use clinical and professional reasoning skills (Coker, 2010). The didactic portion of an OTP student's education provides a foundation for developing clinical and professional reasoning abilities (Bailey & Cohn, 2002; Coker, 2010). Level II fieldwork (FW) experiences should be designed to develop clinical and professional reasoning, particularly by allowing them to practice this richly contextual and nuanced skill (AOTA, 2012; Coker, 2010; Mattingly, 1991). During Level II FW, learners have opportunities to apply their academic knowledge and start utilizing the different clinical reasoning types (Bailey & Cohn, 2002; Coker, 2010). Fieldwork educators (FWE) are responsible for facilitating the development of clinical and professional reasoning in OTP students to support positive client outcomes.

Fieldwork educators utilize a host of learning activities during Level II FW to optimize the development of clinical and professional reasoning skills in OTP students. These include hands-on learning, reflective practice, consistency of caseload population, and reviewing videotapes of interactions with clients (Bailey & Cohn, 2002; Ferraro Coates & Crist, 2004; Holmes et al., 2010; Seif et al., 2014; Sladyk & Sheckley, 2001). Specifically, hands-on experience with clients has been found to be necessary for OTP students to fully understand what clinical reasoning entails (Coker, 2010). Reflective practice appears to help OTP students organize and manage old and new knowledge

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and has also been found to especially support their development of clinical and professional reasoning (Coker, 2010; Roth, 1989; Shafaroodi et al., 2014). Interestingly, one study found that students who experienced fewer types of FW learning activities were more proficient in clinical and professional reasoning than students who experienced more of these (Sladyk & Sheckley, 2001). The authors hypothesized that this was likely because engagement in fewer activities enabled the students to develop a deeper understanding of the lessons drawn from each of those activities (Sladyk & Sheckley, 2001).

All but one of the few OTP studies published on clinical and professional reasoning development have been conducted with OT students. Whether OTA students benefit from and value similar learning activities during Level II FW as OT students is unclear since despite working alongside one another and sharing many similar responsibilities, OTs and OTAs have different scopes of practice. In the one study that examined the topic in OTA students, Coviello et al. (2019) found that OTA students (n = 8) identified eight learning activities that supported the development of their clinical reasoning skills: "FW site on-boarding process," "knowing expectations," "receiving feedback," "characteristics of FWE's," "collaboration," "hands-on learning," "consistency in caseload," and "self-reflection." The pilot study by Coviello et al. (2019) began to uncover similarities and differences between what OT and OTA students experience; however, the small sample size limited the generalizability of the results. Thus, we designed the present study to expand knowledge of which Level II FW learning activities contribute to the development of clinical and professional reasoning skills in OTA students.

Methods

A mixed methods study was conducted to deepen the understanding of the learning activities OTA students engage in during their Level II FW and their perception of the impact of these activities on the development of their clinical and professional reasoning skills. The study was approved by the institutional review board.

Participants

All participants were OTA students enrolled in a single program at a mid-Atlantic university over a two-year period (2017-2019). OTA students were invited to participate in the study during class prior to beginning their first Level II FW placement. Four successive cohorts of students were invited to participate in the study. Of the 89 possible participants, 58 OTA students agreed to participate in the study and signed the informed consent form.

Data Collection

Participants completed a sociodemographic questionnaire (see Table 1). Information was also collected on the supervision ratios (see Table 2) and fieldwork settings (see Table 3) the participants experienced.

Table 1

*Demographic Characteristics of the Participants (*n = *58)*

Characteristics	**Number (*n*)***	**Percentage (%)**
Sex assigned at birth		
Male	7	12.1
Female	47	81.0
Gender identity		
Male	7	12.1
Female	46	79.3
Age (years)		
20-24	13	22.4
25-29	24	41.4
30-34	8	13.8
35-39	2	3.4
40-44	1	1.7
45-49	4	6.9
50-54	2	3.4
Ethnic origin**		
Asian	4	6.8
Black or African American	8	13.6
Hispanic or Latino or Spanish origin of any race	2	3.4
Native Hawaiian or other Pacific Islander	1	1.7
White	41	69.5
Highest level of education prior to OTA program		
High school graduate, diploma, or GED	4	6.9
Some college credit, no degree	13	22.4
Trade, technical, or vocational training	3	5.2
Associate degree	6	10.3
Bachelor's degree	28	48.3
Master's degree	1	1.7
No Response	3	5.2
Highest level of education attained by either parent		
High school graduate, diploma, or GED	19	32.8
Some college credit, no degree	4	6.9
Trade, technical, or vocational training	7	12.1
Associate degree	3	5.2
Bachelor's degree	10	17.2
Master's degree	12	20.7

Note. OTA = occupational therapy assistant; GED = General Education Development; *Some participants did not provide demographic information; **Participants were asked to select all that apply regarding their ethnicity.

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Table 2

Level II Fieldwork Supervision Models of Participants

Primary Model of Supervision	**Number (*n*)****	**Percentage (%)**
One supervisor: One student	25	39.1
One supervisor: Two students	9	14.1
Two supervisors: One student	4	6.3
Two supervisors: Two students	1	1.6
One distant supervisor*: One student	2	3.1
One distant supervisor: Two students	17	26.6
Two distant supervisors: Two students	3	4.7
No response	3	4.7

Notes. *Distant supervisor = occupational therapy practitioner(s) onsite a minimum of 8 hours per week. **The count exceeded *n* = 58 as participants were allowed to select more than one option to categorize the model of supervision at their site.

Table 3

Settings of Participants' Level II Fieldworks

Setting	**Number (*n*)***	**Percentage (%)**
Community based- day program for adults	17	28.3
Community based- mental health	6	10.0
Community based- wellness program	5	8.3
Inpatient- acute rehab	1	1.7
Inpatient- acute hospital	1	1.7
Pediatric- school	16	26.7
Skilled nursing facility	10	16.7
Other ("mental health hospital inpatient")	1	1.7
No Response	3	5.0

Note. *The count exceeded *n* = 58 as participants were allowed to select more than one option to identify their fieldwork setting.

All of the participants (*n* = 58) took part in one of 11 in-person focus groups. The focus groups were conducted on campus, within one week of the end of the participants' first Level II FW placement, by trained interviewers who used an interview guide (see Appendix). The interviewers were a combination of faculty in the participants' OTA program and a research assistant unknown to the participants. All focus groups lasted approximately one hour and were audio recorded.

Immediately after the focus group, participants from the third and fourth cohorts completed a paper version of the Fieldwork Learning Experiences Questionnaire in-person (*n* = 26; FLEQ); the FLEQ, in its current form, did not exist when cohorts 1 and 2 participated in the study. The FLEQ consists of 17 items related to the frequency in which Level II FW students engaged in different learning activities and the student perceived impact of activities on clinical reasoning skill development. It uses a 7-point scale with 10 items anchored with *strongly disagree* and *strongly agree* (see Table 4), seven items assessing the number of times that students experienced a learning activity anchored with *0 times* and *10+ times* (see Table 5), and 18 items anchored with *no impact* and *most impact* (see Table 6). The FLEQ was modeled after the questionnaire by Coviello et al. (2019), which was a researcher-developed questionnaire with no validity or reliability information provided. This questionnaire was modified to capture the self-perceived impact of different learning activities which were found to foster the development of clinical reasoning in healthcare providers in previous studies (Ferraro Coates & Crist, 2004; Cohn, 1989; Distler, 2007; LaRochelle et al., 2012; Lee et al., 2016; Tiruneh et al., 2014). The response choices of the FLEQ were also modified to ease data analysis.

Data Preparation and Analysis

The data from the sociodemographic questionnaire and the FLEQ were entered in an Excel spreadsheet, checked for accuracy and analyzed through descriptive statistics. When an item on the FLEQ was rated as four, five, or six out of six, it was counted as having been agreed that it was experienced.

The audio recordings of the focus groups were transcribed verbatim by trained transcribers using a written transcription protocol. Each transcription was checked for accuracy by a second transcriber, then uploaded into NVivo version 12.5.0 for analysis. Then the data analysis of the focus group transcripts began using a multi-step, multi-coder process. The coding matrix developed by Coviello et al. (2019) was used as a starting point for coding of the transcripts. Using this coding matrix, two trained graduate research assistants under the supervision of the lead author coded the transcripts, identifying missing codes and codes whose definitions needed revisions. This iterative process continued until the research team was certain that the coding matrix captured the entirety of the data available in the transcripts. Simultaneously, the two graduate research assistants established inter-coder reliability coding the same transcripts and comparing codes. Discrepancies were discussed, which led to further refinement of the coding matrix through the addition and deletion of codes, re-categorization of codes, and clarification of code definition. Once intercoder reliability of 80% was reached, the coding matrix was finalized. At that time, all transcripts were coded using the final coding matrix by the same two research assistants.

Thematic analysis was then performed through a review of the transcripts and excerpts from the transcripts grouped by codes. The thematic analysis was conducted by three authors who independently looked for recurring patterns within the data and then compared and contrasted their interpretation to ensure dependability and credibility. The list of themes was then compared one last time against the transcript excerpts organized by codes to ensure that all relevant themes had been identified.

The themes were categorized and ordered by frequency of occurrence within transcripts. This process was used to maximize the dependability and credibility of qualitative analysis.

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Table 4
*Cohort 3 and 4 Participants' (*n = *25) Self-report of the Degree to which Learning Experiences that Occurred During Level II Fieldwork*

Learning experiences	0 (Strongly disagree)	1	2	3	4	5	6 (Strongly agree)	Median
Treated mostly consistent caseload					3 (11.5)	4 (15.4)	18 (69.2)	6
Mostly treated gradually increasing number of clients	1 (3.8)		5 (19.2)	1 (3.8)	3 (11.5)	3 (11.5)	12 (46.2)	*
FWE asked questions at least once a week			1 (3.8)	3 (11.5)	8 (30.8)	2 (7.7)	11 (42.3)	5
FWE modeled best practice at least once a week		1 (3.8)		3 (11.5)	4 (15.4)	8 (30.8)	9 (34.6)	5
FWE engaged in story-telling at least once a week	1 (3.8)			2 (7.7)	2 (7.7)	7 (26.9)	13 (50.0)	6
FWE chunked information				2 (7.7)	8 (30.8)	11 (42.3)	4 (15.4)	5
Met daily with FWE to receive feedback	6 (23.1)	1 (3.8)	1 (3.8)	3 (11.5)		2 (7.7)	12 (46.2)	*
Met weekly with FWE to receive feedback	1 (3.8)				2 (7.7)		22 (84.6)	6

Note. Numbers represent the frequency count, percentages in parentheses. FWE = fieldwork educator. * Denotes bimodal data, where a median value could not be meaningfully provided.

Table 5

*Cohort 3 and 4 Participants' (*n = *25) Self-report of Frequency of Different Learning Experiences that Occurred During Level II Fieldwork*

Learning experiences	**0** **0 times**	**1** **1 time**	**2** **2 – 3 times**	**3** **4 – 5 times**	**4** **6 – 7 times**	**5** **8 – 9 times**	**6** **10+ times**	**Median**
Video recordings made of interactions with clients	23 (88.5)	2 (7.7)						0
Video recordings made of professional interactions	25 (96.2)							0
Completed reflective journaling for FWE	6 (23.1)	2 (7.7)	2 (7.7)	3 (11.5)	3 (11.5)		9 (34.6)	3
Completed a concept map	25 (96.2)							0
Completed an activity analysis	9 (34.6)	4 (15.4)	2 (7.7)	1 (3.8)	4 (15.4)	2 (7.7)	3 (11.5)	1

Note. Percentages in parentheses. FWE = fieldwork educator. * Denotes bimodal data, where a median value could not be meaningfully provided.

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Table 6

*Cohort 3 and 4 Participants' (*n *= 25) Impressions of the Impact of Each Learning Experience During Level II Fieldwork on the Development of Their Clinical Reasoning*

Learning experiences	0 (No impact)	1	2	3	4	5	6 (Most impact)	Median
Mostly treated gradually increasing # of consistent clients			1 (3.8)	1 (3.8)	3 (11.5)	6 (23.1)	14 (53.8)	6
FWE asked questions			1 (3.8)	2 (7.7)	5 (19.2)	5 (19.2)	12 (46.2)	5
FWE modeled best practice			1 (3.8)	2 (7.7)	2 (7.7)	10 (38.5)	10 (38.5)	5
FWE engaged in story-telling	1 (3.8)	1 (3.8)		1 (3.8)	6 (23.1)	2 (7.7)	14 (53.8)	6
FWE chunked information	1 (3.8)		1 (3.8)		7 (26.9)	8 (30.8)	8 (30.8)	5
Completed written case study	13 (50.0)	2 (7.7)		1 (3.8)	2 (7.7)	6 (23.1)	1 (3.8)	*
Presented case study to site staff	13 (50.0)				5 (19.2)	6 (23.1)	1 (3.8)	*
Presented an EBP article to site staff	10 (38.5)			1 (3.8)	4 (15.4)	5 (19.2)	5 (19.2)	*
Video recordings made of interactions with clients	22 (84.6)	1 (3.8)	1 (3.8)		1 (3.8)			0

Table 6 Continued **Learning experiences**	**0 (No impact)**	**1**	**2**	**3**	**4**	**5**	**6 (Most impact)**	**Median**
Video recordings made of professional interactions	24 (92.3)	1 (3.8)						0
Reflective journaling for FWE	5 (19.2)			1 (3.8)	7 (26.9)	4 (15.4)	8 (30.8)	4
Completed a concept map	24 (92.3)				1 (3.8)			0
Completed an activity analysis	7 (26.9)		2 (7.7)	1 (3.8)	6 (23.1)	3 (11.5)	6 (23.1)	4
Met daily with FWE to receive feedback	6 (23.1)		1 (3.8)	2 (7.7)		2 (7.7)	14 (53.8)	*
Met weekly with FWE to receive feedback					3 (11.5)	2 (7.7)	20 (76.9)	6

Note. Percentages in parentheses. FWE = fieldwork educator. * Denotes bimodal data, where a median value could not be meaningfully provided.

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Results

Characteristics of the Participants and the Fieldwork Placements

Table 1 shows the demographic characteristics of the 58 OTA student participants. A majority (80%) identified as female and white (69%), and they ranged in age from 20 to 54 years old, with the majority (41.4%) between 25 to 29 (see Table 1). Almost half (48%) of the participants obtained a bachelor's degree prior to beginning the OTA associate degree program, with 40% of the participants identifying as first-generation college students and almost 33% reporting that their parents' highest level of education was a high school diploma or a General Education Development (GED; see Table 1).

During their Level II FW, the most frequently used mode of supervision experienced by the participants was one supervisor per student (39%; see Table 2). Approximately half of the participants (47%) completed their first Level II FW in a community-based setting, such as a day program, mental health setting, or a wellness program (see Table 3).

Aspects of Level II FW that Contributed to Clinical and Professional Reasoning Development

In the focus groups, participants shared their impression about aspects of their first Level II FW placement that they felt contributed to the development of their clinical and professional reasoning skills. Six major themes emerged from the qualitative analysis as described below.

"Hands on, Independent Delivery of OT Services"

The participants in the majority of focus groups (i.e., 10 of 11) discussed how the shift from mostly observing their FWEs during Level I FW placements to actively providing OT services during their Level II FW placement was valuable in developing their clinical and professional reasoning skills. Here is how one participant described finding benefits in application:

> It was pretty cool to just actually be able to apply what we learned and experience it. It's totally different when the person is being over stimulated in front of you as opposed to reading about it in a book. Just having that actual hands-on experience definitely helps [develop] clinical reasoning skills (Focus Group 2, Participant 16.3).

Another participant reflected that their Level I FW placements would have been even more useful if they had been able to provide more "hands on" OT services (Focus Group 10, Participant 5). Participants often stated (i.e., 33 references in 10 transcripts) that having "hands on" experience with a consistent caseload was beneficial, as exemplified by a participant who stated, "I feel like for me, having to see the same people over and over again and get a lot of experience, a lot of time with them throughout those eight weeks, really helped me" (Focus Group 2, Participant 16.7). Participants expressed repeatedly (i.e., 9 of 11 focus groups) that this increased focus

on independent "hands on" OT service delivery boosted their professional confidence, as exemplified by this statement: "[hands on learning] ended up being very beneficial for me because it forced me to build confidence in my skills" (Focus Group 9, Participant 4).

"Thinking on Your Feet"

Participants in all eleven of the focus groups talked about the various ways that they improved their intervention skills, and thus their clinical and professional reasoning skills, with a recurring theme of "thinking on one's feet." This theme speaks both to the need to adjust an intervention plan for a given client and to the adaptation demands of an intervention plan when working with groups. This is best illustrated by a participant who stated:

> Sometimes, [the clients] would come in and don't want to participate, so you have to kind of think on your feet, like how am I going to get them motivated to, to start this activity or just to engage in a whole half hour session (Focus Group 7, Participant 1).

Repeatedly (i.e., 63 references found across all 11 transcripts), participants explained that this need to "think on one's feet" came in part from the need to be client-centered in their intervention delivery, as noted in this excerpt: "Some things may not work for certain clients that you think [would have] worked….so like while you're working with [him/her], I feel like that's when you use the most of your clinical reasoning" (Focus Group 5, Participant 5).

"Unique Value of Community Based Placements"

Participants repeatedly described the "unique value of community-based placement" (i.e., 49 references in 9 of 11 transcripts) on the development of their clinical reasoning skills. In large part, the value seemed related to the first theme since participants identified the amount of hands-on independent OT services delivery (e.g., groups, individual treatment, training other professionals) as a plus value of community-based Level II FW. This is best illustrated by a participant who stated the following about their community-based Level II FW placement:

> Every single day was so different that it [community-based Level II FW] was a learning experience in itself. So that helped me see the bigger picture [that is] being able to work in groups, being able to work individually….and how my clinical reasoning [skill] guides groups versus working one-on-one with somebody (Focus Group 11, Participant 2).

Participants also described community-based placement having enhanced their time management skills, professionalism and problem-solving skills, as noted in the following excerpt: "I think that not having, like, a supervisor, like, most of the time helped too because me and [peer partner] really had to come up with, like, our own critical thinking, clinical reasoning, therapeutic use of self" (Focus Group 10, Participant 1). Within community-based placements, many of the participants reported experiencing leading

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groups (i.e., 13 participants in eight focus groups). Participants saw value in leading groups on the development of their clinical reasoning skills, as noted by a participant who stated:

> Even though we had X, Y, Z planned, one group may have benefitted from something we did in the beginning more than the end, so we learned to adapt what we were doing according to our group members, and I think that really helped me to think like an OTA (Focus Group 9, Participant 1).

"FWE Supervision Approach Makes a Difference"

Participants across most focus groups (i.e., 9 of 11) mentioned the supervision style of their FWE had an impact on the development of their clinical and professional reasoning skills. The most common supervision approach discussed was the receipt of feedback (i.e., 22 mentions in 8 focus groups). Participants also spoke of the value of explaining their clinical reasoning to their FWE as in this excerpt:

> I had to have an [explanation] for every single thing that I did, including, like, taking someone's blood pressure, [choosing] an intervention or [justifying] why I was seeing [the client] in the morning instead of in the afternoon. So, constantly having an answer to why really helped me develop (Focus Group 4, Participant 1).

The degree of support from their FWE was a polarizing point during focus groups, with some participants finding more value in a 'present' and supportive FWE whereas other participants feeling they grew more when working independently. Fourteen participants stated they felt they benefited from the autonomous nature of their Level II FW placement and opportunities to work independently; of these 14, nine participants stated in the focus groups that they completed their Level II FW placement in a community-based setting. As noted by one participant "...my meetings with my FWE were twice a week, and she was there for four hours, and she was really hands-on… because it was nontraditional, I think that was plenty" (Focus Group 8, Participant 2). Conversely, a participant placed in a traditional setting remarked:

> My fieldwork educator being with me on a daily basis, she knew, um, what might be too much for me, ... and she also saw me with the kids and she would say 'I think you're ready to see this child, you're not ready to see this child' (Focus Group 10, Participant 3).

"Application of Evidence-Based Practice"

Participants repeatedly mentioned (i.e., 73 references in 11 transcripts) searching for information to justify the selection, planning, implementation, and modification of intervention plans as another learning activity that contributed to their clinical and professional reasoning skills development. Sometimes, participants would describe using observation as a means to gain information about a client as depicted by one participant:

> I did a lot of research on different, um, interventions to try with the clients. And it's also a lot of just observing. …I practiced my observation skills a lot, and see how they were functioning and like what I could do to implement strategies to make it more successful for them (Focus Group 8, Participant 4).

At traditional sites, some participants were able to use documentation and charts to find information about clients. This was best illustrated by a participant who stated (Focus Group 8, Participant 1), "We had access to medical records and their charts, so it, reviewing that beforehand, looking at goals that they had, and then trying to come up with something that was more client-centered, um, for interventions." For some participants, searching for evidence-based practice was the essence of clinical and professional reasoning as depicted by the following excerpt: "You can always have that evidence-based background to explain why you're doing what you're doing and that can help shape your clinical reasoning" (Focus Group 10, Participant 1). Participants described that searching for evidence often occurred at home after their day of Level II FW as exemplified by the following quote:

> It was a lot of research about what this diagnosis is, what deficits they might have, what are some activities that can focus on each of those deficits. I was always going back home and doing a lot of homework and then coming back [to my FW site] with a plan and ideas of upgrades and downgrades (Focus Group 2, Participant 16.9).

"Value of Interprofessional Interactions"

Participants frequently mentioned (i.e., 42 references from all 11 focus groups) that interacting with team members from other professions contributed to the development of their clinical and professional reasoning. Often, this was described as educating and informing colleagues about the unique value of occupational therapy as depicted by one participant who stated "I feel like educating other professionals is also really helpful for us. [We had to] find evidence-based articles [to] back up what we're doing and why it's beneficial" (Focus Group 11, Participant 5). Other interactions took place when the participants wanted to learn more about their clients to provide better care, as noted by this participant who described:

> Talking with the staff was really helpful because they are the ones that have been with them the longest so it was just getting feedback and information from them and suggestions on certain things…. It was helpful just to get to talk to the staff and... hear from them too. Um, so basing your treatment plans off of all of that information was helpful (Focus Group 5, Participant 3).

Frequency and Impact of Various Fieldwork Learning Experiences

A total of 26 participants from the 3rd and 4th cohorts of students completed the FLEQ. All of the participants stated that they treated a mostly consistent caseload, with 69.2% reporting that they strongly agreed this was the case (see Table 4). The same percentage of participants (69.2%) noted that this caseload increased gradually (see Table 4). When asked about the impact of treating a gradually increasing number of

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consistent clients on their clinical and professional reasoning development, 88.4% of participants reported that they found this progression to be impactful, with 53.8% of participants reporting this progression most impacted the development of their clinical and professional reasoning skills (see Table 6).

The majority of participants noted that their clinical and professional reasoning development was positively impacted when their FWE chunked information (88.5%), asked questions (84.6%), modeled best practice (84.6%), or engaged in story-telling (84.6%; see Table 6). Notably, 53.8% of the participants described the FWE engaging in story-telling and 46.2% described the FWE asking questions as most impacting the development of their clinical and professional reasoning (see Table 6). The majority of participants agreed that their FWE practiced these learning activities (chunked information = 88.5%; asked questions = 80.8%; modeled best practice = 80.8%; engaged in story-telling = 84.6%) at least once per week (see Table 4).

Learning activities that participants engaged in less frequently included completing reflective journaling for their FWE (46.1% engaged in this activity more than half a dozen times throughout their experience) and completing an activity analysis (34.6% of participants reporting they engaged in these activities more than half a dozen times) throughout their experience (see Table 5). Despite the lower frequency of occurrence of these activities, the participants who reported engaging in them found they impacted the development of their clinical and professional reasoning skills (journaling = 73%; activity analysis = 57.7%; see Table 6). Other activities that participants felt impacted their clinical and professional reasoning development included completing a written case study (34.6%) and presenting a case study (46.1%) or an evidence-based practice article (42.2%) to site staff (see Table 6). No participants reported having video recordings made of interactions with clients, video recordings made of professional interactions, or creating concept maps during their Level II FW experience (see Table 5).

Receiving feedback from the FWE was perceived as both one of the most frequently occurring experiences (see Table 4) and most impactful experiences during their Level II FW (see Table 6). Almost all participants (92.3%) reported that they met weekly with their FWE, while 57.7% agreed they met daily with their FWE (see Table 4). Also, almost all participants (96.1%) reported that meeting weekly with their FWE to receive feedback had a positive impact on their clinical and professional reasoning development, while 61.5% reported that meeting daily with their FWE to receive feedback impacted their clinical and professional reasoning development (see Table 6).

Discussion

Participants' and the Level II FW Placements' Characteristics

Understanding for whom the results of a study are relevant is important in qualitative studies. In this study, this means understanding the characteristics of the participants and of their Level II FW placements. It is noteworthy that the study participants were slightly more racially/ethnically diverse, with 25.5% identifying as non-White (see Table

1) compared to OTA programs nationally (AOTA, 2018). Additionally, of the participants who indicated gender, 12.1% identified as being male, which is slightly less than the average (14%) for OTA programs (AOTA, 2018). Prior to admission to the OTA program, many participants (60.3%) had obtained a college degree, ranging from associate to master's level, suggesting a well-educated group of students (see Table 1). Almost half of participants (41.2%) experienced a one supervisor per student supervision model whereas 47% indicated completion of Level II FW along with another student (see Table 2). This percentage of participants who experienced the one supervisor per student model was similar to the results of a recent study conducted with OTA FW students (Coviello et al., 2019). A study completed by Evenson et al. (2015) found that one supervisor per student was the most frequent supervision model used among OTA programs nationally. Participants in this study experienced a higher-than-average completion of Level II FW along with another student, which is likely attributed to the community-based placement rate of the participants in this study (46.6%; see Table 3), where the collaborative FW model with more than one student per supervisor is also more common. The relatively large number of community-based placements experienced by these OTA students is relevant to some of the themes that emerged from the qualitative analysis. Overall, participants in this study can be described as relatively representative of the OTA student body within the United States.

Contributors to Clinical and Professional Reasoning Development

Qualitative thematic analysis identified six themes which captured the participants' impressions of aspects of their Level II FW that contributed to their clinical and professional reasoning development. Three of the themes were similar to those that appeared in the only previous study conducted with OTA students on this topic (Coviello et al., 2019): "hands-on learning," "FWE approach," and "the value of interprofessional interactions." Three novel themes, not previously identified, also emerged from the analysis: "thinking on your feet," "value of community-based placements," and "application of evidence-based practice/searching for clinical information." Several of the themes identified in this study with OTA students, "hands-on learning," "review of evidence-based literature," "interprofessional interactions," and "FWE approach," are consistent with previous clinical reasoning research conducted with OT and other health profession students (Coker, 2010; Distler, 2007; Overton et al., 2009; Tiruneh et al., 2014). This is preliminary evidence that it may be appropriate to extrapolate what is known about clinical and professional reasoning skill development in OT students to OTA students. One theme, "thinking on your feet," appears completely novel, as it has not appeared in any previous studies of clinical and professional reasoning skills development in healthcare provider students. It may be interesting to explore the importance of this theme for OTA and OT students in future studies.

"Hands-on experience" was the theme that was identified most frequently by participants as contributing to the development of their clinical and professional reasoning skills. In fact, there were 89 references to hands-on learning across all the focus group transcripts which reflects the participants' impressions that opportunities for hands-on learning are important to the development of clinical and professional reasoning. Some participants also indicated a preference for more hands-on learning

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versus observation during Level I FW, since actively providing services not only requires application of learning, but also helps to build confidence. This finding is consistent with previous research which not only supports active engagement of students during Level I FW, but also asserts that “hands-on” learning promotes students’ comfort level interacting with clients, competence with clinical skills, and fosters the development of professional behaviors and clinical reasoning in preparation for clinical practice (Coker, 2010; Haynes, 2011). Another finding which was reflected in both the qualitative thematic analysis and the results of the FLEQ, and which is consistent with prior research completed on OT students’ development of clinical and professional reasoning, is the importance of having a consistent caseload (Cohn, 1989; Sladyk & Sheckley, 2001). The majority of the participants attributed “hands-on experience” treating a consistent caseload as either being impactful or the most impactful to developing their clinical and professional reasoning.

“Thinking on your feet” was the second theme that emerged from the transcripts. This theme is related to the theme of “hand-on experience” since during Level II FW, OTP students address actual client needs (AOTA, 2012) which requires interaction with clients while providing students the opportunity to “think on their feet.” This theme however is further refined, as participants shared the need to be flexible, alter plans, and/or make decisions when clients did not want to participate in chosen interventions, the planned intervention was not as effective, or the intervention was not as engaging as the participants originally hoped. To be client-centered, in-the-moment modifications were required, and participants attributed this flexibility to developing clinical and professional reasoning. This appeared to be consistent whether providing individual or group interventions and did not appear to depend upon practice setting or on whether the participants were completing their Level II FW with another student.

The value of “community-based placements” has appeared in prior OT clinical and professional reasoning research (Overton et al., 2009). Under this theme, the results of this study suggest that participants value the freedom to co-plan, co-select, and co-implement group and individual treatment interventions with their assigned OTA FW student peer. Participants also appeared to value the opportunity to develop therapeutic use of self and professional behaviors and to creatively problem-solve to address the needs of the clients within the environments in which they function. Participants’ statements suggested they appreciated doing so without being under the constant supervision of their FWE. The emergence of this theme validates the use of community-based placements for Level II FW OTA students, as participants not only recognized the value but also attributed community-based experiences to the development of clinical reasoning skills. Although there is some debate regarding the benefits of community-based placements, this finding is consistent with studies involving OT students who completed either Level I or Level II FW in community settings, where opportunities to apply knowledge and skills, problem solve, and develop ideas lead to acquisition of new knowledge that assists in the development of clinical reasoning (Gat & Ratzon, 2014; Mattila & Dolhi, 2016; Overton et al., 2009).

The FWE approach is clearly a major contributor to clinical and professional reasoning skills development in OTA students, with 82.2% (9 of 11) of the focus groups referencing its importance. Specifically, participants mentioned that feedback, the ability to provide an explanation regarding reasons for choosing certain interventions, carrying out interventions in a particular format, and answering the question "why" were all important to developing clinical and professional reasoning skills. The FLEQ results further support the participants' perceptions of the significance of feedback, as the receipt of FWE feedback, whether it occurred on a daily or weekly basis, was considered by the majority of participants to be the most impactful and one of the most frequently occurring experiences during Level II FW contributing to the development of clinical and professional reasoning. Asking questions was another impactful experience that nearly half of the participants identified on the FLEQ as most impactful to clinical and professional reasoning development.

Additionally, FLEQ results reflect role modeling of best practice, chunking information, and FWE use of storytelling as additional approaches used by FWEs which impacted the development of clinical and professional reasoning. Asking probing questions, story-telling, role modeling best practice, chunking and the importance of feedback have all been identified in prior research relating to the development of clinical reasoning in either OT or OTA students (Cohn,1989; Coviello et al., 2019). In contrast to a prior study involving OTA students, the credentials, years of clinical and supervisory experience, receptivity of the FWE, and participation in FW-related training were not mentioned by participants as contributing to the development of clinical and professional reasoning (Coviello et al., 2019). In part this difference could be related to sources of data as the study by Coviello et al. (2019) included FW journals; in part the difference may also be due to the different experiences of these participants during Level II FW.

"Application of evidence-based practice" was identified by participants as important in 91% of the transcripts (10 of 11 focus groups), with participants relating the development of clinical reasoning skills to their observations, documentation, review of charts, and exploration of the evidence. To gain an understanding of the client, develop appropriate interventions designed to meet the clients' needs, and develop strategies to promote occupational performance through clinical and professional reasoning, participants appeared to rely on evidence. The need to apply evidence and search for information emerged in all practice settings and all supervision models. The FLEQ results also support the importance of being required to search, apply, and present evidence as a mechanism to develop clinical and professional reasoning, not only while providing OT services; completion of a written case study and/or presentation of a case study or evidence-based practice article to site staff was identified as impactful to the development of clinical reasoning skills.

Interprofessional interactions with members of other professions was the final theme that emerged from the study. This theme is similar in name to one found in a prior study involving OTA students (Coviello et al., 2019). However, in contrast to the previous study, which related clinical reasoning development to the ability to learn from, interact with, and ask questions of intraprofessional peers, FWEs, staff, and team members, this

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study reflected a greater importance on interactions with team members outside of the profession. Participants in this study did not mention intraprofessional collaboration. The reason for this difference is unclear. Rather, participants in our study equated the need to educate others about the distinct value of OT and collaborative interprofessional experiences to the development of clinical and professional reasoning. These findings are similar to other studies which correlate students' perceptions of clinical and professional reasoning development with collaborative interprofessional interactions which occurred during experiential components of their respective curriculums (Brewer & Flavell, 2018; Seif et al., 2014). The interprofessional teams referenced in these two studies included OT students working alongside students from disciplines such as nursing, social work, and physical therapy, among other fields (Brewer & Flavell, 2018; Seif et al., 2014). One of the main benefits of these interprofessional opportunities, as cited by participants in prior studies, was the opportunity to both educate and learn about other professions through these collaborations, similar to the perspective of participants in the present study (Brewer & Flavell, 2018; Seif et al., 2014).

It is noteworthy that although the FLEQ was designed using learning activities that have been found to increase clinical and professional reasoning in healthcare professional students, few of the activities included in the FLEQ were mentioned by participants during the focus groups. In essence, during the focus group, participants reflected more broadly on what contributed to the development of their clinical and professional reasoning skills during Level II FW whereas the FLEQ asked about specific types of activities (e.g., FWE asking probing questions, role modeling best practice, and use of videotaping). These findings speak to the importance of using mixed methodology, combining quantitative and qualitative data, to obtain a comprehensive picture of students' perceptions regarding the frequency and impact of various learning activities and experiences during Level II FW. It is important to note that some of the experiences which are attributed to the development of clinical and professional reasoning in the literature (e.g., videotaping client interactions, video recordings made of professional interactions, creating concept maps) and therefore included on the FLEQ were not experienced by participants in this study (Ferraro Coates & Crist, 2004; Lee et al., 2016). Additionally, some activities which were experienced by participants to a lesser degree were not referenced during the qualitative analysis (e.g., reflective journaling for the FWE/site, completion of an activity analysis), however were found to be impactful to the development of clinical and professional reasoning for those participants, suggesting that the development of clinical and professional reasoning may be highly individualized and driven by experiences.

Future Studies

Continued research in this emerging area of study is necessary at many levels. A comparison of OTA students at the associate and baccalaureate levels, as well as a comparison between OTA and OT students' perceptions of learning experiences and the perceived impact of these learning experiences on the development of clinical and professional reasoning, would be useful information. Further, studies that explored and compared OTA students, FWE, and Academic Fieldwork Coordinators' (AFWC) perceptions of learning experiences that foster clinical and professional reasoning skills

development during Level II FW could be used to enhance FW education/programs. Replication of this study to include OTA students from other programs and regions would add to the profession's current body of knowledge. It would also be beneficial to further examine strategies that both fieldwork educators and OTP students could utilize to tailor learning experiences to individual learners based on their strengths and needs.

Limitations

The sample size (n = 58) was rather large for a mixed methods study, which strengthened the dependability of the results. However, the use of a convenience sample, with all participants being students of the same academic program who completed their Level II FW within the same geographical area, limited the transferability of the findings. The transferability of the findings may be further limited by the fact that nearly half of the participants experienced the collaborative FW model within community-based settings, which not all OTA programs use.

Efforts were made throughout the study to minimize researcher bias. However, like in all qualitative studies, researcher bias may have tainted the results. To minimize researchers' bias, two researchers coded and recorded the data until they reached adequate reliability. They also consulted with a senior member of the research team to resolve discrepancies. Unfortunately, it was not possible to conduct member checking to confirm the meaning of statements given the time gap between the collection of the data and the completion of the data analysis. Member checking would have further enhanced the credibility of the results.

The FLEQ is dependent on self-reported data and does not have established psychometric properties. Further, the FLEQ was completed after the focus groups to minimize participants' responses to focus group questions being influenced by the FLEQ questionnaire. However, in doing so, it is possible that the FLEQ responses were affected by the focus group discussion.

Implications for Occupational Therapy Education

The results of this study have direct application for OTA academic programs as they work with Level II FW sites to enhance the learning experiences of their students. Participants placed great value on the opportunity to provide independent "hands on" services, and the chance to "think on their feet" as ways to develop clinical and professional reasoning skills. Clearly, academic programs and FWEs should continue to explore opportunities for OTA students to optimize "hands on learning" and "think on their feet," with participants noting that this would be beneficial in their Level I FW experiences in addition to Level II experience.

Community-based placements were highly valued by participants in this study. AFWCs should consider opportunities to expand Level II FW programs to include community-based practice placements if not currently utilizing these placements for OTA students. Alternatively, academic programs could provide their students with a combination of traditional and community-based placements in order to provide increased diversity for learning and the development of clinical and professional reasoning.

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Specific supervision approaches used by FWEs seem to be highly valued by the participants. Students may benefit from initiating dialog with FWEs regarding the type of experiences and approach to supervision that they find most beneficial. Some students appear to prefer ongoing, on-site, frequent, and consistent feedback while others prefer to be 'thrown-in' and work independently with opportunities to respond to FWE asking probing questions and prompting participants' clinical and professional reasoning during scheduled feedback sessions. These findings suggest that, when determining "goodness of fit", AFWCs should not only consider students' practice placement preferences when assigning students for Level II FW, but also students' prior performance during Level I FW, student communication styles, FWE's availability (daily on-site supervision consistent with traditional placements, versus off-site supervision which requires OTP FWE to be onsite for scheduled supervision for eight hour per week for placements at community-based sites), and knowledge of site and population needs.

Participants identified the importance of applying evidence-based practice skills within Level II FW for developing clinical and professional reasoning skills in OTA students. AFWCs may consider providing recommendations to Level II FWEs to include evidence-based practice assignments as one of their Level II FW expectations and to use probing questions, such as asking "why", to facilitate the development of clinical and professional reasoning skills. Further, according to the participants in this study, Level II FW sites should consider ensuring opportunities for interprofessional collaboration as another opportunity to foster the development of this clinical and professional reasoning skill.

Conclusion

The study was designed to expand our knowledge of FW Level II learning experiences that contribute to the development of clinical and professional reasoning skills in OTA students. Six major themes were identified by OTA participants as assisting them in developing their clinical reasoning skills during Level II FW: "hands-on experience," "thinking on your feet," "the value of community-based placements," "the supervision approach of the FWE," "application of evidence-based practice" and "interprofessional interactions." The study confirmed themes that had already been identified by Coviello et al. (2019) and expanded on their study by identifying three novel themes: "thinking on your feet," "value of community-based placements" and "evidenced-based practice". Most of the themes are consistent with studies of clinical and professional reasoning development during FW in OT students. This is preliminary evidence that it may be appropriate to extrapolate what is known about clinical and professional reasoning skills development in OT students to OTA students. The results suggest that the development of clinical reasoning is a nuanced, highly individualized skill that is based on an array of students' experiences. This study informs OTP educational programs, AFWC, and FWE of which learning activities and experiences are perceived by OTA students to foster clinical and professional reasoning.

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Appendix

Focus Group Interview Guide

(Modified from Royeen et al., 2001)

OTA Students' Perspectives Regarding What Constitutes Clinical and Professional Reasoning.

a. Tell me how you would define clinical reasoning.
b. Tell me about your clinical reasoning process. Probe: Can you tell me more? Will you share example(s)?
c. In your opinion, what is the importance of clinical reasoning in Occupational Therapy?

OTA Students' Impressions of What Promoted Their Development of Clinical and Professional Reasoning Skills During Level II Fieldwork.

a. During your Level II fieldwork, you had different experiences/opportunities for learning (e.g., meetings with your FW Educator, treating consistent caseload of clients (as gradually assigned by FW educator), presenting case studies, being asked probing questions, hearing stories about clients/the profession, etc.). Tell me what was most helpful in making you think like an OT practitioner. Probe: What would you consider were the most important to your learning?
b. What would you consider were the least beneficial to your learning? Probe: Can you tell me more?
c. Tell me your impressions of how these learning experiences/opportunities impacted your ability to achieve entry level competence by the end of your Level II fieldwork.
d. Tell me about any learning experiences/opportunities which might have been beneficial to your clinical reasoning development.

Level II OTA Fieldwork Students' Perceptions About the Impact of the Number and Frequency of Different Learning Experiences/Opportunities on Their Development of Clinical and Professional Reasoning Skills.

a. During your Level II fieldwork, you had different experiences/opportunities for learning. Tell me your impressions of how the number of learning experiences/opportunities promoted your development of clinical reasoning.
b. Tell me your impressions of how the frequency of these learning experiences/opportunities promoted your development of clinical reasoning.