

DISSERTATION

ADVANCING CLARITY: EXPLORING PROFESSIONAL THINKING SKILLS IN
OCCUPATIONAL THERAPY

Submitted by

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ABSTRACT

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Background: Reasoning, reflection and evidence-based practice are three interrelated and essential skills for occupational therapy practice. As threshold concepts in the field, they contribute to development of a sense of professional identity. However, these skills are inconsistently defined and differentiated from one another, leading to difficulties in related communication, education, and research. In this dissertation I sought to advance the profession's understanding of consensus conceptualizations of these essential professional thinking skills and how they are taught.

Methods: This dissertation comprises five articles reporting results of two broad studies. In the first study, a scoping review, I explored peer-reviewed occupational therapy literature that included a definition of a term related to reasoning and/or reflection. Along with my research team, I extracted data from each paper on definitions of relevant terms, relationships amongst relevant terms, references used to define relevant terms, and descriptive information about each article. In the second study, I used Delphi methodology to explore nine occupational therapy educators' consensus definitions of, conceptualizations of relationships between, and educational strategies for teaching clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. I then conceptually integrated results of both studies to compare findings between the literature and educators.

Findings: Both studies indicate that there is some agreement about main characteristics of each of these skills. They also both suggest that clinical/professional reasoning, reflective practice, and evidence-based practice are related to each other in complex, non-linear ways that warrant further exploration. Findings from the Delphi study additionally indicate that there are key educational strategies that may support development of multiple of these professional thinking skills.

Conclusion: This dissertation adds to the body of literature clarifying conceptualizations of necessary professional thinking skills in occupational therapy. Continued explicit consideration of conceptualizations of reasoning, reflection, and evidence-based practice within occupational therapy literature and education will advance communication, measurement, and, ideally, uptake of these skills into practice to support an integrated sense of professional identity.

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DEDICATION

In loving memory of Stitch.

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CHAPTER 1 – INTRODUCTION¹

Occupational therapy involves “the therapeutic use of everyday life occupations with persons, groups, or populations (i.e., the client) for the purpose of enhancing or enabling participation” (American Occupational Therapy Association (AOTA), 2020, p. 1). Occupational therapy is therefore a true *profession*, meaning it is tasked with “human problems amenable to expert service” (Abbott, 1988, p. 35). Maintaining the status of “profession,” and creating a strong sense of professional identity, requires a clear delineation of the skills required to practice occupational therapy.

Professional Thinking Skills in Occupational Therapy

Professional expertise within human health services can be described as involving “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice” (Epstein & Hundert, 2002, p. 226). This description is relevant to occupational therapy practice; occupational therapy literature, educational requirements, and practice acts further define the skills that therapists need to maintain. Within occupational therapy literature, three of the many skills that are commonly cited as essential to practice include (clinical or professional) reasoning, reflective practice, and evidence-based practice. In summarizing literature across health professions, Benfield and Johnston (2020) described professional expertise within occupational therapy as involving both reasoning and evidence-based practice, along with a third domain, measurement of outcomes. They also suggested that each of these three domains involves some level of reflection by the

¹Elements of this introduction chapter were published as a paper in the *Open Journal of Occupational Therapy* (Burke et al., 2023). The content is duplicated and expanded upon in this chapter as a foundation for the dissertation; the paper itself can be read in full in Appendix A.

occupational therapist to achieve the best outcomes for clients, thus including the three skills noted above. Lecours and colleagues (2021) conducted a concept analysis of occupational therapy literature on professionalism and found that in occupational therapy, professionalism includes reasoning (into which they incorporate both critical thinking and clinical judgment) as a key behavior and reflexivity (considered to involve introspection, analytical skills, and awareness of one's own limitations) as a key personal attribute. These authors described evidence-based practice as complementary to professionalism. The discrepancy between definitions offered by Benfield and Johnson and Lecours reveals that different key professional thinking skills and/or attributes will be highlighted based on which idea of professional expertise or professionalism is examined. However, clinical/professional reasoning, reflective practice, and evidence-based practice are consistently mentioned as essential across models related to professional thinking in occupational therapy.

Clinical/professional reasoning, reflective practice, and evidence-based practice are also each considered threshold concepts for occupational therapy students (Nicola-Richmond et al., 2016). Threshold concepts are ideas that are considered fundamental to mastery of a discipline or profession (Cousin, 2010). The qualities inherent to threshold concepts are debated, but they are generally understood to involve troublesome content (i.e., content that is difficult to learn) and to otherwise be: transformative (involving a conceptual shift for the learner); irreversible (unlikely to be forgotten); integrative (helping the learner to appreciate connections across content areas); and bounded (have clear conceptual boundaries). Other capabilities sometimes identified as threshold concepts within occupational therapy include: understanding and applying the models and theories of occupational therapy; discipline-specific skills and knowledge; practicing in context; a client-centered approach; occupation; the occupational therapist role; and a holistic

approach (Nicola-Richmond et al., 2016). Each of these capabilities specifically relates to the practice of occupational therapy and understanding key constructs of the profession. Clinical reasoning, reflective practice, and evidence-based practice, though, are the three threshold concepts that require additional metacognitive skills apart from understanding, making them potentially the most difficult threshold concepts to master.

The practice act also identifies essential attributes for occupational therapists. In the *Occupational Therapy Practice Framework (OTPF-4)*, professional reasoning, self-reflection, and evidence-informed practice are described as key contributors to the “cornerstones” of occupational therapy (AOTA, 2020). Cornerstones are concepts that distinguish the profession of occupational therapy; they include “core values and beliefs rooted in occupation,” “knowledge of and expertise in the therapeutic use of occupation,” “professional behaviors and dispositions,” and “therapeutic use of self” (AOTA, 2020, p. 6). As clarified in the *OTPF-4*, reasoning, self-reflection, and evidence-informed practice are all significant skills supporting the defining features of occupational therapy as a profession.

Finally, academic standards for occupational therapy students in the United States provide that graduates should be able to demonstrate clinical reasoning and use evidence in practice (Accreditation Council for Occupational Therapy Education (ACOTE®), 2018). Although not explicit in the standards, reflective practice is also an implied requirement, as therapists are expected to remain lifelong learners (Cohn et al., 2010). A lifelong learner must consider areas for professional growth and examine their current competence; these behaviors comprise reflective practice. Occupational therapy programs may individually interpret these academic standards but must design their programs to meet these expectations.

Becoming an occupational therapist, then, requires learning and integration of reasoning, reflective practice, and evidence-based practice skills. In other words, those entering the field must embody specific professional thinking skills in order to take on the identity of the profession (Nicola-Richmond et al., 2016; Walder et al., 2022).

Statement of the Problem

Clinical/professional reasoning, reflective practice, and evidence-based practice are seen as essential professional thinking skills in occupational therapy, and yet definitions of the constructs underlying the skills are inconsistent and occasionally conflicting (Bannigan & Moores, 2009; Henderson et al., 2017; Krueger et al., 2020). These constructs are often identified as being related to one another, but their relationships are more often assumed than explicit. This inconsistency and lack of clarity raises questions about how those in the profession are understanding and communicating about these skills, and how the actual skills of reasoning, reflective practice, and evidence-based practice can be taught, implemented, and measured. Philosophically, it raises questions about how occupational therapists learn to become, and ultimately to *be*, occupational therapists.

Unclear Standards for Skills Related to Professional Expertise

The *OTPF-4* describes how therapists use clinical/professional reasoning to accomplish a variety of important tasks in the occupational therapy process (AOTA, 2020). In the *OTPF-4*'s glossary of terms, professional reasoning is defined using a quote from Schell (2019) as the “process that practitioners use to plan, direct, perform, and reflect on client care” (p. 482). The term “clinical reasoning” is also used, although its definition is just a reference to the definition for professional reasoning. In the previous edition of the practice framework, only the term clinical reasoning was used with the same definition (Amini et al., 2014).

Self-reflection is also considered a key skill for therapists. While this term is used in the *OTPF-4*, it is not defined. The *OTPF-4* considers the occupational therapy process to be dynamic, as practitioners engage in ongoing reflection “to accommodate new developments and insights” (AOTA, 2020, p. 18). Further, in describing the evaluation process in occupational therapy, AOTA indicates the need for “reflective clinical reasoning.” In this one document, reflection is *both* a component of the clinical reasoning process *and* a modifier for a kind of clinical reasoning.

The *OTPF-4* also identifies evidence-informed (and “evidence based”) practice as a critical skill for occupational therapy but does not define this construct. Instead, it frequently mentions that therapists must integrate the “best available evidence” into their work.

Although each way of viewing these constructs may be meaningful or useful, having multiple conceptualizations – without being explicit about the differences between them – contributes to a lack of clarity. This is especially detrimental to our ultimate understanding of how professional thinking skills influence therapeutic outcomes for clients.

Unclear Approaches for Teaching Professional Expertise

Lack of clear definitions of clinical/professional reasoning, reflective practice, and evidence-based practice challenge our understanding of how occupational therapy educators themselves conceptualize and teach these skills to students (Bannigan & Moores, 2009; Henderson et al., 2017; Krueger et al., 2020). Poor engagement in professional thinking skills by practicing therapists has been blamed on lack of integration of constructs – notably evidence-based practice and reflection – within occupational therapy education (Krueger et al., 2020). Overlap and inconsistencies amongst definitions for clinical/professional reasoning, reflective

practice, and evidence-based practice make it difficult to discern corresponding relevant educational approaches and to evaluate proficiency in these skills.

In line with the educational standards and practice expectations for occupational therapists, educators do profess the importance of development of these three skills (Marr, 2017). Little research currently exists on curricular models that best support acquisition of skills related to professional expertise (Unsworth & Baker, 2016). Advancing this research agenda will require an understanding of how educators conceptualize professional thinking skills as well as an appreciation of what approaches are currently viewed as best practice for promoting their development in students.

Purpose of the Dissertation

Following from this lack of clarity, the purpose of my dissertation was to advance understanding of how essential professional thinking skills are individually defined and related to each other within occupational therapy literature and amongst occupational therapy educators.

My research questions are:

1. What is known from the existing literature about how occupational therapists define and differentiate between clinical/professional reasoning and reflection/reflective practice?
2. How do occupational therapy educators define clinical reasoning, professional reasoning, reflective practice, and evidence-based practice?
3. How do occupational therapy educators conceptualize the relationships amongst clinical reasoning, professional reasoning, reflective practice, and evidence-based practice?

4. What do occupational therapy educators identify as best-practice teaching strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice in occupational therapy students?

Philosophical Paradigm of the Dissertation

Philosophical underpinnings of the profession of occupational therapy provided a guiding framework for this dissertation. Although a variety of philosophical perspectives exist within occupational therapy, key features of the profession are aligned with pragmatism (Breines, 1987; Hooper & Wood, 2002). Pragmatism is a philosophical tradition that centers problems and solutions, judging concepts based on their consequences in the real world (Hildebrand, 2013). This makes it well suited to investigation of professional thinking skills that are taught and used in practice.

As a profession, occupational therapy has gone through paradigm shifts in focus in line with internal and external changes throughout history (Kielhofner, 2009). The most recent paradigm, the contemporary paradigm, highlights a shift back to a pragmatic approach to practice. This approach embraces that truth is not absolute, and that to best serve clients, multiple sources of information must be integrated based on action, experience, and outcomes (Hooper & Wood, 2002; Morgan, 2014). Occupational science was established as a discipline partially in response to the philosophical shift within occupational therapy towards pragmatism and the contemporary paradigm. Within the contemporary paradigm, therapists must navigate complex problem setting and problem solving that does not follow the more linear path of the preceding mechanistic paradigm (Parham, 1987). Moving towards pragmatism recentered inquiry and reflection as skills necessary to the profession and created a need for focused research attention on the professional thinking required for the practice of occupational therapy (Cohn et al.,

2010). This shift therefore established a need for occupational science to support research on occupational therapy as a profession.

Occupational science, as it leans towards pragmatism, has thus begun to verbalize “the incremental and systematic (but not necessarily linear) processes of human problem-solving that are fundamental to occupation-focused work” (Baranek et al., 2020, p. 275). Even as research refines our understanding of best practice interventions within occupational therapy, occupational science declares that problem-solving – which requires reasoning and reflection to remain a truly professional task (Abbott, 1988) – continues to be essential to practice.

Personal Positioning

I have found that my personal philosophy resonates deeply with the pragmatist foundations of occupational therapy. Central to my belief system is the notion that knowledge is contextually constructed and is therefore built within a collaborative community. Working as an occupational therapist, this perspective naturally led me to explore the potential of reflective practice opportunities, such as group supervision, as powerful tools for professional growth and shared learning.

However, upon entering the realm of practice, I encountered a dissonance between my aspiration for ongoing professional development and the practical constraints imposed by the workplace. This tension was not unique to my experience – I found that my colleagues in the emerging practice area of nature-based pediatrics shared similar desires for collaborative reflective practice, yet faced comparable barriers due to a lack of institutional support, both financially and structurally.

This dissonance became the catalyst for my research journey. Initially, my intention was to contribute to the evidence-base underpinning the role of reflection in delivering high-quality

services. However, as I explored the literature, I realized that a lack of clarity existed regarding the definition and differentiation of reflection from other essential professional thinking skills. This observation prompted a shift in focus to the present research.

As I embarked on my dissertation research, I recognized the imperative of engaging in reflection, both in the subject matter and the research process itself. This intertwining of reflection with my study's objectives and methodologies enabled me to continually refine my understanding and acknowledge my own biases and limitations as an interpreter of the research outcomes. The iterative process of analyzing findings, challenging assumptions, and revisiting biases served as a practical application of my philosophical perspective as it relates to the pragmatism inherent in occupational science.

Summary and Structure of This Dissertation

This dissertation includes five manuscripts related to two broad studies, a scoping review and a Delphi study; all five manuscripts will be or have been submitted for publication in peer-reviewed journals. In Chapter 2, I present the results of the scoping review investigating definitions of reasoning and reflection in occupational therapy literature (addressing research question #1). In Chapter 3, I present a brief report with further findings from the scoping review related to relationships between reasoning and reflection in occupational therapy literature (also addressing research question #1). In Chapter 4, I present a supplementary literature review that goes into detail on evidence-based practice and its history within the profession, as well as background on educational strategies used to teach professional thinking skills. In Chapters 5-7, I present results of the Delphi study: Chapter 5 explores educator conceptualizations of professional thinking skills (addressing research question #2); Chapter 6 explores educator conceptualizations of relationships amongst professional thinking skills (addressing research

question #3); and Chapter 7 explores educator perspectives on best-practice educational strategies for teaching professional thinking skills (addressing research question #4). In Chapter 8, I present a discussion of the combined findings and implications of these two studies. Finally, in Chapter 9 I reflect on how my dissertation is situated within occupational science and rehabilitation science, and how it contributed to my development as a scholar. Note that for chapters consisting of articles (Chapters 2, 3, 5, 6, and 7), the relevant references will directly follow the article; for all other chapters (Chapters 1, 4, 8, and 9), references are aggregated in the main “[References](#)” section at the end of the dissertation.

CHAPTER 2 – DEFINING REASONING AND REFLECTION IN OCCUPATIONAL THERAPY: A SCOPING REVIEW²

Introduction

Occupational therapists must engage in high-level thinking to integrate knowledge and best support clients (Bannigan & Moores, 2009). This high-level thinking is often described as involving reasoning and reflection, both considered essential to health professionals in practice (Lecours et al., 2021; Young et al., 2020). Accordingly, the World Federation of Occupational Therapists (WFOT, 2016) considers professional reasoning, which includes reflective practice, a required skill for practitioners. Despite their significance to practice, however, reasoning and reflection are not clearly or consistently conceptualized in occupational therapy literature (Burke et al., 2023). Although “there is no one sentence definition that captures the subtlety of how therapists think in the midst of practice” (Mattingly & Fleming, 1994, p. 9), constructing specific definitions of professional skills as concepts within occupational therapy fosters a stronger sense of professional identity (Crabtree, 1998; Wong et al., 2016). Lack of clarity around the intended meaning of the terms *reasoning* and *reflection* limits educators in teaching these skills, therapists in communicating about them in practice, and researchers in studying them precisely.

According to Mosey (1996), adequate concept definitions require a label, reference to an immediate superordinate category for the concept, and inclusion of specific distinguishing characteristics. Labels, or consistent terms to refer to a concept, are necessary for communication. Superordinate categories create relational structures between concepts. Specific distinguishing characteristics allow for differentiation across concept labels. These three

² This chapter is comprised of a prepared manuscript that will be submitted to a journal for publication. This manuscript reports on data from my scoping review.

elements are muddled or inconsistent for reasoning and reflection in occupational therapy literature.

Constructing a Definition of Reasoning

Rogers (1983) first articulated that clinical reasoning in occupational therapy is the “thinking that guides practice” (p. 601) but also interchangeably used the label “clinical judgment” for this professional skill. The label “clinical reasoning” has since proliferated in occupational therapy literature, but other labels are also used for this concept, including decision making, professional reasoning, therapeutic reasoning, and theoretical reasoning (da Silva Araujo et al., 2022; Young et al., 2020). Today, the labels “clinical reasoning” and “professional reasoning” are commonly used, and in the literature appear to be described as near synonyms with one notable difference: the label “professional reasoning” includes reasoning in non-clinical practice settings (Unsworth & Baker, 2016). In the health professions, the label “critical thinking” has also been used interchangeably with clinical reasoning, despite attempts to differentiate them (Berg et al., 2021; Victor-Chmil, 2013).

Identification of an immediate superordinate category for reasoning also varies widely. Here we have referred to the construct as a “professional thinking skill,” in line with existing models in occupational therapy that include reasoning and/or reflection as constructs (Bannigan & Moores, 2009; Benfield & Johnston, 2020). In other literature, reasoning has been categorized as a thinking or cognitive process (Unsworth & Baker, 2016), a mode of thinking (Fleming, 1991b; Mattingly, 1991b), and more generally a multifaceted process (Schell & Cervero, 1993). One’s choice of superordinate category orients the construct within a larger framework.

Finally, there is relatively little research on unique elements of reasoning within occupational therapy (Márquez-Álvarez et al., 2019), making it difficult to isolate specific

distinguishing characteristics. In the occupational therapy-specific literature on clinical reasoning, authors tend to cite theorists describing the unique reasoning of occupational therapists such as Mattingly, Fleming, Schell, Unsworth, and Higgs (da Silva Araujo et al., 2022); each have presented elements of clinical reasoning. Mattingly (1991b) wrote that it is “fundamentally applied phenomenology” (p. 983) and Fleming (1991a) wrote that reasoning more generally refers to “the many ways in which a person may think about and interpret an idea or phenomenon” (p. 989). Higgs (1992) and Unsworth (1999, 2001) have described clinical reasoning as involving all the thinking processes associated with conducting a clinical practice. Giving the most detail, Schell (2019) described clinical reasoning as a “process that practitioners use to plan, direct, perform, and reflect on client care” (p. 482). While acknowledging these similar features, it can be seen that same label (“clinical reasoning”) may be used across different theories to mean different things; clinical reasoning that focuses on cognitive processes will include different characteristics than a definition that focuses on relational aspects of reasoning (Gordon et al., 2022). Identification of specific distinguishing features is thus essential to communication about reasoning as a construct.

Instead of focusing on unique or specific qualities of reasoning in the profession, theorists have often focused on modes or types of reasoning. Commonly described modes of reasoning in occupational therapy include narrative (Mattingly, 1991a), procedural, interactive, and conditional (Fleming, 1991b), scientific, narrative, and pragmatic (Schell & Cervero, 1993), and generalization reasoning (Unsworth, 2005). These types have continued to expand and become more niche, clarifying for the field what therapists are reasoning about. A systematic review of clinical reasoning even considered “what is professional reasoning” and “types of reasoning” to be one combined topic area/theme of the literature base in occupational therapy (Unsworth &

Baker, 2016). However, this does not clarify what reasoning itself *is*, and often leads to definitions by example that do not include specific features, meaning much of the literature referencing these theorists may not be explicit in defining the construct of reasoning. When sufficiently clear and detailed definitions are assumed, rather than explicit, communication is muddled across literature on this key professional skill.

Constructing a Definition of Reflection

Reflection arose as a construct largely in the field of education, described as “active, persistent and careful consideration of any belief [...] in the light of the grounds that support it and the further conclusion to which it tends” (Dewey, 1933, p. 9). Unfortunately, in attempts to measure and study reflection, the construct is often reduced to component parts, limiting the expansive potential of the construct for such a complex field like occupational therapy (Wong et al., 2016).

There are a variety of labels used to describe constructs related to reflection, including reflective practice, reflexivity, and critical reflection. These labels are not always clearly distinguished from one another in literature. Schön (1983), who translated literature on reflection in educational contexts to the context of professional practice, wrote about reflective practice. He considered reflective practice to include both reflection-in-action, which occurs during practice, and reflection-on-action, which occurs retrospectively. Since then, “reflective practice” and “reflection” have often been used interchangeably, or in a way that suggests reflective practice is simply practice that involves reflection (Wong et al., 2016), creating inconsistency across labels for these related constructs. Kinsella (2001), in describing reflective practice, noted that regardless of how it is conceptualized, reflective practice is “a broad and complex notion” (p. 196). Later, Kinsella and Whiteford (2010) wrote that “reflexivity” is the construct that combines

reflection with a critical dimension that interrogates social constructs. However, others refer to this as “critical reflection” (Brookfield, 2009; Lundgren & Poell, 2016). Authors do not always explicitly delineate which construct they intend to reference when using a reflection-related label.

Reflection has also been put into a variety of superordinate categories. For example, reflection has been categorized as a type of evaluation (Wong et al., 2016) and as intellectual and affective activities (Boud et al., 1985). As noted above, reflection has also been put under the umbrella category of reflective practice (Schön, 1983), which itself has been categorized, among other things, as a theory of professional development (Wong et al., 2016) and an epistemology of practice (Fragkos, 2016). These superordinate categories suggest a variety of expansive ways of thinking about reflection in health professional practice.

Finally, specific distinguishing characteristics of reflection vary. Literature within occupational therapy often does not clearly articulate a specific conceptualization of reflection, or else describes it in simplistic terms (Kinsella, 2001). If a conceptualization of reflection is given, authors tend to highlight the complexity of the construct (Bannigan & Moores, 2009). Schön (1983) described reflective practice as a “dialogue of thinking and doing through which I become [...] more skillful” (p. 31), describing the process of reflection as applied to professional practice. Reflection has also been described more specifically in relation to content (what you are thinking about) and process (how you are thinking) in health professional literature, and is discussed as occurring following a triggering event or critical incident (Fragkos, 2016; Nguyen et al., 2014). Although reflection could be considered a term that needs no definition in academic literature, the nuances of this skill in relation to professional competence make it worth explicitly defining.

The Present Study

Clear conceptualizations of reasoning and reflection – key professional skills – are necessary for communication about these skills in education and practice. It is worth acknowledging that a sole focus on definitional agreement would slow progress in this area, and work has been progressing to focus on how to measure these constructs (Benfield & Johnston, 2023). However, recent reviews focus on literature that is primarily about a singular construct of interest (i.e., reasoning or reflection), and do not include the larger body of literature in the profession that might define these constructs (da Silva Araujo et al., 2022; Márquez-Álvarez et al., 2019; Marshall, 2019). Further, we were unable to identify existing work differentiating reasoning and reflection in occupational therapy, and much of the existing literature conflates them. Clear definitions are needed to communicate a theory of professional skills that includes both reasoning and reflection (Mosey, 1996). The aim of this scoping review was therefore to understand how reasoning and reflection are defined, and therefore differentiated, in occupational therapy literature.

Method

Scoping reviews are indicated when aiming to “examine and clarify definitions that are used in the literature” (Munn et al., 2018, p. 3). Therefore, a scoping review was conducted to identify occupational therapy literature that defines reasoning and reflection. This study was conducted following Arksey and O’Malley’s (2005) scoping review framework as revised by Levac and colleagues (2010) and consistent with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018).

The question guiding this review was: *what is known from the literature about how occupational therapists define reasoning and reflection?* Our search included the following databases: CINAHL, PubMed, PsycINFO, Web of Science, Embase, and MEDLINE. We used search terms related to reasoning and reflection, as listed in Table 2.1, along with “occupational therap*.” The search covered the timeframe up to August, 2021.

Table 2.1

Search Terms

Search Terms Related to Reasoning	Search Terms Related to Reflection
Clinical reasoning	Critical reflection
Professional reasoning	Reflective thinking
Critical thinking	Reflectiveness
	Reflective practice

Note. All search terms were used in conjunction with “occupational therap*”.

Inclusion criteria were: peer-reviewed; relates to occupational therapy (i.e., explicitly references occupational therapists/therapy); and, defines clinical reasoning, professional reasoning, critical thinking, reflective practice, reflection, or critical reflection. Articles were excluded if they were not available in English. Covidence software (Veritas Health Innovation, 2018) was used to organize the review. The initial search returned 3,023 articles after duplicates were removed. With my committee chair, I conducted screening of titles and abstracts; we required consensus only for the first 10 articles. Because of this, screening erred on the side of being inclusive to ensure relevant studies were not prematurely excluded. Then myself and at least one other review completed full-text screening on each article, and conflicts were reviewed either by a third reviewer or through reviewer consensus. During full-text review we found that some articles discussed reasoning or reflection in relation to the research process (i.e., reflexivity in qualitative research), which was not within the intended scope of this review. Therefore, I

added a *post hoc* exclusion criteria: definitions for the terms of interest must be related to occupational therapy practice and/or education.

Creation of an extraction table was an iterative process following usability testing and familiarization with the included articles. The final chart included the following fields: authors, publication year, source country, relationship to occupational therapy, definition of relevant terms (including associated references for given definitions), and any other relevant terms (and associated definitions) used by article authors to describe professional skills. Definitions that authors discussed but clearly did not agree with were not extracted. Myself and at least one other reviewer engaged in extraction for each article independently; subsequently I reviewed all decisions for consistency. I met frequently with my co-reviewers throughout this process to discuss and resolve any conflicts in the data extraction. I conducted descriptive analysis to identify specific article characteristics. For analysis of the definitions of terms, the extraction table next included each component of a definition from Mosey (1996): label, superordinate category, and distinguishing characteristics. From the original search plan, I explored three construct labels related to reasoning (clinical reasoning, professional reasoning, and critical thinking) and three construct labels related to reflection (reflection, reflective practice, and critical reflection). I then visually mapped categories and characteristics to compare the data.

Results

Ultimately I included 123 articles in this review; the PRISMA flow chart (Figure 2.1) outlines the number of studies included at each stage. Included articles were published between 1987 and 2021. Articles defining clinical reasoning span this time frame, with definitions of critical thinking first appearing in 1991, reflection in 1995, reflective practice in 2000, and professional reasoning in 2010 (Figure 2.2). Across terms, articles were published around the

world, with 51% of articles coming from North America ($n = 74$), 16% from Oceania ($n = 23$), 14% from Europe ($n = 20$), 2% from Africa ($n = 3$), 1% from Asia ($n = 2$), and 1% from South America ($n = 1$). Article type varied across each term, with the majority describing qualitative designs ($n = 40$), theoretical papers ($n = 27$), quantitative designs ($n = 22$), and programs ($n = 19$). There were also mixed methods studies ($n = 16$), literature reviews ($n = 10$), case studies ($n = 6$), and papers describing measure development ($n = 5$). Descriptive information on each included article appears in Table 2.2.

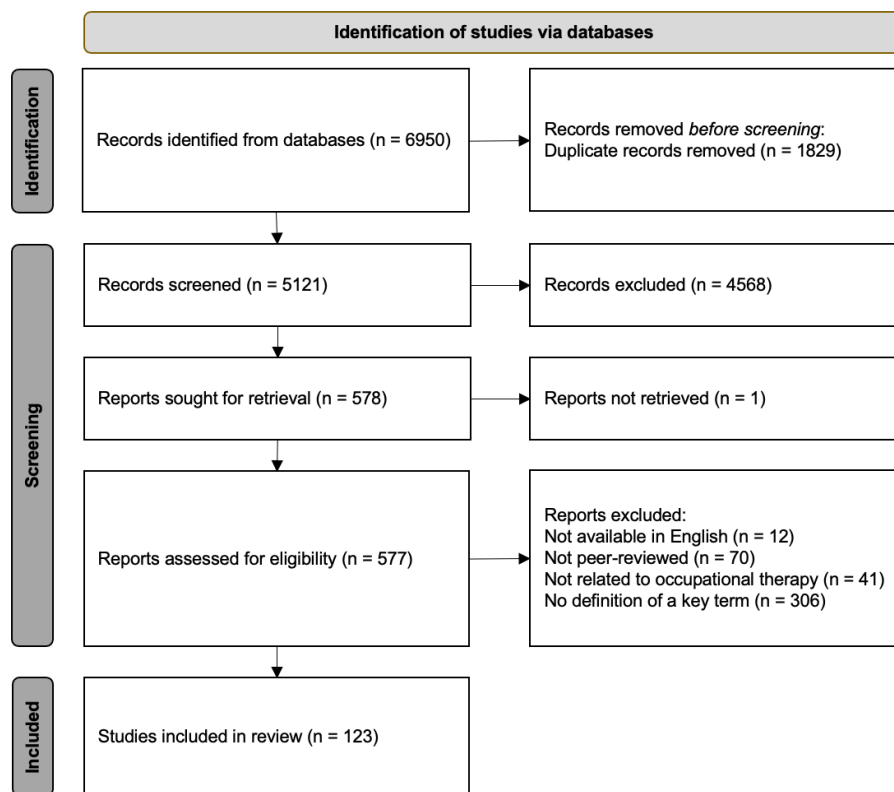


Figure 2.1

Flow Diagram for Inclusion of Peer-Reviewed Studies in the Scoping Review

Note. Figure format from: “The PRISMA 2020 statement: an updated guideline for reporting systematic reviews,” by M. Page, J. McKenzie, P. Bossuyt, I. Boutron, T. Hoffmann, C. Mulrow, et al.; 2021, British Medical Journal, 372(71). doi: 10.1136/bmj.n71.

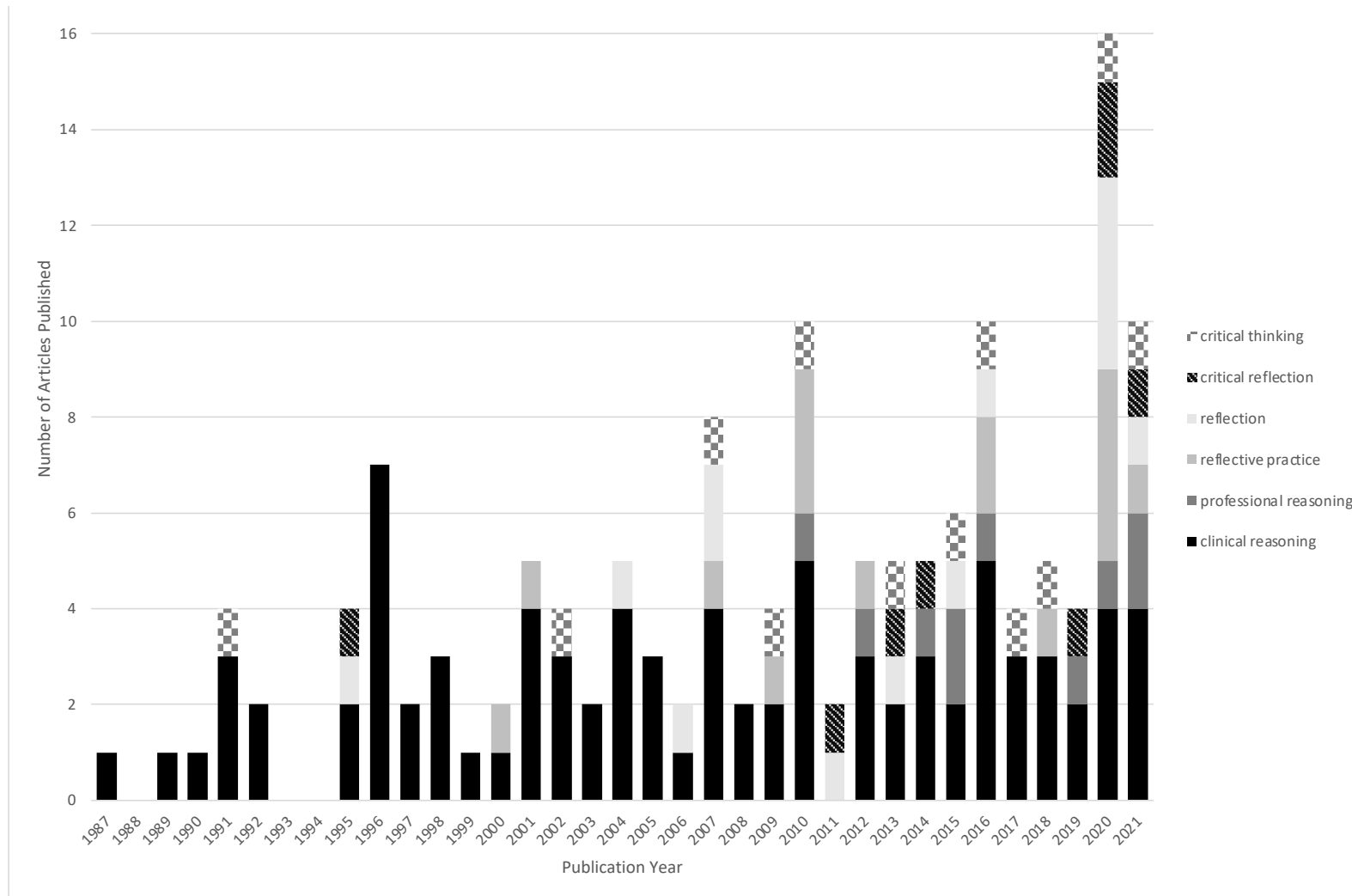


Figure 2.2

Publication Trends Related to Professional Skills in Occupational Therapy

Table 2.2*Descriptive Characteristics of Articles Included in Analysis*

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
1	Alnervik & Svidén (1996)	Sweden	Mixed Methods	Examine descriptions of treatment when therapists are invited to storytelling or reflection on practice	Clinical reasoning
2	Andrews (2000)	England	Case Study	Demonstrate impact of reflective practice on learning for a third-year occupational therapy student	Reflective practice
3	Arnold et al. (2019)	Australia	Qualitative	Describe current practice for estimating domestic assistance hours in a medicolegal context	Clinical reasoning
4	Arntzen (2018)	Norway	Theoretical	Explore the situated and embodied aspects of clinical reasoning in occupational therapy practice	Clinical reasoning
5	Artioli et al. (2021)	Italy	Literature Review	Identify experiences of health professionals and students in applying reflective writing during their education	Reflection
6	Atler & Gavin (2010)	US	Mixed Methods	Explore how service-learning experiences impact student perceptions of their abilities	Critical thinking
7	Bailey & Cohn (2002)	US	Program Description	Describe an occupational therapy course on interactive and phenomenological aspects of clinical reasoning	Clinical reasoning
8	Bannigan & Moores (2009)	Canada	Theoretical	Consider reflective practice and evidence-based practice as complementary aspects of professional thinking	Clinical reasoning, reflective practice
9	Barris (1987)	US	Qualitative	Describe psychosocial occupational therapy evaluation	Clinical reasoning
10	Bazyk et al. (2010)	US	Qualitative	Explore service learning for occupational therapy students working with groups of low-income urban youth attending after-school care	Professional reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
11	Benfield & Johnston (2020)	US	Measure Development	Develop a measure of evidence-informed professional thinking	Clinical reasoning, professional reasoning
12	Berg et al. (2021)	US	Literature Review	Determine how critical thinking is defined and taught in healthcare education	Clinical reasoning, critical thinking, critical reflection
13	Bottari et al. (2014)	Canada	Qualitative	Examine clinician reasoning when observing clients with acquired brain injury vs. healthy controls making errors in the performance of everyday activities	Clinical reasoning
14	Britton et al. (2016)	Australia	Qualitative	Describe practice challenges in Western Australia's acute hospital system when striving to meet fiscal accountability expectations	Clinical reasoning
15	Carrier et al. (2020)	Canada	Qualitative	Describe elements involved in the clinical reasoning of community occupational therapists	Clinical reasoning
16	Carrier et al. (2012)	Canada	Qualitative	Explore clinical reasoning process of occupational therapists that underly their choice of strategy for teaching transfers to older adults	Clinical reasoning, reflective practice
17	Carrier et al. (2010)	Canada	Literature Review	Synthesize current knowledge about community occupational therapist clinical reasoning	Clinical reasoning
18	Chaffey et al. (2010)	Australia	Qualitative	Explore the use of intuition by mental health occupational therapists	Clinical reasoning
19	Cheung et al. (2018)	Singapore	Qualitative	Explore how occupational therapists make decisions with female homemakers with upper limb repetitive strain injury	Clinical reasoning
20	Cohn (1989)	US	Theoretical	Propose strategies to teach technical skills and provide a foundation for clinical reasoning	Clinical reasoning
21	Coviello et al. (2019)	US	Qualitative	Explore how occupational therapy assistant students view clinical reasoning and what prompts its development on Level II fieldwork	Clinical reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
22	Crabtree (1998)	Australia	Theoretical	Discuss clinical reasoning in occupational therapy	Clinical reasoning
23	Crabtree & Lyons (1997)	Australia	Case Study	Investigate styles of clinical reasoning used by an occupational therapist in a large public hospital	Clinical reasoning
24	Cross et al. (2004)	UK	Program Description	Describe how a workshop operationalized reflection to increase self-efficacy and motivation to engage with continued professional development	Reflection
25	Crowe (2014)	US	Qualitative	Explore the professional reasoning process of an occupational therapist using a multi-sensory environment to treat clients with dementia	Professional reasoning
26	de Beer & Mårtensson (2015)	South Africa	Mixed Methods	Determine how supervisors' feedback influences student clinical reasoning during fieldwork	Clinical reasoning
27	de Beer & Vorster (2012)	South Africa	Mixed Methods	Determine which elements of interpersonal communication between supervisor and student support student clinical reasoning during fieldwork	Clinical reasoning
28	Dennis et al. (2015)	US	Theoretical	Discuss how occupational health is related to the environment and propose use of a sustainability lens	Clinical reasoning, professional reasoning
29	Dougherty et al. (2016)	US	Qualitative	To define evidence used in everyday practice and how it is used and reflected in documentation	Clinical reasoning
30	Doumanov & Rugg (2003)	England	Qualitative	Identify factors guiding clinical reasoning of occupational therapists vs. occupational therapy support staff for the elderly in a community rehabilitation setting	Clinical reasoning
31	Doyle et al. (2014)	US	Qualitative	Explore decision making of occupational therapists addressing upper limb post-stroke sensory impairments	Clinical reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
32	Du Toit & Wilkinson (2010)	South Africa	Qualitative	Describe an AR experiential learning process for students	Reflective practice
33	Dubroc & Pickens (2015)	US	Qualitative	Investigate how occupational therapists develop clinical reasoning expertise in home modifications	Professional reasoning
34	Dunn & Musolino (2011)	US	Measure Development	Validate the Reflective Thinking Questionnaire (QRT) and Revised Study Process Questionnaire (RSPQ-2F) for U.S. health professions students enrolled in entry-level, graduate physical and occupational therapy programs	Reflection, critical reflection
35	Fisher (1997)	US	Theoretical	Describe the role of clinical reasoning in ethical practice during health care reform	Clinical reasoning
36	Fitzgerald & MacCobb (2017)	Ireland	Program Description	Describe the collaborative generation of scholarship of practice between an academic program and an education department to implement the Alert Program	Clinical reasoning
37	Flemming et al. (2021)	Canada	Quantitative	Describe assessments, clinical reasoning, and confidence of occupational therapists determining the need for clients to have 24-hour supervision	Clinical reasoning
38	Fondiller et al. (1990)	US	Qualitative	Identify values that influence clinical reasoning	Clinical reasoning
39	Fone (2006)	Australia	Program Description	Describe an information package for supporting the supervision process	Reflection
40	Fortune & Ryan (1996)	England	Program Description	Present a caseload management system for community occupational therapists	Clinical reasoning
41	Foucault et al. (2018)	Canada	Quantitative	Characterize ePortfolio use, evaluate ease of use and impact on professional competence, and explore differences between novice and experienced occupational therapists regarding ePortfolios	Reflective practice

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
42	Garcia et al. (2021)	Chile	Quantitative	Examine factors that influence evidence-based practice uptake by Chilean occupational therapists	Clinical reasoning
43	Gee et al. (2017)	US	Quantitative	Outline how to develop and describe a clinical simulation measurement tool to capture student clinical reasoning	Clinical reasoning, critical thinking
44	Gibson et al. (2000)	US	Qualitative	Describe novice vs. experienced therapists' clinical reasoning when creating goals	Clinical reasoning
45	Greber et al. (2007)	Australia	Theoretical	Describe the Four-Quadrant Model of Facilitated Learning	Clinical reasoning
46	Guy et al. (2020)	Australia	Mixed Methods	Describe to what extent reflective practice is facilitated within occupational therapy supervision processes	Reflective practice
47	Hall et al. (1992)	US	Theoretical	Outline the clinical reasoning process guiding the provision of occupational therapy services in the Wake County Public School System in North Carolina	Clinical reasoning
48	Hansen (2013)	US	Qualitative	Use the service learning pedagogy to explore how occupational justice theory is linked to practice	Clinical reasoning
49	Hinojosa & Howe (2016)	US	Program Description	Present the ePortfolio used by the New York University Department of Occupational Therapy for a post professional practice doctorate	Reflection
50	Jeffery et al. (2021)	New Zealand	Qualitative	Explore development of evidence-based practice in novice occupational therapists in New Zealand	Professional reasoning, reflective practice
51	Keponen & Launiainen (2008)	Finland	Program Description	Describe an approach developed by the authors at Helsinki Polytechnic for teaching clinical reasoning based on the Model of Human Occupation	Clinical reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
52	Kinsella (2001)	Canada	Theoretical	Present six considerations for occupational therapists to think about and begin to develop reflective practices	Reflective practice
53	Knecht-Sabres (2010)	US	Mixed Methods	Examine if integration of experiential learning opportunities impacts student clinical reasoning	Clinical reasoning
54	Knecht-Sabres (2013)	US	Mixed Methods	Examine effectiveness of experiential learning opportunities near the end of the occupational therapy students' didactic education	Clinical reasoning
55	Knightbridge (2014)	Australia	Quantitative	Understand the experiential learning that occurred during an alternative practice education experience and its impact on entry-level competency, personal growth, and future practice	Critical reflection
56	Knis Matthews et al. (2017)	US	Theoretical	Place clinical reasoning in a historical context; propose the Matthews Model of Clinical Reasoning	Clinical reasoning
57	Kramer et al. (2007)	US	Program Description	Discuss learning-centered approaches used within an occupational therapy program	Clinical reasoning, critical thinking
58	Kristensen et al. (2012)	Denmark	Qualitative	Investigate aspects affecting occupational therapist reasoning in stroke rehabilitation when implementing research-based evidence	Clinical reasoning
59	Kristensen & Peterson (2016)	Denmark	Theoretical	Discuss connections between occupational science and clinical reasoning, theory, and curriculum	Clinical reasoning
60	Krueger et al. (2020a)	US	Quantitative	Identify factors associated with evidence-based practice implementation in occupational therapy	Reflective practice, reflection
61	Krueger et al. (2020b)	US	Qualitative	Identify practice experiences that trigger self-reflection in occupational therapists, how occupational therapists utilize reflection, and how reflection relates to actions	Reflective practice, reflection, critical reflection

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
62	Kuipers & Grice (2009)	Australia	Mixed Methods	Explore how occupational therapists structure their clinical reasoning related to upper limb rehabilitation	Clinical reasoning
63	Leicht & Dickerson (2002)	US	Theoretical	Describe the occupational therapy clinical reasoning process compared to that of medicine and nursing	Clinical reasoning
64	Lowe et al. (2007)	Canada	Case Study	Examine whether or not and when health professionals use reflection when implementing learning into practice	Reflection
65	Lysaght & Bent (2005)	US	Mixed Methods	Explore case presentation impacts on clinical reasoning	Clinical reasoning
66	Márquez-Álvarez et al. (2021)	Spain	Quantitative	Identify occupational therapy undergraduates' perspectives of improving professional reasoning	Professional reasoning
67	Márquez-Álvarez et al. (2019)	Spain	Literature Review	Identify and describe the scientific publications on professional reasoning	Professional reasoning
68	Marterella & Aldrich (2015)	US	Theoretical	Argue that educating students in qualitative inquiry helps instill habits that support ethical, well-reasoned practice	Reflection
69	Mattingly (1991)	US	Theoretical	Describe a new definition of clinical reasoning in occupational therapy	Clinical reasoning
70	Mattingly & Gillette (1991)	US	Theoretical	Consider impact of collaborative research process of on understanding of clinical reasoning in occupational therapy	Clinical reasoning
71	McCannon et al. (2004)	US	Mixed Methods	Investigate occupational therapy student clinical reasoning during a problem-based learning case study	Clinical reasoning
72	McCarron & D'Amico (2002)	US	Mixed Methods	Determine if using problem-based learning influences occupational therapy student clinical reasoning	Clinical reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
73	McGrath et al. (2010)	Ireland	Program Description	Report on web-based learning technologies to support practice education	Clinical reasoning
74	Mew & Fossey (1996)	Australia	Case Study	Describe one therapist's clinical reasoning related to client-centered practice when using the Canadian Occupational Performance Measure	Clinical reasoning
75	Miller et al. (2001)	Canada	Measure Development	Describe development of the Competency Based Fieldwork Evaluation (CBFE)	Clinical reasoning
76	Mitchell & Unsworth (2004)	Australia	Quantitative	Describe the work and clinical reasoning of metropolitan community health occupational therapists in Victoria	Clinical reasoning
77	Mitchell & Unsworth (2005)	Australia	Mixed Methods	Examine differences between novice and expert community health occupational therapist clinical reasoning	Clinical reasoning
78	Mjøsund et al. (2021)	Norway	Qualitative	Explore how healthcare providers in a Norwegian rehabilitation context integrate physical activity into clinical reasoning	Clinical reasoning
79	Mostert et al. (1996)	Australia	Case Study	Demonstrate use of narrative reasoning, show how treatment can influence perceptions of illness experience	Clinical reasoning
80	Mu et al. (2010)	US	Program Description	Describe two international learning programs at Creighton University and report on outcomes of each	Clinical reasoning
81	Murphy & Stav (2018)	US	Quantitative	Examine effect of online video cases and a clinical reasoning activity on development of clinical reasoning skills in entry-level occupational therapy students	Critical thinking
82	Neistadt (1992)	US	Quantitative	Identify if a classroom-as-clinic in an entry-level master's degree program improves student clinical reasoning	Clinical reasoning
83	Neistadt (1996)	US	Theoretical	Review clinical reasoning teaching strategies	Clinical reasoning

Ref # ^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
84	Neistadt (1998)	US	Quantitative	Examine effects of clinical reasoning thinking frame on student ability to articulate and apply clinical reasoning	Clinical reasoning
85	Neistadt & Atkins (1996)	US	Program Description	Explore if didactic preparation emphasizes procedural more than narrative reasoning relative to adult physical dysfunction diagnoses	Clinical reasoning
86	Neistadt et al. (1998)	US	Qualitative	Determine whether clinical reasoning case studies are more effective teaching tools than traditional case studies	Clinical reasoning
87	Ng et al. (2020)	Canada	Qualitative	Explore what critical reflection or critically reflective practice consist of in the school-based health care context	Reflective practice, reflection, critical reflection
88	Nicola-Richmond et al. (2016)	Australia	Mixed Methods	Explore threshold concepts within occupational therapy	Clinical reasoning, reflective practice
89	Nielsen et al. (2020)	US	Quantitative	Compare traditional and nontraditional Level I fieldwork experiences related to critical thinking skills	Critical thinking
90	Nikopoulou-Smyrni & Nikopoulos (2007)	UK	Quantitative	Describe and share preliminary data on a new integrated clinical reasoning model (i.e., Anadysis) with patients suffering a stroke	Clinical reasoning
91	Oldenburg et al. (2020)	US	Quantitative	Compare changes in clinical reasoning for rehabilitation fieldwork students in a 3:1 collaborative vs 1:1 traditional learning model	Clinical reasoning
92	Paterson & Adamson (2001)	Canada	Quantitative	Understand how students in different countries learn formally and informally about clinical reasoning	Clinical reasoning
93	Pereira et al. (2019)	Australia	Case Study	Explore application of the <i>Capabilities, Opportunities, Resources and Environments (CORE)</i> approach in three Australian occupational therapy practice settings	Critical reflection

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
94	Preston et al. (2018)	UK	Program Description	Report on an improvement test of change introduced within one ambulance station in Scotland	Clinical reasoning
95	Reid (2013)	Canada	Quantitative	Examine how an 8-week online curriculum impacted mindfulness for occupational therapy graduate students	Reflection
96	Robertson (1996)	New Zealand	Mixed Methods	Identify educational strategies that could be used to assist students to develop clinical reasoning skills	Clinical reasoning
97	Royeen (1995)	USA	Program Description	Discuss the need for change in occupational therapy education to prepare students and present a problem-based learning experience as one solution	Clinical reasoning, critical reflection
98	Royeen (2020)	USA	Theoretical	Define and contextualize metaemotion of occupation	Reflection
99	Scaffa & Wooster (2004)	USA	Quantitative	Determine effects of a problem-based learning course on the development of clinical reasoning skills of undergraduate occupational therapy students	Clinical reasoning
100	Schaber & Shanedling (2012)	USA	Quantitative	Measure changes in student critical thinking over a semester in a cyclical online theory course	Professional reasoning
101	Schwartz (1991)	USA	Theoretical	Examine shared themes from clinical reasoning studies and discuss related implications for occupational therapy	Clinical reasoning, critical thinking
102	Shafaroodi et al. (2014)	Iran	Qualitative	Identify and evaluate factors affecting occupational therapist clinical reasoning	Clinical reasoning
103	Stewart (2001)	Scotland	Program Description	Describe occupational therapist contributions to a computer simulation of care for fractured hips	Clinical reasoning
104	Strong et al. (1995)	Australia	Qualitative	Explore differences in clinical reasoning between expert occupational therapists and students	Clinical reasoning

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
105	Taylor et al. (2007)	UK	Program Description	Describe adoption of information and communication technologies in occupational therapy and a computer aided case-based reasoning tool for community occupational therapists assisting clients to choose home electronic assistive or smart house technology	Clinical reasoning
106	Toth-Cohen (2008)	USA	Qualitative	Examine clinical reasoning in context	Clinical reasoning
107	Tryssenaar (1995)	Canada	Qualitative	Discuss interactive journals as a strategy to promote reflection related to mental health	Reflection
108	Unsworth (2001)	Australia	Mixed Methods	Examine differences between novice and expert occupational therapist clinical reasoning in inpatient physical rehabilitation	Clinical reasoning
109	Unsworth (2004)	Australia	Qualitative	Explore clinical reasoning and client-centered practice, examine pragmatic reasoning, and present a diagrammatic conceptualization of clinical reasoning	Clinical reasoning
110	Unsworth (2005)	Australia	Qualitative	Explore conceptualizations and use of clinical reasoning in occupational therapy using a novel video approach	Clinical reasoning
111	Unsworth & Baker (2016)	Australia	Literature Review	Describe professional reasoning literature in occupational therapy	Clinical reasoning, professional reasoning, critical thinking
112	Vachon et al. (2010a)	Canada	Qualitative	Explore the clinical decision-making processes and reflective process used by occupational therapists who had taken a four-day continuing education program	Reflective practice
113	Vachon et al. (2010b)	Canada	Qualitative	Explore occupational therapists' ability to use reflective learning to ameliorate use of research evidence	Reflective practice

Ref #^a	Authors (Year)	Source Country	Nature of Scholarship	Aim/Purpose	Defined Terms of Interest
114	Velde et al. (2006)	USA	Quantitative	Investigate critical thinking of two groups of occupational therapy students	Clinical reasoning
115	Vogel et al. (2009)	USA	Quantitative	Explore differences in critical thinking skills of occupational and physical therapy students over the course of their academic program	Critical thinking
116	Vroman & MacRae (1999)	USA	Theoretical	Explore problem-based learning in occupational therapy education	Clinical reasoning
117	Ward (2003)	USA	Qualitative	Present a study of clinical reasoning in group psychosocial occupational therapy practice	Clinical reasoning
118	Whalley Hammel (2013)	Canada	Theoretical	Encourage occupational therapists to engage in critical reflection on client-centered practices	Critical thinking, critical reflection
119	Whalley Hammell (2015)	USA	Theoretical	Persuade occupational therapists of the importance of critical thinking regarding client-centered practices	Critical thinking
120	Wittman & Velde (2002)	USA	Theoretical	Argue that cultural competence, critical thinking, and intellectual development are inter-relational and must be taught in occupational therapy curricula	Critical thinking
121	Wong et al. (2016)	UK	Theoretical	Elucidate problems that arise teaching and learning reflection in a rote manner and suggests for improvement	Reflective practice
122	Young et al. (2020)	Canada	Literature Review	Determine how clinical reasoning is described in health professional education	Clinical reasoning
123	Zimmerman et al. (2007)	USA	Program Description	Share student evaluation process used to facilitate development of personal and professional skills necessary to successful practice in occupational therapy	Reflective practice, reflection

^a These reference numbers are used to refer to the articles throughout this manuscript and the included tables.

Reasoning and Related Constructs in Occupational Therapy Literature

Clinical Reasoning

Of the articles included in this review, 85 offered a definition for the label “clinical reasoning,” the most of any of the listed terms (Table 2.3). Citations that authors gave for definitions of clinical reasoning varied greatly (see Appendix B for citations of references in included articles). The text *Clinical Reasoning in the Health Professions* (Higgs et al., 2008, 2018; Higgs & Jones, 2000) and specific chapters within this text (Chapparo & Ranka, 2000, 2008; Higgs & Jones, 2008) were cited in 15 articles (4, 8, 17, 31, 43, 45, 58, 59, 73, 76, 77, 78, 105, 108, 114), with other of Higgs’ work (1990, 1992, 2003) cited in four articles (51, 79, 104, 109) and a dissertation from Jones and Higgs (2000) cited once (37). The next most cited text ($n = 10$) was Mattingly & Fleming’s (1994) work, *Clinical Reasoning: Forms of Inquiry in a Therapeutic Practice* (18, 26, 27, 37, 76, 77, 83, 84, 106, 110), with other articles by Mattingly (1991a, 1991b) and Fleming (1991a, 1991b, unpublished) cited across nine articles (1, 23, 35, 40, 65, 74, 86, 101, 116). A variety of publications by Schell and colleagues (Schell, 2003, 2009, 2014, 2019; Schell et al., 2014; Schell & Cervero, 1993; Schell & Schell, 2008) was cited in 17 articles (14, 15, 16, 17, 19, 21, 27, 28, 36, 42, 43, 48, 53, 54, 56, 57, 84). Five articles cited scholarship from Rogers (1982; 1983; 9, 12, 44, 62, 111) and from Neistadt (Neistadt, 1998; Neistadt et al., 1998; 14, 43, 63, 71, 80), three cited Unsworth (1999, 2001; 3, 94, 109), and two each cited Dowie and Elstein (1988; 37, 108) and Hagedorn (1997; 90, 103). Twenty-three additional citations for the definition of clinical reasoning appeared only once each in the included articles.

Table 2.3*Explicit Definitions of Clinical Reasoning*

Ref #^a	Clinical Reasoning...	Citation(s)
1	"on both occasions reflected the capacity to give reasons for any particular intervention grounded in medical knowledge and to extract from his or her repertoire of interventions proven to be effective in treatment" (p. 109)	Fleming (1991b)
3	is "the process by which therapists plan, conduct and reflect on their clinical practice" (p. 245)	Unsworth (2001)
4	is "a context-dependent way of thinking and decision making in health professional practice. The process of clinical reasoning utilizes the three core dimensions of practice knowledge, cognitive and reflexive inquiry, and metacognition" (p. 174)	Higgs et al. (2008)
7	"involves making judgments that are specific to a context, about how to provide intervention for a particular person, in a particular place and time. [Clinical reasoning] is the process therapists use to frame problems, make sense of where they can go with particular clients, and decide what to do in the midst of practice. Clinical reasoning is a complex thinking process that happens over time; it is an interactive and unfolding process over the entire course of therapy." (p. 32)	None
8	"is 'a process in which the clinician, interacting with significant others (client, caregivers, health care team members), structures meaning, goals, and health management strategies based on clinical data, client choices, and professional judgement and knowledge'" (p. 343)	Higgs & Jones (2000)
9	"is an ongoing, interactive process of decision making, involving art, science, and ethics" (p. 148)	Rogers (1983)
11	"is the process by which therapists 'collect cues, process the information, come to an understanding of a patient problem or situation, plan and implement interventions, evaluate outcomes and reflect on and learn from the process'" (p. 310)	Levett-Jones et al. (2010)
12	"is the process by which a healthcare professional gathers diagnostic, procedural, scientific, pragmatic, ethical and client narrative information to make a judgment on how to therapeutically intervene" (p. 1)	Rogers (1983)

Ref #^a	Clinical Reasoning...	Citation(s)
13	is "the process of thought used when making a clinically oriented decision when faced with a novel situation [...] The analytical process includes a 'hypothetico-deductive process' whereby a possible solution to a clinical problem is envisioned (the hypothesis). To evaluate a hypothesis, the clinician accesses his or her knowledge base (theoretical knowledge) associated with the observed clinical signs" (pp. E18-E19)	Nendaz et al. (2005); Nendaz et al. (2012)
14	"can be viewed as the thinking framework through which therapists organise and support their clinical thinking" (p. 262)	Neistadt (1998); Schell & Cervero (1993)
15	is "'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 1210)	Schell (2009)
16	is "'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 355)	Schell (2009)
17	is "the way [occupational therapists] solve problems and make decisions [and] 'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 356)	Schell (2009); Higgs & Jones (2008); Ikiugu (2007)
18	"is a complex notion concerned with the ways in which therapists think in practice" (p. 300)	Mattingly & Fleming (1994)
19	is "'the process that practitioners use to plan, direct, perform, and reflect on client care". Within the context of this article, it means how therapists plan and implement ergonomic education in housework to facilitate behavior change in their clients based on their understanding, experiences and reflection of their clients' perspectives" (p. 3137)	Schell (2009)
20	is "having a reason for connecting a particular treatment decision to a particular frame of reference. [...] Clinical reasoning is based on our knowledge of procedures, interactions with patients, and interpretation and analysis of the evolving situation. It is a complex process dependent upon years of experience" (p. 241)	None
21	"is the process by which therapists collect information; develop an understanding of clients' needs; and then plan, direct, perform, and reflect on client care" (p. 1)	Cronin & Graebe (2018); Schell & Schell (2008)
22	is "information processing, thinking in stories and [...] an interpersonal process" (p. 114)	None
23	is "'a largely tacit, highly imagistic, and deeply phenomenological mode of thinking'" (p. 57)	Mattingly (1991b)
26	"is a complex thinking and doing process that requires memory, critical, creative and practical reasoning skills" (p. 255)	Mattingly & Fleming (1994), Sternberg (2002)

Ref #^a	Clinical Reasoning...	Citation(s)
27	"is a complex and multifaceted process and comprises interactive, scientific, narrative, pragmatic, ethical and conditional reasoning skills" (p. 21)	Scaffa & Wooster (2004), Mattingly & Fleming (1994), Schell & Cervero (1993)
28	"refers to the processes that therapists use to plan, carry out, and evaluate client care " (p. 163)	Schell (2014)
29	is "the ability to synthesize information (from theory, internalized knowledge, and occupational analyses)" (p.293)	None
30	is "an infinitely subtle and complex skill that enables professionals to make decisions within their own field of expertise using the working knowledge they have acquired over time [that] is based on both clinical experience and theoretical principles, which are embedded in professionals' knowledge base but may remain highly subjective" (p. 196)	Fish & Coles (1998)
31	"is the overarching thinking process utilized throughout practice [...] the cognitive process used to arrive at clinical decisions" (p. 216)	Higgs & Jones (2008), Smith et al. (2008)
35	"is an 'interpretive judgment' skill which must be developed [...] it involves an examination by the therapist of all appropriate factors, and the making of a decision on how to progress with the care of a patient" (p. 33)	Mattingly (1991b)
36	"is the process used by practitioners to plan, direct, perform and reflect on practice" (p. 270)	Schell (2003)
37	"encompasses different styles of thinking and decision making" (p. 77)	Dowie & Elstein (1988), Jones & Higgs (2000), Mattingly & Fleming (1994)
38	"essentially a decision-making process [...] directed to a specific, practical end - a right action for a particular patient, given that person's situation at the time of the decision" (p. 42)	Pellegrino & Thomasma (1981)
40	"is a 'largely tacit, highly [imagistic] and deeply phenomenological mode of thinking'. This thinking demands consideration of an individual's particular circumstances and the unique meaning of that circumstance for the individual or family" (p. 208)	Mattingly (1991b)
42	"is [...] 'the process used by practitioners to plan, direct, perform and reflect on client care'" (p. 170)	Schell (2019)

Ref #^a	Clinical Reasoning...	Citation(s)
43	is "the thought process used by occupational therapists during evaluation and intervention to design, implement, and modify a therapeutic plan of care [...] 'the process of how therapists make sense of clinical situations and how they decide to proceed in therapy' [...] 'the process used by practitioners to plan, direct, perform, and reflect on client care' [...] a therapist's ability to take into consideration the needs, wishes, and ideals of the client" (p. 2)	Schell & Schell (2008), Neistadt (1998), Crabtree (1998), Higgs & Jones (2008)
44	is "the 'thinking that guides practice'" (p. 16)	Rogers (1983)
45	"is the process by which therapists integrate theory and practice" (p. S31)	Chapparo & Ranka (2000)
47	"is the problem-solving strategy used under conditions of uncertainty" (p. 928)	None
48	"is the process practitioners follow to plan, direct, perform and reflect on client care" (p. 44)	Schell & Schell (2008)
51	"refers to the professional thinking and decision making process for choosing the best possible action in a specific practice context" (p. 96)	Higgs (2003)
53	is "the thought process that clinicians use in practice that enables them to individualize client treatment, facilitate functional performance, and create positive outcomes for clients" (p. 321)	Neistadt et al. (1998) (1998)
54	is " the thought process that clinicians use in practice, which enables them to individualize client treatment, facilitate functional performance, and create positive outcomes for their clients" (p. 24)	Neistadt et al. (1998)
56	is "the 'process used by practitioners to plan, direct, perform and reflect on care'. Clinical reasoning is the cognitive mechanism that therapists use to create effective client-centered practices that are comprehensive and include an understanding of the client (their social/historical/cultural context), the practice context and the client/therapist interaction" (p. 360)	Schell et al. (2014); Atkins & Ersser (2000)
57	"is a complex process used by occupational therapists to 'plan, direct, perform, and reflect on client care'" (p. 187)	Schell (2003)
58	is "a context-dependent way of thinking and decision-making in professional practice to guide practice actions utilizing core dimensions of practice knowledge, reflexivity, reasoning, and metacognition" (p. 120)	Chapparo & Ranka (2008)

Ref # ^a	Clinical Reasoning...	Citation(s)
59	is "a context-dependent way of thinking and decision-making in professional practice to guide practice utilising core dimensions of practice knowledge, reflexivity, reasoning, and metacognition" (p. 241)	Chapparo & Ranka (2008)
62	"entails gathering information about many different aspects of the clinical situation, perceiving and interpreting salient cues, and then, on the basis of those cues and relevant knowledge, choosing the treatment strategy that is most likely to facilitate goal achievement" (p. 418)	Rogers (1983)
63	"is the complex thought process therapists use during all therapeutic interactions and is the main process used to integrate client assessment information and formulate an intervention plan" (p. 106)	Neistadt et al. (1998)
65	"is the embodiment of higher level, competent functioning that is seen in experienced clinicians who are able to integrate explicit professional knowledge with implicit, acquired knowledge of practice to produce skilled responses to a complex and varied range of presenting problems" (pp. 314-315)	Mattingly (1991b)
69	is "primarily directed not to a biological world of disease but to the human world of motives and values and beliefs - a world of human meaning [...] Clinical reasoning, taken in this sense, becomes applied phenomenology" (p. 983)	None
70	"is a thinking process that develops over time as therapists interact with patients [...] an unfolding process" (p. 974)	None
71	"is the thought process that clinicians use in practice that enables them to individualize client treatment, facilitate functional performance and create positive outcomes for their clients'" (pp. 160-161)	Neistadt et al. (1998)
72	is "'The process of ongoing, interactive reasoning related to one's clinical role and interaction with clients at an individual, group or population level' [and] 'clearly and critically analyzing the reasons for the decisions and actions we take' [...] a combination of scientific and practical knowledge used to develop interventions that are meaningful and goal-directed" (p. 2)	Christiansen & Baum (1997), Parham (1987)
73	"refers to both the procedure and product of clinical decision-making and is highly individualised to the specific training and practice context of a specific health profession" (p. 32)	Higgs & Jones (2000)

Ref # ^a	Clinical Reasoning...	Citation(s)
74	"refers to 'the many ways in which a person may think about and interpret an idea or phenomenon'" (p. 157)	Fleming (1991a)
75	is "analytical and conceptual thinking, judgement, decision making and problem solving" (p. 248)	None
76	"is the thinking, decision-making and 'know-how' that therapists use in the conduct of their work, including the way they seek information, how they interpret the client's overall situation and how they derive a 'best' course of action with a particular client" (p. 15)	Higgs & Jones (2000), Mattingly & Fleming (1994)
77	"is the thinking, decision making and know-how that therapists use in the conduct of their work, including the way in which they seek information, how they interpret the client's overall situation and how they derive a best course of action with a particular client" (p. 216)	Higgs & Jones (2000), Mattingly & Fleming (1994)
78	is "'the thinking and decision-making processes associated with clinical practice [...] that allows practitioners to make difficult decisions in the conditions of complexity and uncertainty that often occur in health care'" (p. 1625)	Higgs et al. (2018)
79	"is [...] the thinking processes that clinicians use while making decisions about patient management, as opposed to the decisions themselves" (p. 126)	Higgs (1992)
80	"is the ability to distinctly and critically analyze the reasons for one's actions and to reflect upon those decisions afterward with intentions of improvement" (p. 75)	Neistadt (1998), Schön (1987)
82	"'is a dynamic process of inquiry in action that takes place in the context of occupational therapy evaluation and treatment'" (p. 814)	Tufts University-Boston School of Occupational Therapy (1990)
83	"the thought process occupational therapists use during evaluation and treatment" (p.676)	Dutton (1995), Mattingly & Fleming (1994)
84	"is the thought process practitioners use during evaluation and intervention [...] clinical reasoning concepts can be viewed as a thinking frame - a structure to organize and support clinical thinking" (p. 221)	Mattingly & Fleming (1994), Schell & Cervero (1993), Perkins (1987)
85	"is the thought process that guides occupational therapy evaluation and treatment" (p. 670)	None
86	"the thought process clinicians use in practice" (p. 125)	Fleming (1991b)
88	is "the way that therapists think in practice. Clinical reasoning provides a framework for therapist thinking, actions and outcomes and helps to justify interventions" (p. 101)	None

Ref # ^a	Clinical Reasoning...	Citation(s)
90	is "a process of reflective inquiry, in collaboration with a patient or family (if possible), which seeks to promote a deep and contextually relevant understanding of the clinical problem, in order to provide a sound basis for clinical intervention" (p. 1130)	Hagedorn (1997)
91	"is the process of decision-making" (p. 252)	None
92	"is [...] 'thinking and talking about the way you work and giving reasons for what you do ... [it] forms the basis of all therapeutic practice and underpins problem solving'" (p. 403)	Alsop & Ryan (1996)
94	"is [...] 'the thinking process associated with conducting a clinical practice'" (p. 359)	Unsworth (2001)
96	"is the thinking that underlies the action taken in clinical situations and is based on facts, principles and experiences" (p. 212)	Shulman (1987)
97	is "the problem-solving process [...] in practice" (p. 338)	Barrows & Feltovich (1987)
99	is "'the reflective thought process that therapists undergo to integrate client evaluation information and to develop and implement intervention plans'" (p. 333)	Royeen et al. (2001)
101	"is [...] a complex intellectual process that surpasses logical thought [...] a process that involves the therapist in a phenomenological approach to making sense of the patient's condition and evokes the therapist's use of a caring perspective in establishing a collaborative relationship with the patient" (p. 1033)	Mattingly (1991a), Mattingly (1991b), Fleming (1991b), Fleming (unpublished)
102	"is [...] the numerous modes of thinking that guide clinical practice" (pp. 1-2)	None
103	is "using mental models" (p. 4); is "the 'thinking in order to do'" (p. 6)	Hagedorn (1997)
104	"is the broad umbrella term used for all cognitive processes that guide clinical practice [...] 'the process of using thinking, interpersonal and clinical skills and knowledge in order to acquire, evaluate and make sense of the mass of clinical information available to the health care practitioner during interactions with clients and thereby make, implement and evaluate, in association with the client, clinical decisions which are relevant to his or her situation and clinical problem'" (p. 119)	Higgs (1990)
105	is "the 'thinking and decision making process associated with clinical practice [...] It is a thinking process, incorporating elements of cognition, knowledge and metacognition, directed towards enabling the clinician to take the best judged action in a specific context'" (p. 171)	Higgs & Jones (2000)

Ref #^a	Clinical Reasoning...	Citation(s)
106	"is [...] the ways occupational therapists (OTs) think in the midst of practice and reflect on their own thinking" (p. 82)	Mattingly & Fleming (1994)
108	"is [...] the thinking processes associated with conducting a clinical practice" (p. 163)	Higgs (1992), Unsworth (1999)
109	"is generally defined as the many modes of thinking that guide clinical practice" (p. 10)	None
110	is "the many modes of thinking and decision making associated with clinical practice" (p. 31)	Dowie & Elstein (1988), Higgs & Jones (2000), Mattingly & Fleming (1994)
111	"describes the thinking processes used by occupational therapists when planning, conducting and reflecting on their practice" (p. 5)	Rogers (1982)
114	is "'a spiraling thinking process; a search for a growing understanding of the clinical situation as the basis for clinical intervention'" (p. 57)	Higgs & Jones (2000)
116	is "tacit understanding, imagistic, and phenomenological thinking that is based on habitual knowledge gained through experience" (p. 533)	Mattingly (1991a)
117	is "clinical intention aim[ed] at the care of others. It is purposeful and grounded activity of sentient and aware beings. The intention to care for others is manifested as attention: perceiving, apprehending and analyzing phenomena"	Paget (1988)
122	"reflects the thinking or reasoning that a health practitioner engages in to solve and manage a clinical problem" (p. 2)	None

^a Reference numbers correspond to those assigned in Table 2.2.

Although there were a variety of superordinate categories given for clinical reasoning, two main categories predominated. The first of these was “process” or “processes,” given in 52 (61%) of the definitions (3, 4, 7, 8, 9, 11, 12, 13, 15, 16, 17, 19, 20, 21, 22, 26, 27, 28, 31, 36, 38, 42, 43, 45, 48, 51, 53, 54, 56, 57, 63, 70, 71, 72, 78, 79, 82, 83, 84, 85, 86, 90, 91, 94, 97, 99, 101, 104, 105, 108, 111, 114). This process was specified as involving *thinking* in 11 articles (4, 7, 13, 43, 51, 56, 78, 79, 104, 105, 111), *decision-making* in 12 articles (4, 7, 9, 13, 30, 38, 51, 73, 78, 79, 91, 105), and *synthesis/integration* in three articles (45, 63, 99).

These clinical reasoning processes were further distinguished in ten articles as involving all or some of the steps of the occupational therapy process itself, such as planning, conducting, implementing and/or performing, directing, and reflecting on practice/intervention (3, 11, 15, 16, 21, 27, 48, 70, 79, 85), largely pulling from Schell’s (2019) definition of professional reasoning. In four articles, authors added collecting cues or information (11, 12, 21, 104) and in six articles authors added evaluation, interpretation, and/or analysis (11, 13, 20, 28, 77, 104) to the process. In two additional articles, clinical reasoning was not categorized as a process but the authors described it as involving many of these steps (62, 65).

The second main superordinate category for clinical reasoning, given in 21 definitions (25%) each, was some form of “thinking” (14, 18, 23, 40, 44, 58, 59, 74, 75, 76, 77, 88, 92, 96, 102, 103, 106, 109, 110, 116, 122). Across these definitions authors included fewer distinct characteristics of clinical reasoning. However, they did largely describe clinical reasoning as being used in, during, or to support practice (14, 18, 44, 58, 59, 76, 77, 88, 92, 96, 102, 106, 109, 110, 122). Additionally, in these articles clinical reasoning was described as being based in a variety of sources of evidence, including knowledge (58, 59 116) and experience (96, 116).

Across categories, other given characteristics of clinical reasoning included that it is context-dependent (4, 7, 38, 40, 54, 62, 63, 76, 77, 90, 104), occurs throughout the therapy process (7, 9, 31, 43, 63, 70, 72, 76, 77), accounts for professional knowledge and/or experience (1, 8, 13, 20, 26, 29, 30, 45, 56, 58, 59, 62, 65, 73, 104, 105, 116), accounts for the client perspective or choice (8, 12, 19, 40, 43, 53, 54, 56, 71, 72, 104), and enables therapists to give a rationale for their decision-making (1, 20, 80, 88, 92). Clinical reasoning was also described as being “in” or “guiding” practice across 25 articles (14, 18, 26, 31, 44, 53, 54, 63, 70, 71, 74, 82, 83, 84, 85, 86, 88, 94, 96, 102, 103, 106, 108, 114, 122). Across eight articles, clinical reasoning was described as including reflective or reflexive inquiry (4, 58, 59, 72, 80, 90, 99, 106) and in four it was described as involving metacognition (4, 58, 59, 105). Finally, clinical reasoning was described as phenomenological across six articles (22, 23, 40, 69, 101, 116).

Professional Reasoning

Ten of the included articles provided a definition of professional reasoning (Table 2.4). Of these, eight included references for their given definitions. All references were to versions of definitions from Schell and colleagues (Schell, 2009, 2014; Schell et al., 2014; Schell & Schell, 2008).

Table 2.4*Explicit Definitions of Professional Reasoning*

Ref #^a	Professional Reasoning...	Citation(s)
10	"is the 'process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 183)	Schell (2009)
11	"is a near synonym for clinical reasoning" (p. 310)	None
25	is "the 'process that [occupational therapy] practitioners use to plan, direct, perform, and reflect on client care'" (p. 199)	Schell (2014)
28	"refers to the processes that therapists use to plan, carry out, and evaluate client care" (p. 163)	Schell (2014)
33	"is the process that occupational therapists use 'to plan, direct, perform, and reflect on client care'" (p. 317)	Schell (2014)
50	is "a problem-solving process in which both theory and knowledge of the context are combined to develop sound clinical decisions" (p. 346)	None
66	"is [...] the process by which professionals plan, direct, carry out and reflect on the client's treatment" (p. 2)	Schell & Schell (2008), Schell et al. (2014)
67	is "the process used by practitioners to plan, direct, perform, and reflect on client care" (p. 1)	Schell & Schell (2008), Schell et al. (2014)
100	is "the active thinking processes of planning, directing, performing, and reflecting related to intervention" (p. e-10)	Schell & Schell (2008)
111	"is inclusive of occupational therapy practice that is based in clinical as well as non-clinical settings such as in schools, workplaces or other community settings [...] Professional reasoning involves all the thinking processes of the clinician as s/he moves into, through and out of the therapeutic relationship and therapy process with a client" (p. 5)	Schell & Schell (2008)

^a Reference numbers correspond to those assigned in Table 2.2.

Because of this consistency across included articles, superordinate categories and distinguishing characteristics of professional reasoning were similar. Most authors described professional reasoning as a “process” (10, 25, 33, 50, 66, 67) or “processes” (28, 100, 111). In referencing Schell’s various works on professional reasoning, most authors identified that professional reasoning includes planning, directing, performing (or carrying out), and reflecting on (or evaluating) client care (10, 25, 28, 33, 66, 67, 100). Alternatively, professional reasoning was identified as a problem-solving process (50), including integration of theory and knowledge, directed at making decisions and as an (active) thinking process (100, 111) that is related to therapy/intervention. In two articles, the definition of professional reasoning suggested it was a near synonym for clinical reasoning (11, 111).

Critical Thinking

As noted, critical thinking is often conflated with clinical reasoning. Twelve of the included articles provided a definition of critical thinking (Table 2.5). Of these, seven included a reference for the authors’ given definitions, all but one of which were unique. The only reference that appeared more than once was to the Insight Assessment (2014; 81, 89).

Table 2.5*Explicit Definitions of Critical Thinking*

Ref #^a	Critical Thinking...	Citation(s)
6	is "where personal observations are reflected upon, course of actions planned, and outcomes are evaluated" (p. 24)	Torcivia & Gupta (2008), Velde et al. (2006)
12	is "the process of analyzing and evaluating thinking to make decisions" (p. 2)	Paul & Elder (2016)
43	is "‘reflective thinking focused on deciding what to believe or do'. There are several models of critical thinking in which the therapist proceeds through a process of steps to recognize a problem, attempt to understand it, analyze it, evaluate it through a diverse lens, and generate possible solutions" (p. 2)	Norris & Ennis (1989), Garrison et al. (2001)
57	"is the ability to incorporate multiple concepts, views of society, and the individual for effective problem solving" (p. 187)	None
81	is "‘the process of purposeful, reflective judgment focused on deciding what to believe or what to do'" (p. 2)	Insight Assessment (2014)
89	is "‘the process of purposeful, reflective judgement focused on deciding what to believe or what to do'" (p. 7403345010p2)	Insight Assessment (2014)
101	"logic and problem solving based solely on abstract reasoning" (p. 1036)	Paul (1990)
111	is "thinking processes that have been rationally appraised and evaluated" (p. 5)	None
115	is "a discrete process of using knowledge and skills to acquire necessary information to clearly identify problems, evaluate evidence, generate courses of action based on the problems, and choose the best solutions" (p. 153)	None
118	"is an intellectual practice that challenges assumptions and taken-for-granted ways of thinking, and that seeks to expose linkages between ideologies and power" (p. 174)	None
119	"is an intellectually engaged process of thinking about thinking: of examining assumptions and beliefs and the taken-for-granted knowledge that is assumed to be – or that one holds to be – 'true'" (p. 238)	None

120	"is 'purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based'" (p. 455)	Facione (1998)
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^a Reference numbers correspond to those assigned in Table 2.2.

Critical thinking was mostly categorized as a process (12, 43, 81, 89, 111, 115, 119). Regarding characteristics, critical thinking was described as including judgement (81, 89, 120), reflection (6, 43, 81, 89), evaluation (6, 12, 43, 111, 115, 120), analysis (12, 43, 120), and elements of problem solving (43, 57, 120). Critical thinking was also described as informing decisions about what to do or think (12, 43, 81, 89). Finally, some authors explicitly noted that critical thinking involves challenging assumptions (118, 119) or integrating multiple perspectives/sources of evidence (43, 57, 120).

Reflection and Related Constructs in Occupational Therapy Literature

Reflection

Fourteen articles included definitions of reflection (Table 2.6). All of the articles defining reflection also included a reference for their definition. Dewey (1938, 1993) was referenced twice (34, 87), as were Moon (2004; 5, 64) and Lowe et al. (2007; 60, 61). The other 13 references were given only once each.

Table 2.6*Explicit Definitions of Reflection*

Ref #^a	Reflection...	Citation(s)
5	is "a form of mental processing or thinking used by learners to fulfill a purpose or achieve some anticipated outcome [...] a purposive activity directed towards goals [...] reflection involves a three-stage process, including recollection of the experience, attending to own feelings, and re-evaluating the experience" (p. 2)	Moon (2004), Boud et al. (1985)
24	is "a development strategy that begins with the 'here and now' of individual professional experience [...] to draw on past experience to inform their plans for evidencing future practice" (p. 10)	Kinsella (2000), Van Manen (1991)
34	"as a cognitive activity is [...] a systematic, rigorous, disciplined way of thinking that needs to happen in interaction with others" (p. 128); "represents actions where information is connected with experience" (p. 129)	Dewey (1993), Kember et al. (2000)
39	is "a form of self-appraisal that assists a clinician to create logical order to thoughts and feelings related to working with staff and clients [...] 'What differentiates reflection from problem-solving is that part of the potential solution is the therapist developing a new view of him or herself, or a confirmation of his or her existing view'" (p. 280)	Marrow et al. (1997); Boniface (2002)
49	"is a contextual examination of the journey the learner has experienced and encourages the learner to critically analyze the process, not just the content of the lessons learned" (p. 2)	Haverkamp & Vogt (2015)
60	"is the intentional cognitive process used in complicated or uncertain situations to address a problem or fulfill a particular purpose" (p. 254)	Lowe et al. (2007)
61	"is the intentional cognitive process used in complicated or uncertain situations in order to address a problem or fulfill a particular purpose" (p. 321)	Lowe et al. (2007)
64	is "intentional mental processing, used primarily with complicated or uncertain situations or ideas in order to fulfill a particular purpose in the present or future" (p. 143)	Moon (2004)
68	is "a general and purposeful analysis of knowledge and experience" (p. 123)	Lipp (2007), Mann et al. (2009)
87	"which is the active, persistent and careful consideration of knowledge claims." (p. 313)	Dewey (1938)

Ref #^a	Reflection...	Citation(s)
95	is "a strategy, a 'habit of mind'" (p. 45)	Epstein & Hundert (2002)
98	"is a process consisting of deep thought or [...] deep feeling about something" (p. 466)	Merriam-Webster (n.d.)
107	"is [...] the process of reviewing one's own experiences and knowledge to invent unique approaches to complex clinical problems [...] can be seen as several complex skills leading toward the transformation of future action" (p. 696)	Saylor (1990)
123	"refers to self-awareness of one's own repertoire of knowledge and skills in combination with present circumstances to form new understandings" (p. 2)	Schön (1987)

^a Reference numbers correspond to those assigned in Table 2.2.

In six (43%) of the articles, reflection was categorized as a “process” (98, 107), sometimes specified as “mental processing” (5, 64) or a “cognitive process” (60, 61). In four articles, authors described reflection as being used in complex, complicated, or uncertain situations (60, 61, 64, 107). Reflection was described as being purposeful (5, 68) and intentional (60, 61), directed at a variety of purposes, including broadly to fulfill a purpose (5, 60, 61, 64), to inform (24) or transform (107) future practice, to connect information and experiences (34), to create logical order to thoughts and feelings (39), to critically analyze the process of lessons learned (49), to invent unique approaches (107), to form new understandings (123), to address a problem (60, 61), or to achieve an anticipated outcome (5). Accordingly, the inputs for reflection included experience, both past experience (5, 24, 34, 49, 68, 107) and present experience (24, 123), thoughts (39, 98), knowledge (68, 87, 107), and feelings (39, 98).

Reflective Practice

Sixteen articles included definitions of reflective practice (Table 2.7). Twelve of these included references for their definition. Schön’s (1983, 1987) definitions were most commonly cited (52, 60, 61, 112, 113, 121), Kinsella (2001, 2012) was cited three times (16, 87, 123), and Duffy (2007) was cited twice (41, 113). The other twelve authors were referenced only once each.

Table 2.7*Explicit Definitions of Reflective Practice*

Ref #^a	Reflective Practice...	Citation(s)
2	is "'a process of examining and exploring issues in an attempt to improve and shape activities'." (p. 396)	Spalding (1998)
8	"can be viewed as a more deliberate, structured process involving the processing of information to assist with learning from complex situations. Reflective practice has been described as: '[a] form of mental processing—like a form of thinking— that we use to fulfil a purpose to achieve some anticipated outcome. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that we already possess.' This definition clearly sets reflective practice apart from more familiar activities that may be better described as recalling an event or reflecting rather than reflective practice." (p. 343)	Moon (2001)
16	"i.e. reflection on professional practice" (p. 364)	Kinsella (2001)
32	"is in essence the reflective activities associated with [community service] that would ensure the actual thinking within the structure provided" (p. 388); is "a 'plan–act–describe–review' sequence" (p. 400)	Bringle & Hatcher (2005), Tripp (2003)
41	is "an active and deliberate process of critically examining one's practice in which the individual is challenged to engage in self-assessment, to integrate knowledge and develop new, socially constructed knowledge adapted to the context" (pp. 1591-1592)	Duffy (2007)
46	"including the contemplation of assumptions and alternatives, is [...] critical reflection on both the individual's performance and the wider context of occupational therapy practice" (p. 321)	Nicola-Richmond et al. (2016)
50	"uses experience as the source of knowledge. Essentially this involves knowing that something did not go as planned and identifying what it was; or considering what went well – in both instances critically thinking about and learning from the experience. Complicated or unstructured situations in which the solution or decision is not obvious are processed" (p. 352)	None

Ref # ^a	Reflective Practice...	Citation(s)
52	is "reflective approaches to professional development [...] Reflective practice has been variously defined as 'a dialogue of thinking and doing through which I become more skilful', as 'a means by which practitioners can develop a greater level of self-awareness about the nature and impact of their performance,' and as an approach in which 'actions are carefully planned in relation to the theory known to the professional and consciously monitored, so that outcomes of the action will be beneficial to the patient'" (p. 196)	Schön (1983), Osterman & Kottkamp (1993), Jarvis (1992)
60	"is the process by which professionals become aware of their implicit knowledge base and learn from experiences" (p. 254)	Schön (1983)
61	"is the process by which professionals become aware of their implicit knowledge base and learn from experiences" (p. 321)	Schön (1983)
87	"is a way of practising in indeterminacy that involves drawing upon personal and experiential knowledge in addition to scientific knowledge to solve messy problems in practice." (p. 313)	Brookfield (2000), Kemmis (2005), Ng et al. (2015), Kinsella et al. (2012)
88	is "undertaking critical reflection of one's own performance and all of the elements of the occupational therapy role. Understanding the role that critical reflection plays in professional practice and clinical reasoning" (p. 101)	None
112	"is an active and deliberate process of critically examining one's own practice and is used to make learning more meaningful and integrate it into one's current experience" (p. 120)	Jarvis (1999), Schön (1983)
113	is "a self-regulation process [...] in which desirable and effective practice is achieved within a continuous reflexive spiral of personal transformation" (p. 330)	Schön (1983), Duffy (2007), McWilliam (2007)
121	"is an iterative developmental process of experiencing and reflecting or thinking and doing" (p. 479)	None
123	is "a complex process where therapists learn from practice experience, examine conceptions of knowledge, think about contexts of practice, explore assumptions in practice, become aware of theories in practice, and finally, develop an action plan" (p. 2)	None

^a Articles numbers correspond to those assigned in Table 2.2.

Reflective practice was mostly categorized, across nine articles (56%), as a “process” (2, 8, 41, 61, 62, 112, 113, 121, 123). In three articles authors described reflective practice as being used in complex or messy situations (8, 50, 87). Given characteristics or activities of reflective practice include thinking (8, 32, 50, 121), examination or contemplation of issues/practice (2, 41, 46, 112, 123), self-assessment of practice, knowledge, and/or biases (41, 46, 52, 60, 61, 88, 112, 113, 123), and, unsurprisingly, some form of reflection itself (16, 32, 46, 52, 88, 113, 121). Reflective practice was also identified as being related to professional practice or about improving practice (2, 16, 32, 41, 46, 52, 87, 88, 112, 113, 123) and drawing on experience as a source of knowledge (50, 60, 61, 87, 121, 123). Finally, reflective practice was described as cyclical, largely involving cycles of thinking and doing/action (32, 52, 113, 121).

Critical Reflection

Eight of the included articles defined critical reflection (Table 2.8). Seven of these included references for their definition (12, 34, 55, 61, 87, 93, 118), to 13 different sources. Each reference was used only once.

Table 2.8*Explicit Definitions of Critical Reflection*

Ref #^a	Critical Reflection...	Citation(s)
12	is "analysis of how assumptions, values, and beliefs impact clinical outcomes. " (p. 8)	Furnari (2014)
34	"is when transformation of beliefs and meaning occurs. It involves constructing personal meaning and using higher-level cognitive skills such as analysis, synthesis, and evaluation." (p. 129)	Kember et al. (2000)
55	is "the questioning of taken-for-granted assumptions about oneself, one's group, and the conditions in which one operates" (p. 444)	Boud (2001)
61	"the deepest analytic level [of reflection], involves critiquing, correcting, changing, and emancipating from less than good or ineffective practices" (p. 322)	Kim (1999), Kim et al. (2010)
87	"adds a layer to reflection, which is the active, persistent and careful consideration of knowledge claims. Through a critical reflection lens, this consideration process questions individual and societal assumptions, disrupts unhelpful power relations, and strives for social change" (p. 313)	Brookfield (2000), Kemmis (2005), Ng et al. (2015), Kinsella et al. (2012)
93	"is a process of making sense of practice experiences and connections between practice and theory, which is needed to turn experience into learning. The critical aspect of reflection means to challenge preconceptions or existing views using theory, enabling new ways of thinking, knowing and practising to emerge" (p. 164)	Boud et al. (1985), Gerlach et al. (2017)
97	is "a way of thinking about occupational therapy practice in a manner that involves the ability to make rational choices and to assume responsibility for those choices" (p. 338)	None
118	"is a rigorous intellectual process of questioning basic assumptions and ideologies that are perceived as self-evident truths; and of explicitly examining ideas, policies, practices, and procedures that are dominant or taken for granted" (p. 175)	Gibson et al. (2010), Eakin et al. (1996)

^a Reference numbers correspond to those assigned in Table 2.2.

Superordinate categories given for critical reflection varied widely; two repeated categories were type of “reflection” (61, 87) and type of “process” (93, 118). Critical reflection was described as analyzing, evaluating, critiquing, and/or questioning (12, 34, 55, 61, 87, 93, 118) a variety of factors, primarily assumptions or existing beliefs (12, 55, 87, 93, 118), leading to transformation or change (34, 61, 87, 93). This form of reflection was described as adding a layer to non-critical reflection (61, 87, 93), and was occasionally specified as being about larger social/systemic issues (87, 118).

Discussion

The aim of this review was to understand how reasoning and reflection are defined, and therefore differentiated from one another, in occupational therapy literature. Because these constructs are considered essential to practice, it is necessary to identify their “adequate” definitions, which include a consistent label, their immediate superordinate category, and distinguishing characteristics (Mosey, 1996). From the 123 articles that were identified as including definitions of one or more construct(s) related to reasoning and reflection, it is apparent that adequate definitions for these constructs are not consistently given in occupational therapy literature. This finding is in line with existing reviews of clinical/professional reasoning in occupational therapy (da Silva Araujo et al., 2022; Gordon et al., 2022; Maruyama et al., 2021); this finding also makes sense given the proliferation of models and understandings of reflection and reflective practice (Marshall, 2019; Ooi et al., 2021). We limited our analysis to given definitions of the labels clinical reasoning, professional reasoning, critical thinking, reflection, reflective practice, and critical reflection, thereby acknowledging the breadth of terms related to these skills and necessarily excluding other potentially relevant skills. Even from our proscribed, limited search of literature on specific professional skills, the variety of labels used to

discuss overlapping professional skills was evident, and these labels did not suggest concept-definition consistency. However, synthesis of the given definitions reveals what is generally agreed upon and where gaps continue to exist in defining these key professional skills in occupational therapy.

Identifying superordinate categories for what we have here described as professional skills allows for greater understanding of the relationships amongst these constructs. In describing the body of practice knowledge for professions, Mosey (1996) identified clinical reasoning as a component of the process of practice. This is consistent with the majority of the definitions given for clinical reasoning in the included articles, which also described clinical reasoning as a process. In fact, “process” was a majority category for most of the constructs analyzed here. Taking the majority perspective of the included articles, then, clinical reasoning, professional reasoning, critical thinking, and reflective practice are all processes of practice for occupational therapy. The “process” category was also given by some authors for reflection and critical reflection, although less conclusively. This is, however, a broad category; many of the articles included here did specify the type of process, referring to the process of clinical reasoning as, for example, cognitive vs. interactive. Being specific about the superordinate category helps to situate the construct within a theoretical perspective, and allows for easier differentiation amongst definitions given for the same label.

The distinguishing features of clinical and professional reasoning further strengthen the evidence that these two constructs are largely considered synonyms. They were both described as (primarily) thinking processes used for carrying out occupational therapy intervention. Clinical reasoning was described using more characteristics and was identified as being based in a variety of evidence sources (i.e., professional knowledge, experience, and client perspective). In some of

the included articles, authors defined clinical reasoning by giving a definition of professional reasoning, suggesting, and occasionally being explicit about, the conceptual overlap of these labels. In contrast, professional reasoning was described relatively consistently; this is unsurprising, as the term is newer and has largely been used in association with the definition from Schell (2019), whereas the label clinical reasoning has been used for longer and been based in a variety of theoretical perspectives. None of the extracted definitions suggested a difference between clinical and professional reasoning apart from that professional reasoning was more inclusive of non-clinical practice settings (Unsworth & Baker, 2016). While it is possible for the same label to have different meanings across conceptual frameworks, the lack of definition-label consistency found here suggests authors should clearly identify the foundation for their choice of definition.

Critical thinking was similarly described as being related to thinking about the therapeutic process to make judgments. This supports our original categorization of critical thinking as aligned with the reasoning constructs, with which it is often confounded (Pitonyak et al., 2020). However, critical thinking is sometimes used more like a synonym for reflection (Berg et al., 2021). In the articles included here, clinical/professional reasoning and critical thinking were each also described as including reflection about practice. The evidence that critical thinking may be distinct but closely related to both clinical/professional reasoning and reflection highlights the conceptual overlap across these labels and the ongoing need to be explicit in differentiating them from one another (Berg et al., 2021; Pitonyak et al., 2020).

Characteristics of reflection were consistent with those given in literature outside of occupational therapy; these include that it is cognitive, integrative, iterative, and active (Marshall, 2019). Whereas clinical reasoning was described as being complex, reflection was

distinguished as being used in complex situations. This is consistent with literature outside of occupational therapy, which describes reflection as being triggered by critical incidents (Steven et al., 2020). Including reflection as part of the definition of reasoning, which occurs over the course of intervention, suggests that practitioners should always be engaging in reflection as part of the process of practice; in other words, it suggests that practice is made up of critical incidents that require reflection. Both reasoning and reflection were described as being based in a variety of evidence sources, including experience and knowledge, although definitions of clinical reasoning cited many more evidence sources, including the client perspective. Thus, although there was significant overlap across definitions of clinical/professional reasoning and reflection, when taken together this can be understood as demonstrating the significance of reflection as a component of reasoning in occupational therapy.

Reflective practice was distinguished from reflection as being specifically related to professional practice and involving self-assessment. Accordingly, reflective practice was also described as cyclical, with stages of reflection and stages of action (practice) informing each other, which is consistent with descriptions outside occupational therapy (Finlayson, 2015). However, this description does little to distinguish reflective practice from the reasoning process in occupational therapy, which also involves thinking about and implementing actions in practice. If reflection is a mechanism of clinical reasoning, it makes sense that reflective practice and reasoning would share features. Reflective practice may be distinct for not requiring a specific clinical scenario, as it may involve contemplation of larger issues or a broader focus on professional development (Kinsella, 2001). This suggests that reflective practice is a more encompassing or broader process than clinical/professional reasoning.

Finally, critical reflection was primarily described as a higher or deeper level of reflection, including analysis of assumptions and perhaps consideration of larger issues. This suggests the connection between critical reflection and critical theory; Brookfield (2009) has argued that this connection is essential to differentiating critical reflection from reflection more generally, which is not necessarily critical. However, the connection to critical theory was not consistent across articles, providing an example of the conflation of these two terms that Brookfield has also noted. This description of critical reflection situates it as a component of reflective practice that may be applied based on practitioner skill level and the circumstances (Kember et al., 2000).

Taken together, the definitions of these key professional thinking skills include overlapping processes. Although there were some alternative perspectives in the minority of articles, by aggregating the majority perspective from these included articles it is possible to create a model of these processes whereby reflective practice includes professional reasoning (of which clinical reasoning is one, slightly more restrictive type), which itself includes the more discrete processes of reflection and critical reflection (Figure 2.3). The process of critical thinking overlaps with reasoning and also includes reflection. Of course, additional processes, such as evidence-based practice, would need to be included in this model for it to be useful regarding professional thinking in occupational therapy (Bannigan & Moores, 2009); additionally, this model does not include conceptualizations of constructs that were not categorized as processes. However, this majority understanding can be useful in adjunct to existing models that aim to incorporate essential thinking processes used in occupational therapy.

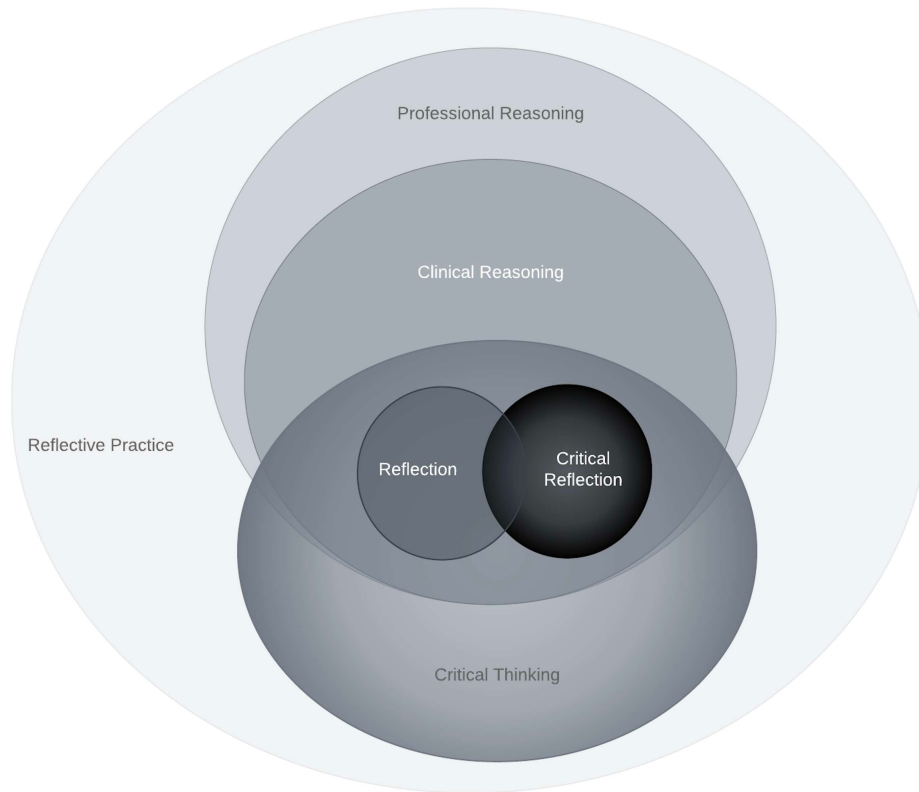


Figure 2.3

Visual Model of Processes from the Majority Perspective of Included Articles

This review has several limitations related to comprehensiveness of findings. For this scoping review, we did not include gray literature, which limits our understanding of how these terms are used to the peer-reviewed context. Additionally, as reasoning and reflection are expansive terms with many synonyms in the literature, it is possible that use of additional synonyms (for example, critical reasoning and reflexivity) as search terms would have led to a more comprehensive review. Because we required an explicit definition of the terms of interest, we necessarily excluded articles that may have added to our understanding of how the terms are used when they are not defined. Although some of these articles included important models or theoretical discussions of reasoning and/or reflection, definitions were presented in a piecemeal

manner interspersed with other information, making essential characteristics difficult to parse or otherwise requiring readers to make inferences. Another reason relevant articles may have been excluded was if they included definitions of terms *by example*, instead of delineating essential characteristics; in other words, some authors described constructs by listing what they “include” without delineating what they “are.” These excluded articles, definitions, and models should be further explored to expand on the findings in this review. It should also be noted that it was impossible to confirm that authors agreed with definitions they presented in their articles, although we endeavored to exclude any definitions that authors clearly disagreed with.

Overall, findings from this review reemphasize the call for researchers to be explicit in defining constructs related to professional thinking in occupational therapy. Using the framework applied here, from Mosey (1996), may be useful to refining specific superordinate categories and detailed characteristics of these processes, thereby orienting one’s audience to relevant theoretical underpinnings and distinguishing features of these professional thinking skills. Applying this or a similar framework when defining constructs will enhance clarity of communication about these processes. Continuing to progress this area of research through measurement studies should include outlining distinguishing characteristics unique to specific thinking processes within occupational therapy. This increased specificity will allow for refinement of theories related to the essential processes of reasoning and reflection for the profession, thereby supporting students to take on the professional identity of occupational therapists.

References

- *Alnervik, A., & Svidén, G. (1996). On clinical reasoning: Patterns of reflection on practice. *Occupational Therapy Journal of Research*, 16(2), 98–110.
<https://doi.org/10.1177/153944929601600202>
- *Andrews, J. (2000). The value of reflective practice: A student case study. *British Journal of Occupational Therapy*, 63(8), 396–398. <https://doi.org/10.1177/030802260006300807>
- *Arnold, S., Mackenzie, L., Millington, M., & James, C. (2019). Occupational therapy medicolegal assessment of domestic assistance requirements: Focus group perspectives. *Australian Occupational Therapy Journal*, 66(2), 239–248. <https://doi.org/10.1111/1440-1630.12552>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- *Arntzen, C. (2018). An embodied and intersubjective practice of occupational therapy. *OTJR Occupation, Participation and Health*, 38(3), 173–180.
<https://doi.org/10.1177/1539449217727470>
- *Artioli, G., Deiana, L., De Vincenzo, F., Raucci, M., Amaducci, G., Bassi, M. C., Di Leo, S., Hayter, M., & Ghirotto, L. (2021). Health professionals and students' experiences of reflective writing in learning: A qualitative meta-synthesis. *BMC Medical Education*, 21(1), 14. <https://doi.org/10.1186/s12909-021-02831-4>
- *Atler, K., & Gavin, W. J. (2010). Service-learning-based instruction enhances students' perceptions of their abilities to engage in evidence-based practice. *Occupational Therapy in Health Care*, 24(1), 23–38. <https://doi.org/10.3109/07380570903410860>

- *Bailey, D. M., & Cohn, E. S. (2002). Understanding others: A course to learn interactive clinical reasoning. *Occupational Therapy in Health Care*, 15(1–2), 31–46.
https://doi.org/10.1080/J003v15n01_05
- *Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- *Barris, R. (1987). Clinical reasoning in psychosocial occupational therapy: The evaluation process. *Occupational Therapy Journal of Research*, 7(3), 147–162.
<https://doi.org/10.1177/153944928700700302>
- *Bazyk, S., Glorioso, M., Gordon, R., Haines, J., & Percaciane, M. (2010). Service learning: The process of doing and becoming an occupational therapist. *Occup Ther Health Care*, 24(2), 171–187. <https://doi.org/10.3109/07380571003681194>
- *Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>
- Benfield, A. M., & Johnston, M. V. (2023). Letter to the editor: Re: Burke, Bundy, & Lane (2023) article “If reasoning, reflection, and evidence-based practice are essential to practice, we must define them.” *The Open Journal of Occupational Therapy*, 11(3), 1–2.
<https://doi.org/10.15453/2168-6408.2180>
- *Berg, C., Philipp, R., & Taff, S. D. (2021). Scoping review of critical thinking literature in healthcare education. *Occupational Therapy In Health Care*, 37(0), 1–18.
<https://doi.org/10.1080/07380577.2021.1879411>

- *Bottari, C., Iliopoulos, G., Shun, P. L. W., & Dawson, D. R. (2014). The clinical reasoning that guides therapists in interpreting errors in real-world performance. *Journal of Head Trauma Rehabilitation*, 29(6), E18–E30.
<https://doi.org/10.1097/HTR.0000000000000029>
- Boud, D., Keogh, R., & Walker, D. (Eds.). (1985). *Reflection: Turning experience into learning*. Kogan Page.
- *Britton, L., Rosenwax, L., & McNamara, B. (2016). Occupational therapy in Australian acute hospitals: A modified practice. *Australian Occupational Therapy Journal*, 63(4), 257–265. <https://doi.org/10.1111/1440-1630.12298>
- Brookfield, S. (2009). The concept of critical reflection: Promises and contradictions. *European Journal of Social Work*, 12(3), 293–304. <https://doi.org/10.1080/13691450902945215>
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, 11(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>
- *Carrier, A., Freeman, A., Desrosiers, J., & Levasseur, M. (2020). Institutional context: What elements shape how community occupational therapists think about their clients’ care? *Health & Social Care in the Community*, 28(4), 1209–1219.
<https://doi.org/10.1111/hsc.12954>
- *Carrier, A., Levasseur, M., Bédard, D., & Desrosiers, J. (2010). Community occupational therapists’ clinical reasoning: Identifying tacit knowledge. *Australian Occupational Therapy Journal*, 57(6), 356–365. <https://doi.org/10.1111/j.1440-1630.2010.00875.x>
- *Carrier, A., Levasseur, M., Bédard, D., & Desrosiers, J. (2012). Clinical reasoning process underlying choice of teaching strategies: A framework to improve occupational

- therapists' transfer skill interventions. *Australian Occupational Therapy Journal*, 59(5), 355–366. <https://doi.org/10.1111/j.1440-1630.2012.01017.x>
- *Chaffey, L., Unsworth, C., & Fossey, E. (2010). A grounded theory of intuition among occupational therapists in mental health practice. *British Journal of Occupational Therapy*, 73(7), 300–308. <https://doi.org/10.4276/030802210X12759925544308>
- *Cheung, T. W. C., Clemson, L., O' Loughlin, K., & Shuttleworth, R. (2018). Ergonomic education on housework for women with upper limb repetitive strain injury (RSI): A conceptual representation of therapists' clinical reasoning. *Disability and Rehabilitation*, 40(26), 3136–3146. <https://doi.org/10.1080/09638288.2017.1378928>
- *Cohn, E. S. (1989). Fieldwork education: Shaping a foundation for clinical reasoning. *American Journal of Occupational Therapy*, 43(4), 240–244. <https://doi.org/10.5014/ajot.43.4.240>
- *Coviello, J. M., Potvin, M. C., & Lockhart-Keene, L. (2019). Occupational therapy assistant students' perspectives about the development of clinical reasoning. *The Open Journal of Occupational Therapy*, 7(2). <https://doi.org/10.15453/2168-6408.1533>
- *Crabtree, M. (1998). Images of reasoning: A literature review. *Australian Occupational Therapy Journal*, 45, 113–123. <https://doi.org/10.1111/j.1440-1630.1998.tb00792.x>
- *Crabtree, M., & Lyons, M. (1997). Focal points and relationships: A study of clinical reasoning. *British Journal of Occupational Therapy*, 60(2), 57–64. <https://doi.org/10.1177/030802269706000204>
- *Cross, V., Liles, C., Conduit, J., & Price, J. (2004). Linking reflective practice to evidence of competence: A workshop for allied health professionals. *Reflective Practice*, 5(1), 3–31. <https://doi.org/10.1080/1462394032000169938>

- *Crowe, J. (2014). Professional reasoning and occupational therapist's use of a multi-sensory environment for clients with dementia. *Physical & Occupational Therapy in Geriatrics*, 32(3), 198–209. <https://doi.org/10.3109/02703181.2014.927947>
- da Silva Araujo, A., Anne Kinsella, E., Thomas, A., Demonari Gomes, L., & Quevedo Marcolino, T. (2022). Clinical reasoning in occupational therapy practice: A scoping review of qualitative and conceptual peer-reviewed literature. *The American Journal of Occupational Therapy*, 76(3), 7603205070. <https://doi.org/10.5014/ajot.2022.048074>
- *de Beer, M., & Mårtensson, L. (2015). Feedback on students' clinical reasoning skills during fieldwork education. *Australian Occupational Therapy Journal*, 62(4), 255–264. <https://doi.org/10.1111/1440-1630.12208>
- *de Beer, M., & Vorster, C. (2012). Fieldwork education: Putting supervisors' interpersonal communication to the test. *South African Journal of Occupational Therapy*, 42(1), 21–26.
- *Dennis, C. W., Dorsey, J. A., & Gitlow, L. (2015). A call for sustainable practice in occupational therapy. *Canadian Journal of Occupational Therapy*, 82(3), 160–168. <https://doi.org/10.1177/0008417414566925>
- Dewey, J. (1933). *How we think*. D. C. Heath.
- *Dougherty, D. A., Toth-Cohen, S. E., & Tomlin, G. S. (2016). Beyond research literature: Occupational therapists' perspectives on and uses of “evidence” in everyday practice. *Canadian Journal of Occupational Therapy*, 83(5), 288–296. <https://doi.org/10.1177/0008417416660990>
- *Doumanov, P., & Rugg, S. (2003). Clinical reasoning skills of occupational therapists and support staff: A comparison. *International Journal of Therapy and Rehabilitation*, 10(5), 195–202.

- *Doyle, S. D., Bennett, S., & Dudgeon, B. J. (2014). Sensory impairment after stroke: Exploring therapists' clinical decision making. *Canadian Journal of Occupational Therapy*, 81(4), 215–225. <https://doi.org/10.1177/0008417414540516>
- *du Toit, S. H. J., & Wilkinson, A. C. (2010). Research and reflection: Potential impact on the professional development of undergraduate occupational therapy students. *Systemic Practice and Action Research*, 23(5), 387–404. <https://doi.org/10.1007/s11213-010-9165-5>
- *Dubroc, W., & Pickens, N. D. (2015). Becoming “at home” in home modifications: Professional reasoning across the expertise continuum. *Occupational Therapy in Health Care*, 29(3), 316–329. <https://doi.org/10.3109/07380577.2015.1010129>
- *Dunn, L., & Musolino, G. M. (2011). Assessing reflective thinking and approaches to learning. *Journal of Allied Health*, 40(3), 128–136.
- Finlayson, A. (2015). Reflective practice: Has it really changed over time? *Reflective Practice*, 16(6), 717–730. <https://doi.org/10.1080/14623943.2015.1095723>
- *Fisher, G. S. (1997). Health care reform, managed care, and clinical reasoning: Implications for ethical occupational therapy practice. *Occupational Therapy in Health Care*, 11(1), 27–37. https://doi.org/10.1300/J003v11n01_02
- *Fitzgerald, B., & MacCobb, S. (2017). An occupational therapy and teaching partnership: Applying a scholarship of practice model. *Occupational Therapy in Health Care*, 31(3), 270–282. <https://doi.org/10.1080/07380577.2017.1342888>
- Fleming, M. H. (1991a). Clinical reasoning in medicine compared with clinical reasoning in occupational therapy. *The American Journal of Occupational Therapy*, 45(11), 988–996. <https://doi.org/10.5014/ajot.45.11.988>

- Fleming, M. H. (1991b). The therapist with the three-track mind. *The American Journal of Occupational Therapy*, 45(11), 1007–1014. <https://doi.org/10.5014/ajot.45.11.1007>
- *Flemming, K., Ferri, R., Rose, M. A., Maranan, A., & Nalder, E. (2021). Determining the need for client 24-hour supervision: A cross-sectional survey of occupational therapists. *Occupational Therapy in Health Care*, 35(1), 75–92. <https://doi.org/10.1080/07380577.2020.1870783>
- *Fondiller, E. D., Rosage, L. J., & Neuhaus, B. E. (1990). Values influencing clinical reasoning in occupational therapy: An exploratory study. *Occupational Therapy Journal of Research*, 10(1), 41–58. <https://doi.org/10.1177/153944929001000105>
- *Fone, S. (2006). Effective supervision for occupational therapists: The development and implementation of an information package. *Australian Occupational Therapy Journal*, 53(4), 277–283. <https://doi.org/10.1111/j.1440-1630.2006.00581.x>
- *Fortune, T., & Ryan, S. (1996). Applying clinical reasoning: A caseload management system for community occupational therapists. *British Journal of Occupational Therapy*, 59(5), 207–211. <https://doi.org/10.1177/030802269605900505>
- *Foucault, M. L., Vachon, B., Thomas, A., Rochette, A., & Giguère, C. É. (2018). Utilisation of an electronic portfolio to engage rehabilitation professionals in continuing professional development: Results of a provincial survey. *Disability and Rehabilitation*, 40(13), 1591–1599. <https://doi.org/10.1080/09638288.2017.1300335>
- Fragkos, K. C. (2016). Reflective practice in healthcare education: An umbrella review. *Education Sciences*, 6(3), 27. <https://doi.org/10.3390/educsci6030027>
- *Garcia, J., Copley, J., Turpin, M., Bennett, S., McBryde, C., & McCosker, J. L. (2021). Evidence-based practice and clinical reasoning in occupational therapy: A cross-sectional

- survey in Chile. *Australian Occupational Therapy Journal*, 68(2), 169–179.
<https://doi.org/10.1111/1440-1630.12713>
- *Gee, B. M., Thompson, K. E., Strickland, J., & Miller, L. J. (2017). First year occupational therapy students' clinical reasoning approach to addressing challenging behaviors related to sensory processing using a simulated case study. *Journal of Occupational Therapy Education*, 1(2), 1–25. <https://doi.org/10.26681/jote.2017.010207>
- *Gibson, D., Velde, B., Hoff, T., Kvashay, D., Manross, P. L., & Moreau, V. (2000). Clinical reasoning of a novice versus an experienced occupational therapist: A qualitative study. *Occupational Therapy In Health Care*, 12(4), 15–31.
https://doi.org/10.1080/J003v12n04_02
- *Greber, C., Ziviani, J., & Rodger, S. (2007). The four-quadrant model of facilitated learning (Part 1): Using teaching-learning approaches in occupational therapy. *Australian Occupational Therapy Journal*, 54, S31–S39. <https://doi.org/10.1111/j.1440-1630.2007.00662.x>
- Gordon, D., Rencic, J. J., Lang, V. J., Thomas, A., Young, M., & Durning, S. J. (2022). *Advancing the assessment of clinical reasoning across the health professions: Definitional and methodologic recommendations* (2). 11(2), Article 2.
<https://doi.org/10.1007/S40037-022-00701-3>
- *Guy, L., Cranwell, K., Hitch, D., & McKinstry, C. (2020). Reflective practice facilitation within occupational therapy supervision processes: A mixed method study. *Australian Occupational Therapy Journal*, 67(4), 320–329. <https://doi.org/10.1111/1440-1630.12660>

- *Hall, L., Robertson, W., & Turner, M. A. (1992). Clinical reasoning process for service provision in the public school. *American Journal of Occupational Therapy*, 46(10), 927–936. <https://doi.org/10.5014/ajot.46.10.927>
- *Hansen, A. M. (2013). Bridging theory and practice: Occupational justice and service learning. *Work*, 45(1), 41–58. <https://doi.org/10.3233/wor-131597>
- Higgs, J. (1992). Developing clinical reasoning competencies. *Physiotherapy*, 78(8), 575–581. [https://doi.org/10.1016/S0031-9406\(10\)61202-3](https://doi.org/10.1016/S0031-9406(10)61202-3)
- *Hinojosa, J., & Howe, T.-H. (2016). EPortfolio: The scholarly capstone for the practice doctoral degree in occupational therapy. *The Open Journal of Occupational Therapy*, 4(3). <https://doi.org/10.15453/2168-6408.1203>
- *Jeffery, H., Robertson, L., & Reay, K. L. (2021). Sources of evidence for professional decision-making in novice occupational therapy practitioners: Clinicians’ perspectives. *British Journal of Occupational Therapy*, 84(6), 346–354. <https://doi.org/10.1177/0308022620941390>
- Kember, D., Leung, D. Y. P., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Tse, H., Webb, C., Wong, F. K. Y., Wong, M., & Yeung, E. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment and Evaluation in Higher Education*, 25(4), 381–395. <https://doi.org/10.1080/713611442>
- *Keponen, R., & Launiainen, H. (2008). Using the Model of Human Occupation to nurture an occupational focus in the clinical reasoning of experienced therapists. *Occupational Therapy in Health Care*, 22(2–3), 95–104. <https://doi.org/10.1080/07380570801989549>
- *Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>

- *Knecht-Sabres, L. J. (2010). The use of experiential learning in an occupational therapy program: Can it foster skills for clinical practice? *Occupational Therapy In Health Care*, 24(4), 320–334. <https://doi.org/10.3109/07380577.2010.514382>
- *Knecht-Sabres, L. J. (2013). Experiential learning in occupational therapy: Can it enhance readiness for clinical practice? *Journal of Experiential Education*, 36(1), 22–36. <https://doi.org/10.1177/1053825913481584>
- *Knightbridge, L. (2014). Experiential learning on an alternative practice education placement: Student reflections on entry-level competency, personal growth, and future practice. *British Journal of Occupational Therapy*, 77(9), 438–446. <https://doi.org/10.4276/030802214X14098207540956>
- *Knis-Matthews, L., Mulry, C. M., & Richard, L. (2017). Matthews model of clinical reasoning: A systematic approach to conceptualize evaluation and intervention. *Occupational Therapy in Mental Health*, 33(4), 360–373. <https://doi.org/10.1080/0164212X.2017.1303658>
- *Kramer, P., Ideishi, R. I., Kearney, P. J., Cohen, M. E., Ames, J. O., Shea, G. B., Schemm, R., & Blumberg, P. (2007). Achieving curricular themes through learner-centered teaching. *Occupational Therapy in Health Care*, 21(1–2), 185–198. https://doi.org/10.1300/j003v21n01_14
- *Kristensen, H. K., Borg, T., & Hounsgaard, L. (2012). Aspects affecting occupational therapists' reasoning when implementing research-based evidence in stroke rehabilitation. *Scandinavian Journal of Occupational Therapy*, 19(2), 118–131. <https://doi.org/10.3109/11038128.2011.556197>

- *Kristensen, H. K., & Petersen, K. S. (2016). Occupational science: An important contributor to occupational therapists' clinical reasoning. *Scandinavian Journal of Occupational Therapy*, 23(3), 240–243. <https://doi.org/10.3109/11038128.2015.1083054>
- *Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020a). Occupational therapists' implementation of evidence-based practice: A cross sectional survey. *Occupational Therapy In Health Care*, 34(3), 253–276. <https://doi.org/10.1080/07380577.2020.1756554>
- *Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020b). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *Occupational Therapy in Health Care*, 34(4), 320–350. <https://doi.org/10.1080/07380577.2020.1815929>
- *Kuipers, K., & Grice, J. W. (2009). The structure of novice and expert occupational therapists' clinical reasoning before and after exposure to a domain-specific protocol. *Australian Occupational Therapy Journal*, 56(6), 418–427. <https://doi.org/10.1111/j.1440-1630.2009.00793.x>
- Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130. <https://doi.org/10.1177/0008417421994377>
- *Leicht, S. B., & Dickerson, A. (2002). Clinical reasoning, looking back. *Occupational Therapy in Health Care*, 14(3–4), 105–130. https://doi.org/10.1080/j003v14n03_07
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5(1), 1–9. <https://doi.org/10.1186/1748-5908-5-69>

- *Lowe, M., Rappolt, S., Jaglal, S., & Macdonald, G. (2007). The role of reflection in implementing learning from continuing education into practice. *Journal of Continuing Education in the Health Professions*, 27(3), 143–148. <https://doi.org/10.1002/chp.117>
- Lundgren, H., & Poell, R. F. (2016). On critical reflection: A review of Mezirow's theory and its operationalization. *Human Resource Development Review*, 15(1), 3–28. <https://doi.org/10.1177/1534484315622735>
- *Lysaght, R., & Bent, M. (2005). A comparative analysis of case presentation modalities used in clinical reasoning coursework in occupational therapy. *American Journal of Occupational Therapy*, 59(3), 314–324. <https://doi.org/10.5014/ajot.59.3.314>
- *Márquez-Álvarez, L. J., Calvo-Arenillas, J. I., Talavera-Valverde, M. Á., & Moruno-Millares, P. (2019). Professional reasoning in occupational therapy: A scoping review. *Occupational Therapy International*, 1–10. <https://doi.org/10.1155/2019/6238245>
- *Márquez-Álvarez, L.-J., Calvo-Arenillas, J.-I., Jiménez-Arberas, E., Talavera-Valverde, M.-Á., Souto-Gómez, A.-I., & Moruno-Mirallès, P. (2021). A Q-method approach to perceptions of professional reasoning in occupational therapy undergraduates. *BMC Medical Education*, 21(1), 264. <https://doi.org/10.1186/s12909-021-02710-y>
- Marshall, T. (2019). The concept of reflection: A systematic review and thematic synthesis across professional contexts. *Reflective Practice*, 20(3), 396–415. <https://doi.org/10.1080/14623943.2019.1622520>
- *Marterella, A. L., & Aldrich, R. M. (2015). Developing occupational therapy students' practice habits via qualitative inquiry education: Favoriser l'acquisition d'habitudes en matière de pratique chez les étudiants en ergothérapie par l'intermédiaire d'une formation en

- recherche qualitative. *Canadian Journal of Occupational Therapy*, 82(2), 119–128.
<https://doi.org/10.1177/0008417414562955>
- Maruyama, S., Sasada, S., Jinbo, Y., & Bontje, P. (2021). A concept analysis of clinical reasoning in occupational therapy. *Asian Journal of Occupational Therapy*, 17(1), 17–25.
<https://doi.org/10.11596/asiajot.16.119>
- Mattingly, C. (1991a). The narrative nature of clinical reasoning. *The American Journal of Occupational Therapy*, 45(11), 998–1005. <https://doi.org/10.5014/ajot.45.11.998>
- *Mattingly, C. (1991b). What is clinical reasoning? *The American Journal of Occupational Therapy*, 45(11), 979–986. <https://doi.org/10.5014/ajot.45.11.979>
- Mattingly, C., & Fleming, M. H. (1994). *Clinical reasoning: Forms of inquiry in a therapeutic practice*. F. A. Davis.
- *Mattingly, C., & Gillette, N. (1991). Anthropology, occupational therapy, and action research. *The American Journal of Occupational Therapy*, 45(11), 972–978.
<https://doi.org/10.5014/ajot.45.11.972>
- *McCannon, R., Robertson, D., Caldwell, J., Juwah, C., & Elfessi, A. (2004). Comparison of clinical reasoning skills in occupational therapy students in the USA and Scotland. *Occupational Therapy International*, 11(3), 160–176. <https://doi.org/10.1002/oti.204>
- *McCarron, K. A., & Amico, F. D. (2002). The impact of problem-based learning on clinical reasoning in occupational therapy education. *Occupational Therapy In Health Care*, 16(1), 1–13. https://doi.org/10.1080/J003v16n01_01
- *McGrath, T., Wiid, C., McCormack, C., & Doyle, P. (2010). An exploration of e-learning tools to support the occupational therapy practice education experience at an Irish university. *Irish Journal of Occupational Therapy*, 38(2), 31–36.

- *Mew, M. M., & Fossey, E. (1996). Client-centred aspects of clinical reasoning during an initial assessment using the Canadian Occupational Performance Measure. *Australian Occupational Therapy Journal*, 43, 155–166. <https://doi.org/10.1111/j.1440-1630.1996.tb01851.x>
- *Miller, L. T., Bossers, A. M., Polajko, H. J., & Hartley, M. (2001). Development of the Competency Based Fieldwork Evaluation (CBFE). *Occupational Therapy International*, 8(4), 244–262. <https://doi.org/10.1002/oti.149>
- *Mitchell, R., & Unsworth, C. A. (2004). Role perceptions and clinical reasoning of community health occupational therapists undertaking home visits. *Australian Occupational Therapy Journal*, 51(1), 13–24. <https://doi.org/10.1111/j.1440-1630.2004.00372.x>
- *Mitchell, R., & Unsworth, C. A. (2005). Clinical reasoning during community health home visits: Expert and novice differences. *British Journal of Occupational Therapy*, 68(5), 215–223. <https://doi.org/10.1177/030802260506800505>
- *Mjøsund, H. L., Moe, C. F., Burton, E., & Uhrenfeldt, L. (2021). Promotion of physical activity through reablement for older adults: Exploring healthcare professionals' clinical reasoning. *Journal of Multidisciplinary Healthcare*, 14, 1623–1635. <https://doi.org/10.2147/jmdh.S315553>
- Mosey, A. C. (1996). Theoretical information. In *Applied scientific inquiry in the health professions: An epistemological orientation* (2nd ed., pp. 143–170). The American Occupational Therapy Association.
- *Mostert, E., Zacharkiewicz, A., & Fossey, E. (1996). Claiming the illness experience: Using narrative to enhance theoretical understanding. *Australian Occupational Therapy Journal*, 43(3–4), 125–132. <https://doi.org/10.1111/j.1440-1630.1996.tb01848.x>

- *Mu, K., Coppard, B. M., Bracciano, A., Doll, J., & Matthews, A. (2010). Fostering cultural competency, clinical reasoning, and leadership through international outreach. *Occupational Therapy in Health Care*, 24(1), 74–85.
<https://doi.org/10.3109/07380570903329628>
- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), 1–7. <https://doi.org/10.1186/s12874-018-0611-x>
- *Murphy, L. F., & Stav, W. B. (2018). The impact of online video cases on clinical reasoning in occupational therapy education: A quantitative analysis. *The Open Journal of Occupational Therapy*, 6(3). <https://doi.org/10.15453/2168-6408.1494>
- *Neistadt, M. E. (1992). The classroom as clinic: Applications for a method of teaching clinical reasoning. *American Journal of Occupational Therapy*, 46(9), 814–819.
<https://doi.org/10.5014/ajot.46.9.814>
- *Neistadt, M. E. (1996). Teaching strategies for the development of clinical reasoning. *The American Journal of Occupational Therapy*, 50(8), 676–684.
<https://doi.org/10.5014/ajot.50.8.676>
- *Neistadt, M. E. (1998). Teaching clinical reasoning as a thinking frame. *American Journal of Occupational Therapy*, 52(3), 221–229. <https://doi.org/10.5014/ajot.52.3.221>
- *Neistadt, M. E., & Atkins, A. (1996). Analysis of the orthopedic content in an occupational therapy curriculum from a clinical reasoning perspective. *American Journal of Occupational Therapy*, 50(8), 669–675. <https://doi.org/10.5014/ajot.50.8.669>

- *Neistadt, M. E., Wight, J., & Mulligan, S. E. (1998). Clinical reasoning case studies as teaching tools. *American Journal of Occupational Therapy*, 52(2), 125–132.
<https://doi.org/10.5014/ajot.52.2.125>
- *Ng, S. L., Mylopoulos, M., Kangasjarvi, E., Boyd, V. A., Teles, S., Orsino, A., Lingard, L., & Phelan, S. (2020). Critically reflective practice and its sources: A qualitative exploration. *Medical Education*, 54(4), 312–319. <https://doi.org/10.1111/medu.14032>
- Nguyen, Q. D., Fernandez, N., Karsenti, T., & Charlin, B. (2014). What is reflection? A conceptual analysis of major definitions and a proposal of a five-component model. *Medical Education*, 48(12), 1176–1189. <https://doi.org/10.1111/medu.12583>
- *Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104.
<https://doi.org/10.1111/1440-1630.12252>
- *Nielsen, S., Klug, M., & Fox, L. (2020). Impact of nontraditional level I fieldwork on critical thinking. *The American Journal of Occupational Therapy*, 74(3), 7403345010p1-7403345010p7. <https://doi.org/10.5014/ajot.2020.036350>
- *Nikopoulou-Smyrni, P., & Nikopoulos, C. K. (2007). A new integrated model of clinical reasoning: Development, description and preliminary assessment in patients with stroke. *Disability & Rehabilitation*, 29(14), 1129–1138.
<https://doi.org/10.1080/09638280600948318>
- *Oldenburg, H. Y., Snyder, K. L., Heinle, D. K., & Hollman, J. H. (2020). A comparison of clinical reasoning among rehabilitation students during experiential learning. *Journal of Allied Health*, 49(4), 252–257.

- Ooi, S. M., Fisher, P., & Coker, S. (2021). A systematic review of reflective practice questionnaires and scales for healthcare professionals: A narrative synthesis. *Reflective Practice*, 22(1), 1–15. <https://doi.org/10.1080/14623943.2020.1801406>
- *Paterson, M., & Adamson, L. (2001). An international study of educational approaches to clinical reasoning. *British Journal of Occupational Therapy*, 64(8), 403–405. <https://doi.org/10.1177/030802260106400806>
- *Pereira, R. B., Whiteford, G., Hyett, N., Weekes, G., Di Tommaso, A., & Naismith, J. (2020). Capabilities, Opportunities, Resources and Environments (CORE): Using the CORE approach for inclusive, occupation-centred practice. *Australian Occupational Therapy Journal*, 67(2), 162–171. <https://doi.org/10.1111/1440-1630.12642>
- Pitonyak, J., Nielsen, S., O'Brien, S., Corsilles-Sy, C., Lambert, D., & Jaffe, L. (2020). Critical thinking in occupational therapy education: A systematic mapping review. *Journal of Occupational Therapy Education*, 4(4). <https://doi.org/10.26681/jote.2020.040403>
- *Preston, J., Galloway, M., Wilson, R., McNamee, L., Deans, Y., & McGhee, G. (2018). Occupational therapists and paramedics form a mutually beneficial alliance to reduce the pressure on hospitals: A practice analysis. *British Journal of Occupational Therapy*, 81(6), 358–362. <https://doi.org/10.1177/0308022618757412>
- *Reid, D. T. (2013). Teaching mindfulness to occupational therapy students: Pilot evaluation of an online curriculum. *Canadian Journal of Occupational Therapy*, 80(1), 42–48. <https://doi.org/10.1177/0008417413475598>
- *Robertson, L. J. (1996). Clinical reasoning, Part 2: Novice/expert differences. *British Journal of Occupational Therapy*, 59(5), 212–216. <https://doi.org/10.1177/030802269605900507>

- Rogers, J. C. (1983). Eleanor Clarke Slagle Lectureship—1983; Clinical reasoning: The ethics, science, and art. *The American Journal of Occupational Therapy*, 37(9), 601–616.
<https://doi.org/10.5014/ajot.37.9.601>
- *Royeen, C. B. (1995). Problem-based learning curriculum for occupational therapy education. *American Journal of Occupational Therapy*, 49(4), 338–346.
- *Royeen, C. B. (2020). Meta-emotion of Occupation with Wissen (MeOW): Feeling about feeling while doing with meaning. *Journal of Occupational Science*, 27(4), 460–473.
<https://doi.org/10.1080/14427591.2020.1742196>
- *Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 58(3), 333–336. <https://doi.org/10.5014/ajot.58.3.333>
- *Schaber, P., & Shanedling, J. (2012). Online course design for teaching critical thinking. *Journal of Allied Health*, 41(1), e9-14.
- Schell, B. A. B., & Cervero, R. M. (1993). Clinical reasoning in occupational therapy: An integrative review. *The American Journal of Occupational Therapy*, 47(7), 605–610.
<https://doi.org/10.5014/ajot.47.7.605>
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- *Schwartz, K. B. (1991). Clinical reasoning and new ideas on intelligence: Implications for teaching and learning. *American Journal of Occupational Therapy*, 45(11), 1033–1037.
<https://doi.org/10.5014/ajot.45.11.1033>
- *Shafaroodi, N., Kamali, M., Parvizy, S., Mehraban, A. H., & O'Toole, G. (2014). Factors affecting clinical reasoning of occupational therapists: A qualitative study. *Medical Journal of The Islamic Republic of Iran*, 28, 8.

- Steven, A., Wilson, G., Turunen, H., Vizcaya-Moreno, M. F., Azimirad, M., Kakurel, J., Porras, J., Tella, S., Pérez-Cañaveras, R., Sasso, L., Aleo, G., Myhre, K., Ringstad, Ø., Sara-Aho, A., Scott, M., & Pearson, P. (2020). Critical incident techniques and reflection in nursing and health professions education: Systematic narrative review. *Nurse Educator*, 45(6), E57. <https://doi.org/10.1097/NNE.0000000000000796>
- *Stewart, L. S. P. (2001). The role of computer simulation in the development of clinical reasoning skills. *British Journal of Occupational Therapy*, 64(1), 2–8. <https://doi.org/10.1177/030802260106400102>
- *Strong, J., Gilbert, J., Cassidy, S., & Bennett, S. (1995). Expert clinicians' and students' views on clinical reasoning in occupational therapy. *British Journal of Occupational Therapy*, 58(3), 119–123. <https://doi.org/10.1177/030802269505800309>
- *Taylor, B., Robertson, D., Wiratunga, N., Craw, S., Mitchell, D., & Stewart, E. (2007). Using computer aided case based reasoning to support clinical reasoning in community occupational therapy. *Computer Methods and Programs in Biomedicine*, 87(2), 170–179. <https://doi.org/10.1016/j.cmpb.2007.05.007>
- *Toth-Cohen, S. (2008). Using cultural-historical activity theory to study clinical reasoning in context. *Scandinavian Journal of Occupational Therapy*, 15(2), 82–94. <https://doi.org/10.1080/11038120701534975>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and

explanation. *Annals of Internal Medicine*, 169(7), 467–473. <https://doi.org/10.7326/M18-0850>

*Tryssenaar, J. (1995). Interactive journals: An educational strategy to promote reflection. *The American Journal of Occupational Therapy*, 49(7), 695–702.

<https://doi.org/10.5014/ajot.49.7.695>

Unsworth, C. A. (1999). Clinical reasoning in occupational therapy. In C. A. Unsworth (Ed.), *Cognitive and perceptual dysfunction: A clinical reasoning approach to evaluation and intervention* (pp. 43–73). F. A. Davis.

*Unsworth, C. A. (2001). The clinical reasoning of novice and expert occupational therapists. *Scandinavian Journal of Occupational Therapy*, 8(4), 163–173.

<https://doi.org/10.1080/110381201317166522>

*Unsworth, C. A. (2004). Clinical reasoning: How do pragmatic reasoning, worldview and client-centredness fit? *British Journal of Occupational Therapy*, 67(1), 10–19.

<https://doi.org/10.1177/030802260406700103>

*Unsworth, C. A. (2005). Using a head-mounted video camera to explore current conceptualizations of clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 59(1), 31–40. <https://doi.org/10.5014/ajot.59.1.31>

*Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16.

<https://doi.org/10.1177/0308022615599994>

*Vachon, B., Durand, M. J., & LeBlanc, J. (2010a). Empowering occupational therapists to become evidence-based work rehabilitation practitioners. *Work*, 37(2), 119–134.

<https://doi.org/10.3233/wor-2010-1063>

- *Vachon, B., Durand, M. J., & LeBlanc, J. (2010b). Using reflective learning to improve the impact of continuing education in the context of work rehabilitation. *Advances in Health Sciences Education*, 15(3), 329–348. <https://doi.org/10.1007/s10459-009-9200-4>
- *Velde, B. P., Wittman, P. P., & Vos, P. (2006). Development of critical thinking in occupational therapy students. *Occupational Therapy International*, 13(1), 49–60. <https://doi.org/10.1002/oti.20>
- Veritas Health Innovation. (2018). *Covidence systematic review software* [Computer software]. www.covidence.org
- Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment: Differential diagnosis. *Nurse Educator*, 38(1), 34–36. <https://doi.org/10.1097/NNE.0b013e318276dfbe>
- *Vogel, K. A., Geelhoed, M., Grice, K. O., & Murphy, D. (2009). Do occupational therapy and physical therapy curricula teach critical thinking skills? *Journal of Allied Health*, 38(3), 152–157.
- *Vroman, K. G., & MacRae, N. (1999). How should the effectiveness of problem-based learning in occupational therapy education be examined? *American Journal of Occupational Therapy*, 53(5), 533–536. <https://doi.org/10.5014/ajot.53.5.533>
- *Ward, J. D. (2003). The nature of clinical reasoning with groups: A phenomenological study of an occupational therapist in community mental health. *American Journal of Occupational Therapy*, 57(6), 625–634. <https://doi.org/10.5014/ajot.57.6.625>
- *Whalley Hammell, K. R. (2013). Client-centred practice in occupational therapy: Critical reflections. *Scandinavian Journal of Occupational Therapy*, 20(3), 174–181. <https://doi.org/10.3109/11038128.2012.752032>

- *Whalley Hammell, K. R. (2015). Client-centred occupational therapy: The importance of critical perspectives. *Scandinavian Journal of Occupational Therapy*, 22(4), 237–243. <https://doi.org/10.3109/11038128.2015.1004103>
- Whiteford, G. (2010). Occupational deprivation: Understanding limited participation. In *Introduction to occupation: The art and science of living* (pp. 303–328).
- *Wittman, P., & Velde, B. P. (2002). Attaining cultural competence, critical thinking, and intellectual development: A challenge of occupational therapists. *American Journal of Occupational Therapy*, 56(4), 454–456. <https://doi.org/10.5014/ajot.56.4.454>
- *Wong, K. Y., Whitcombe, S. W., & Boniface, G. (2016). Teaching and learning the esoteric: An insight into how reflection may be internalised with reference to the occupational therapy profession. *Reflective Practice*, 17(4), 472–482. <https://doi.org/10.1080/14623943.2016.1175341>
- World Federation of Occupational Therapists. (2016). *Minimum standards for the education of occupational therapists*.
- *Young, M. E., Thomas, A., Lubarsky, S., Gordon, D., Gruppen, L. D., Rencic, J., Ballard, T., Holmboe, E., Da Silva, A., Ratcliffe, T., Schuwirth, L., Dory, V., & Durning, S. J. (2020). Mapping clinical reasoning literature across the health professions: A scoping review. *BMC Medical Education*, 20(1). <https://doi.org/10.1186/s12909-020-02012-9>
- *Zimmerman, S. S., Hanson, D. J. B., Stube, J. E., Jedlicka, J. S., & Fox, L. (2007). Using the power of student reflection to enhance professional development. *Internet Journal of Allied Health Sciences & Practice*, 5(2), 1–7. <https://doi.org/10.46743/1540-580x/2007.1146>

* Indicates article was included in review.

CHAPTER 3 – INITIAL EXPLORATION OF THE RELATIONSHIP BETWEEN REASONING AND REFLECTION IN OCCUPATIONAL THERAPY LITERATURE: A SCOPING REVIEW

As part of the scoping review presented in Chapter 2, we also collected quotes in which authors explicitly related a reasoning construct (i.e., clinical reasoning, professional reasoning, or critical thinking) to a reflection construct (i.e., reflection, reflective practice, or critical reflection). In this chapter I present these additional findings to further elaborate on how these skills are related to and differentiated from one another in occupational therapy literature.

Introduction

Occupational therapists must integrate knowledge using high-level thinking skills to best support clients (Bannigan & Moores, 2009). Reasoning and reflection are two such high-level thinking skills, both of which are considered essential to health professional practice (Lecours et al., 2021; Young et al., 2020). The World Federation of Occupational Therapists (2016) considers professional reasoning, which includes reflective practice, a required skill for occupational therapy practitioners. While these terms are sometimes not clearly or consistently defined (Burke et al., 2023), an additional challenge in communicating about them, and perhaps to ultimately engaging in these skills, is lack of clarity about their relationship to one another.

Although “there is no one sentence definition that captures the subtlety of how therapists think in the midst of practice” (Mattingly & Fleming, 1994, p. 9), reasoning has been commonly defined in occupational therapy literature as the “process that practitioners use to plan, direct, perform, and reflect on client care” (Schell, 2019, p. 482). Different types of reasoning, such as narrative, procedural, interactive, and conditional reasoning are also commonly referenced (da Silva Araujo et al., 2022; Fleming, 1991; Mattingly, 1991); these arose out of the original

Clinical Reasoning Study (Gillette & Mattingly, 1987) as modes of thinking for occupational therapy practitioners. Types of reasoning have been added to and expounded upon and continue to be a focus of clinical reasoning literature (da Silva Araujo et al., 2022; Márquez-Álvarez et al., 2019).

Reflection, on the other hand, has been more commonly defined using sources outside occupational therapy literature. Schön (1983) has influenced the profession's conceptualization of reflection, describing reflective practice as a “dialogue of thinking and doing through which I become [...] more skillful” (p. 31). This umbrella term “reflective practice” includes reflection during practice (reflection-in-action) and retrospective reflection (reflection-*on*-action). Cohn and colleagues (2010) used these conceptualizations of reflection to discuss the skill's evolution, arguing that “from the beginning to this day, the very nature of occupational therapy practice requires reflective inquiry on the part of occupational therapy practitioners, as client problems are complex, socially constructed and situated” (p. 132).

In a dissection of the structure of theoretical information, Mosey (1996) indicates that postulates, which state the relationship between concepts, are essential to giving meaning to theory. Existing models of professional skills provide an understanding of how reasoning and reflection may be related to one another. Bannigan and Moores (2009) presented a model of professional thinking; they described professional thinking as being “closely aligned to clinical reasoning” (p. 343) and being made up of reflection and evidence-based practice. Nicola-Richmond and colleagues (2016) identified clinical reasoning and reflective practice as two of ten separate threshold concepts in occupational therapy, suggesting these two processes are separate and essential to practice. In their concept analysis of professionalism in occupational therapy, Lecours and colleagues (2021) identified reasoning as a behavioral attribute (which

included critical thinking and clinical judgment); in discussing reasoning, they describe it as critiquing clinical thinking, a behavior often associated with reflective practice (Kinsella, 2009; Schön, 1983). Although not a component of professionalism itself, reflexivity is described as an antecedent, important to the overall development of professionalism. This suggests that reflection facilitates the development of reasoning skills.

In moving research along from theoretical description of these constructs towards measurement, Benfield and Johnston (2020) developed a tool to measure “evidence-informed professional thinking” (which they refer to as EIPT). They identified that expertise involves three domains: “clinical or professional reasoning, evidence-based practices and assessing and measuring outcomes” (p. 310). They further described “essential activities” of clinical reasoning, which all involved reflection (Benfield, 2015; Benfield & Johnston, 2020; Johnston & Benfield, 2015). However, in sampling literature for the initial development of their tool, they did not specifically seek works on reflection or reflective practice, instead focusing on their three overarching domains of expertise. Prior tools that they pulled from did explicitly identify reflection (i.e., Self-Assessment of Clinical Reflection and Reasoning and Self-Reflection and Insight Scale). Rasch analysis of the EIPT tool revealed two significantly correlated dimensions, critical clinical reasoning and evidence-informed practice activities. Both of these dimensions are made up of reflective activities (i.e., reflection, assessment, questioning, appraising); both subscales thus suggest reflection or reflective practice as activities essential to EIPT.

In literature more focused on individual professional thinking skills, relationships between reasoning and reflection are not often explicit or consistent. The lack of relational clarity between reasoning and reflection in occupational therapy literature is unsurprising for two reasons. First, some of the earliest work on reasoning in the field was influenced by Schön’s

(1983) ideas about reflective practitioners (Gillette & Mattingly, 1987). Second, early studies on clinical reasoning in occupational therapy used the process of reflection to elicit therapist reasoning (Crabtree & Lyons, 1997; Gillette & Mattingly, 1987). This made the line between reflection and reasoning difficult to parse in results. Strong et al. (1995) even found that “[narrative] reasoning resembles the reflection phase identified in Schön’s model of reflective practice” (p. 120), suggesting a synonymous relationship between the two constructs. More recently, Unsworth and Baker (2016) noted that clinical reasoning, which includes “reflecting on practice” as a key element, has been described using “a plethora of terms [...] including critical thinking, [...] reflective practice and professional reasoning” (p. 5). Here they suggested that a variety of labels related to reasoning and reflection have been used interchangeably, further acknowledging that some appear to view these constructs as synonyms.

Without clear postulates describing the relationship between reasoning and reflection, these concepts will continue to be isolated in our understanding of professional skills. While isolated, they are “contributing little to the description of a set of phenomena,” (Mosey, 1996, p. 160), in this case, our understanding of key professional skills in occupational therapy.

Mosey (1996) suggested that postulates can be temporal (ordering in time), spatial (ordering in space), quantitative (identifying frequency/amount), qualitative (describing characteristics), correlative (identifying degree of covariance), causal (identifying cause-and-effect), and hierarchical (identifying relative positions in a conceptual system) in nature. Existing postulates relating reasoning and reflection tend to be qualitative and hierarchical; these constructs are largely described in terms of their roles in a conceptual system of professional thinking (Bannigan & Moores, 2009; Benfield & Johnston, 2020). For example, one suggested relationship between reasoning and reflection indicates that reasoning supports reflection. In

Cohn and colleagues' (2010) discussion of occupational therapy as a reflective practice, they identify that it is reasoning that allows for engagement with reflection-in and on-practice. They combined Schön's (1983) and Kinsella's (2001) work to summarize that "reflective inquiry involves internally examining a concern or problem by reflecting-in and -on the multiple strands of reasoning to create and clarify meaning and understanding which results in new learning" (Cohn et al., 2010, p. 132). However, others have suggested that reflection supports reasoning. For example, Buchanan and colleagues' (2001), in empirically studying student learning, wrote that activities "promoting reflective practice" are "thus supporting the development of clinical reasoning" (p. 398). Finally, another perspective on these skills is that they may be a part of one another, hierarchically related, as in Schell's (2019) definition of reasoning that includes reflection as one activity. The existing postulates for these skills thus vary widely.

For a complex profession like occupational therapy, more likely than any of these discrete relationships is the existence of more than one relationship and/or non-linear relationships between reasoning and reflection or reflective practice. However, to clarify theoretical information about these skills, explicit postulates about their relationship to one another are essential. Understanding the specifics of these relationships is necessary for clarity of communication about professional thinking skills, which is itself a necessary precursor to teaching reasoning and reflection, which then has a direct impact on ultimate engagement in these skills by practitioners. The aim of this secondary analysis of scoping review data was therefore to understand how occupational therapy literature relates reasoning and reflection.

Method

Scoping reviews are indicated when aiming to define concepts or to "identify and examine characteristics or factors related to a particular concept" (Munn et al., 2018, p. 4).

Therefore, a scoping review was initially chosen for an investigation of how literature defines and differentiates reasoning and reflection in occupational therapy (see Chapter 2). From that literature, suggested relationships between these concepts were occasionally identified, and we chose to conduct a secondary analysis of this data to explore explicit relationships. The initial scoping review and this secondary analysis were both conducted following Arksey and O'Malley's (2005) scoping review framework as revised by Levac and colleagues (2010) and consistent with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018).

The question guiding this secondary analysis was: *what is known from the literature about how occupational therapists relate reasoning and reflection?* Our search included the following databases: CINAHL, PubMed, PsycINFO, Web of Science, Embase, and MEDLINE. We used search terms that related to reasoning and reflection, as listed in Table 3.1, along with “occupational therap*.” The search covered the timeframe up to August, 2021.

Table 3.1

Search Terms

Terms Related to Reasoning	Terms Related to Reflection
Clinical reasoning	Critical reflection
Professional reasoning	Reflective thinking
Critical thinking	Reflectiveness
	Reflective practice

Note. All search terms were used in conjunction with “occupational therap*”.

For inclusion in the larger scoping review, articles needed to have been peer-reviewed and related to occupational therapy (i.e., explicitly referencing occupational therapists/therapy). Additionally, articles needed to include a definition of at least one of the terms of interest: clinical reasoning, professional reasoning, critical thinking, reflective practice, reflection, or critical reflection. The definition was required to be related to occupational therapy practice

and/or education (vs. research). This allowed for a narrower scope and ensured included articles had a more specific focus on the terms of interest. Finally, to be included in this secondary analysis of the data, articles were required to explicitly state a relationship between at least two of the terms of interest. Articles were excluded if they were not available in English.

Covidence software (Veritas Health Innovation, 2018) was used to organize the review. The initial search returned 3,023 articles after duplicates were removed. Along with my committee chair, I conducted screening of titles and abstracts; for the first 10 articles I required consensus. Only one reviewer screened each remaining article; because of this, screening erred on the side of being inclusive to ensure relevant studies were not prematurely excluded. Then myself and at least one other reviewer completed full-text screening on each article, and conflicts were reviewed either by a third reviewer or through reviewer consensus.

Creation of an extraction table was iterative following usability testing and familiarization with the included articles. The final chart included the following fields: authors, publication year, source country, relationship to occupational therapy, definition of relevant terms, and relationships amongst relevant terms. The extracted definitions are reported in Chapter 2. Extraction was carried out for each article independently by at least two reviewers and I reviewed all extraction for consistency. I met frequently with all other reviewers throughout this process to discuss and resolve any conflicts in the data extraction. Descriptive information about articles was then synthesized and data about relationships was analyzed using the framework from Mosey (1996).

Results

The number of studies included at each stage of the review is outlined in Figure 3.1; 42 were ultimately included for analysis (Table 3.2). Included articles were published between 1987

and 2021. Authors and/or studies were primarily associated with the United States ($n = 20$), Canada ($n = 8$), Australia ($n = 4$), Spain ($n = 2$), and England ($n = 2$). The included articles described qualitative designs ($n = 14$), program descriptions ($n = 8$), theory/non-data-based work ($n = 6$), quantitative designs ($n = 4$), literature reviews ($n = 3$), mixed methods designs ($n = 3$), case studies ($n = 2$), and measure development ($n = 2$).

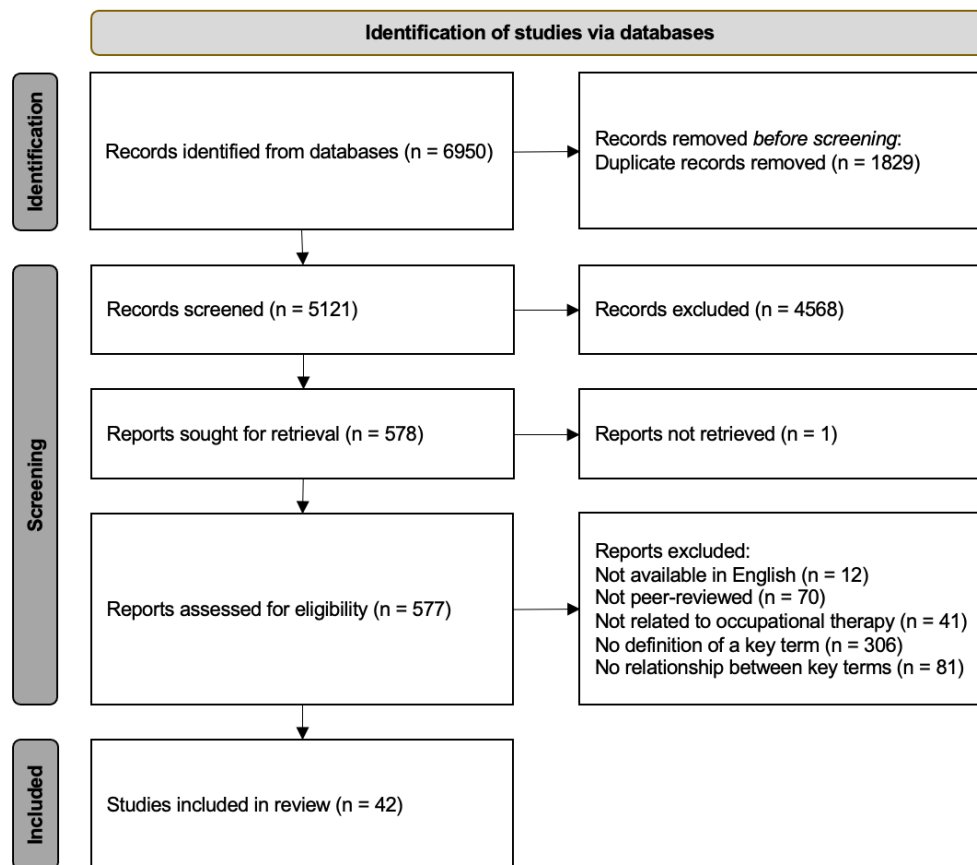


Figure 3.1

Flow Diagram for Inclusion of Peer-Reviewed Studies in the Scoping Review

Note. Figure format from: “The PRISMA 2020 statement: an updated guideline for reporting systematic reviews,” by M. Page, J. McKenzie, P. Bossuyt, I. Boutron, T. Hoffmann, C. Mulrow, et al.; 2021, British Medical Journal, 372(71). doi: 10.1136/bmj.n71.

Table 3.2*Summary of Articles Included in Secondary Analysis*

Ref #^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
1	Alnervik & Svidén (1996)	Sweden	Mixed Methods	Examine how treatment descriptions differ when therapists are invited to storytelling or reflection	Clinical reasoning and reflective practice	"it is important that occupational therapists use different types of reasoning to develop their ability to become reflective practitioners" (p. 101)
2	Andrews (2000)	England	Case Study	Demonstrate impact of reflective practice on learning for a third-year occupational therapy student	Clinical reasoning and reflection	"The value of reflection is further analysed as it informed the clinical reasoning process" (p. 396)
3	Arnold et al. (2019)	Australia	Qualitative	Describe current practice for estimating domestic assistance hours in a medicolegal context	Clinical reasoning and reflection	"Clinical reasoning, the process by which therapists plan, conduct and reflect on their clinical practice" (p. 245)
4	Arntzen (2018)	Norway	Theoretical	Explore the situated and embodied aspects of clinical reasoning in occupational therapy practice	Clinical reasoning and reflection; clinical reasoning and critical reflection	"Critical reflection for the patient and therapist on the double status of the body, and on how it manifests its ambiguous presence, is a crucial but not yet problematized dimension of clinical reasoning" (p. 176)
5	Atler & Gavin (2010)	US	Mixed Methods	Explore how service-learning experiences impact student perceptions of their abilities	Critical thinking and reflection	"the process of critical thinking where personal observations are reflected upon, course of actions planned, and outcomes are evaluated" (p. 25)

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
6	Bailey & Cohn (2002)	US	Program Description	Describe an occupational therapy course focusing on interactive and phenomenological aspects of clinical reasoning	Clinical reasoning and reflection	"The first course on observation and interpretation addresses students' reasoning skills with an emphasis on the ability to make, reflect on, analyze, and critique observations and interpretations" (p. 34)
7	Bannigan & Moores (2009)	Canada	Theoretical	Consider reflective practice and evidence-based practice as complementary aspects of professional thinking	Clinical reasoning and reflective practice	"Reflective practice and evidence-based practice skills both contribute to clinical reasoning" (p. 342)
8	Barris (1987)	US	Qualitative	Describe psychosocial occupational therapy evaluation process	Clinical reasoning and reflection	"clinical reasoning (or clinical decision making) is an integral part of practice in fields where design or problem solving is involved. Schön referred to it as a process of reflecting-in-action and suggested that, ideally, it should not be approached as problem solving but as problem setting" (p. 148)
9	Bazyk et al. (2010)	US	Qualitative	Explore the meaning of service learning and the learning process from the perspective of occupational therapy students providing preventive occupation-based groups to low-income urban youth attending after-school care	Professional reasoning and reflection	"Professional reasoning is the 'process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 183); "This reflection, in turn, affected how they planned and conducted future sessions, resulting in enhanced

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
						professional reasoning skills" (p.184)
10	Benfield & Johnston (2020)	US	Measure Development	Develop an initial measure of evidence-informed professional thinking	Clinical reasoning and reflection; clinical reasoning and critical reflection	"Clinical reasoning is the process by which therapists 'collect cues, process the information, come to an understanding of a patient problem or situation, plan and implement interventions, evaluate outcomes and reflect on and learn from the process' [...] While there are several somewhat different clinical reasoning models [...] Essential activities across models included critical reflection on practice [...] reflecting on one's knowledge, beliefs and values" (p. 310)
11	Carrier et al. (2020)	Canada	Qualitative	Describe elements involved in the clinical reasoning of community occupational therapists	Clinical reasoning and reflection	"Defined as 'the process that practitioners use to plan, direct, perform, and reflect on client care', clinical reasoning is the basis of practice and professional actions" (p. 1210)
12	Carrier et al. (2012)	Canada	Qualitative	Explore occupational therapists' clinical reasoning process that underlies choice of strategy for teaching transfers to older adults	Clinical reasoning and reflection	"Clinical reasoning [...] can be described as 'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 355)

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
13	Carrier et al. (2010)	Canada	Literature Review	Synthesize current knowledge about community OT clinical reasoning	Clinical reasoning and reflection	"[Clinical reasoning] can also be described as 'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 256) "Occupational therapists reach [clinical reasoning] expertise level 1 through professional and personal experiences and active reflection on those experiences" (p. 360)
14	Cheung et al. (2018)	Singapore	Qualitative	Explore how occupational therapists make clinical decisions with female homemakers with upper limb repetitive strain injuries	Clinical reasoning and reflection	"Clinical reasoning refers to 'the process that practitioners use to plan, direct, perform, and reflect on client care'" (p. 3137)
15	Cohn (1989)	US	Theoretical	Propose strategies to teach technical skills and provide a foundation for clinical reasoning	Clinical reasoning and reflection	"The example we provide of reflecting on our own practice can model the clinical reasoning foundation that students will continue to build through reflecting on their own practice" (p. 244)
16	Crowe (2014)	US	Qualitative	Explore the professional reasoning process of an occupational therapist using a multi-sensory environment to treat clients with dementia	Professional reasoning and reflection	"professional reasoning [is] the 'process that [occupational therapy] practitioners use to plan, direct, perform, and reflect on client care'" (p. 199)

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
17	Dubroc & Pickens (2015)	US	Qualitative	Investigate how occupational therapists develop clinical reasoning expertise in home modifications	Professional reasoning and reflection	"Professional reasoning is the process that occupational therapists use 'to plan, direct, perform, and reflect on client care'" (p. 317)
18	Dunn & Musolino (2011)	US	Measure Development	Validate the Reflective Thinking Questionnaire and Revised Study Process Questionnaire for entry-level, graduate physical and occupational therapy students	Professional reasoning and reflective practice	"professional reasoning and self-directed learning as essential components of [reflective practice] for entry-level graduate students" (p. 129)
19	Fitzgerald & MacCobb (2017)	Ireland	Program Description	Describe collaborative scholarship of practice to implement the Alert Program	Clinical reasoning and reflection	"Clinical reasoning is the process used by practitioners to plan, direct, perform and reflect on practice" (p. 270)
20	Fone (2006)	Australia	Program Description	Describe an information package for supporting the supervision process	Clinical reasoning and reflection	"Strategies for facilitating reflective thinking: Encourage supervisee to practise verbalising clinical reasoning/narrative thinking" (pp. 280-281)
21	Fortune & Ryan (1996)	England	Program Description	Present a caseload management system for community occupational therapists	Clinical reasoning and reflection	"Experience, and the opportunity and ability to reflect on this, moves the occupational therapist towards the complex and seemingly intuitive reasoning characteristic of the expert practitioner" (p. 208)

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
22	Garcia et al. (2021)	Chile	Quantitative	Examine factors that influence evidence-based practice uptake by Chilean occupational therapists	Clinical reasoning and reflection	"Clinical reasoning is defined in occupational therapy as 'the process used by practitioners to plan, direct, perform and reflect on client care'" (p. 170)
23	Gee et al. (2017)	US	Quantitative	Outline how to develop and describe a clinical simulation measurement tools to capture student clinical reasoning	Clinical reasoning and reflection	"[Clinical reasoning is] the process used by practitioners to plan, direct, perform, and reflect on client care" (p. 131)
24	Gibson et al. (2000)	US	Qualitative	Describe novice vs. experienced therapists' clinical reasoning when creating goals	Clinical reasoning and reflection	"It appears that reflection on practice may increase awareness of clinical reasoning skills" (p. 26)
25	Guy et al. (2020)	Australia	Mixed Methods	Describe to what extent reflective practice is facilitated within occupational therapy supervision processes	Professional reasoning and reflective practice	"Occupational therapists need to engage in reflective practice to combine knowledge, science and experiences in their professional reasoning" (p. 320)
26	Hansen (2013)	US	Qualitative	Use the service learning pedagogy to explore how occupational justice theory is linked to practice	Clinical reasoning and reflection	"Clinical reasoning in occupational therapy is the process practitioners follow to plan, direct, perform and reflect on client care" (p. 44)
27	Knis Matthews et al. (2017)	US	Theoretical	Place the clinical reasoning process in a historical context; propose the Matthews Model of Clinical Reasoning	Clinical reasoning and reflection	"The occupational therapy practice framework defines clinical reasoning as the 'process used by practitioners to plan, direct, perform and reflect on care'" (p. 360)

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
28	Kramer et al. (2007)	US	Program Description	Discuss learning-centered approaches used within an occupational therapy program	Clinical reasoning and reflection	"clinical reasoning is a complex process used by occupational therapists to 'plan, direct, perform, and reflect on client care'" (p. 187)
29	Leicht & Dickerson (2002)	US	Theoretical	Describe the occupational therapy clinical reasoning process and compare it to that of medicine and nursing	Clinical reasoning and reflection	"the importance of intuition and reflection to the clinical reasoning process of occupational therapists" (p. 121)
30	Lowe et al. (2007)	Canada	Case Study	Examine whether or not and when health professionals use reflection when implementing learning into practice	Clinical reasoning and reflection	"many models do not explicitly focus on the more deliberate use of reflection in clinical reasoning rather than in response to surprises or unexpected occurrences" (p. 143)
31	Márquez-Álvarez et al. (2021)	Spain	Quantitative	Identify occupational therapy undergraduates perspectives of concepts related to improving professional reasoning	Professional reasoning and reflection	"professional reasoning is defined as the process by which professionals plan, direct, carry out and reflect on the client's treatment" (p. 2)
32	Márquez-Álvarez et al. (2019)	Spain	Literature Review	Identify and describe the scientific publications on professional reasoning	Professional reasoning and reflection	"professional reasoning can be defined as the process used by practitioners to plan, direct, perform, and reflect on client care" (p. 1)
33	Mattingly & Gillette (1991)	US	Theoretical	Consider the impact of a collaborative process of research on understanding of clinical	Clinical reasoning and reflection	"reflection can build clinical reasoning skills that will help therapists devise more individualized, appropriate

Ref # ^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
				reasoning in occupational therapy		treatment strategies, even in quite rigid systems" (p. 977)
34	Mu et al. (2010)	US	Program Description	Describe two international learning programs at Creighton University and report on outcomes of each	Clinical reasoning and reflection	"Clinical reasoning is the ability to distinctly and critically analyze the reasons for one's actions and to reflect upon those decisions afterward with intentions of improvement" (p. 75)
35	Royeen (1995)	USA	Program Description	Discuss need for change in occupational therapy education and present a problem-based learning experience as one solution	Clinical reasoning and critical reflection	"I believe that the foundation of clinical reasoning is, in fact, critical reflection" (p. 338)
36	Schaber & Shanedling (2012)	USA	Quantitative	Measure changes in student critical thinking over a semester in a cyclical, intentionally designed online theory course	Professional reasoning and reflection	"professional reasoning [is] the active thinking processes of planning, directing, performing, and reflecting related to intervention" (p. e-10)
37	Stewart (2001)	Scotland	Program Description	Describe occupational therapist contributions to a project aimed using computer simulation of care for patients with a fractured hip	Clinical reasoning and reflective practice	"academic and fieldwork educators are being encouraged to assist students in developing the clinical reasoning skills necessary for reflective practice" (p. 6)
38	Toth-Cohen (2008)	USA	Qualitative	Examine clinical reasoning in context	Clinical reasoning and reflection	"Clinical reasoning is defined as the ways occupational therapists think in the midst of practice and reflect on their own thinking" (p. 82)

Ref #^a	Authors (Year)	Source Country	Scholarship Type	Aim	Relationship Described	Quote
39	Tryssenaar (1995)	Canada	Qualitative	Discuss interactive journals as an educational strategy to promote reflection in the academic mental health component of an occupational therapy curriculum	Clinical reasoning and reflection	"Reflection is an essential component of clinical reasoning in occupational therapy practice" (p. 695)
40	Unsworth & Baker (2016)	Australia	Literature Review	Describe the nature and volume of the professional reasoning literature in occupational therapy and what literature on novice vs. expert occupational therapists says about the development of professional reasoning in occupational therapy students	Clinical reasoning and reflection	"Clinical reasoning [...] describes the thinking processes used by occupational therapists when planning, conducting and reflecting on their practice" (p. 5)
41	Vachon et al. (2010a)	Canada	Qualitative	Explore clinical decision-making/reflective processes used by occupational therapists who took a four-day continuing education program	Clinical reasoning and reflective practice	"Becoming a reflective practitioner can thus assist clinicians in describing their clinical reasoning processes" (p. 120)
42	Vachon et al. (2010b)	Canada	Qualitative	Explore how occupational therapists developed their ability to use reflective learning to ameliorate their use of research evidence	Clinical reasoning and reflection	"occupational therapists use reflection to apply best evidence in their clinical-reasoning and decision-making processes" (p. 330)

^a These reference numbers are used to refer to the articles throughout this manuscript.

Reasoning and Reflection

Of the articles included in this review, 38 described a relationship between a reasoning term and a reflection term (other than reflective practice): 28 included a relationship between clinical reasoning and reflection, six between professional reasoning and reflection, one between critical thinking and reflection, and three between clinical reasoning and critical reflection. For the majority of these ($n = 27$), the suggested relationship is hierarchical, with critical reflection and reflection described as components of or steps in the process of reasoning/critical thinking (3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 16, 17, 19, 22, 23, 26, 27, 28, 30, 31, 32, 34, 36, 38, 39, 40, 42) or with critical reflection as the foundation of clinical reasoning (35).

Some of the described relationships require inference of an assumed hierarchy. In describing the relationship between clinical/professional reasoning and reflection, some authors suggested reflection supports the development of, or informs, the reasoning process (2, 9, 15, 21, 24, 29, 33). Alternatively, in one article clinical reasoning was described as facilitating reflective thinking (20). Finally, in one article the given relationship suggests clinical reasoning is synonymous with reflecting-in-action (8), suggesting equivalent placement in a conceptual hierarchy.

Reasoning and Reflective Practice

Four of the included articles referenced a relationship between clinical reasoning and reflective practice and two referenced a relationship between professional reasoning and reflective practice. These relationships were less consistently described, but all suggested hierarchical relationships. In one article, professional reasoning was described as a component of reflective practice (18). In the remaining five articles either reflective practice was described as

required for, or contributing to, clinical/professional reasoning (7, 25, 41) or clinical reasoning was described as required for, or facilitating, engagement in reflective practice (1, 37).

Discussion

The aim of this secondary analysis of scoping review data was to understand how the relationship between the professional skills of reasoning and reflection are depicted in occupational therapy literature. When authors relate these terms by defining reasoning, the majority describe reflection as a component of the reasoning process. This is unsurprising, as many of the articles included in this study used Schell's (2019) definition of clinical/professional reasoning in which reflection is listed as one component. This situates reflection in a hierarchical relationship to reasoning, and one component of a larger, more complex process. Further, in the included articles, the authors suggested that reflection supports therapist reasoning. These two features of the relationship between reasoning and reflection are consistent with existing models of professional skills in occupational therapy, including those that do not explicitly mention reflection but include it as an activity of other processes (Bannigan & Moores, 2009; Benfield & Johnston, 2020; Lecours et al., 2021).

The relationship between reasoning and reflective practice processes across the included articles is less consistent. Overall, reasoning and reflective practice are described as supporting each other. This is in line with the idea that they are both separate and essential threshold concepts for occupational therapy students (Nicola-Richmond et al., 2016) and that reflexivity, yet another related term, is an antecedent to clinical reasoning (Lecours et al., 2021), much like the relationship discussed above. Thus it would seem that reasoning and reflective practice must each be taught, addressing both their distinct features and the relationship between these processes, to support student learning and uptake in practice (Berg et al., 2021).

The lack of clear distinction between clinical reasoning and reflective practice is also consistent with their overall conceptualizations in literature. As noted, clinical/professional reasoning is described as the “process” used throughout therapeutic intervention, from planning to execution to reflection (Schell, 2019). Reflective practice is often conceptualized as a cyclic process of action and reflection (Finlayson, 2015), thus suggesting it too occurs throughout the course of therapeutic intervention. This raises the question of whether it is possible to engage in clinical reasoning without engaging in reflective practice and vice versa. Literature exploring levels of skill or depth for each of these two processes suggests the answer may be yes. Some of the distinction between reasoning and reflective practice may lie in the fact that reflective practice is also described as a professional development process for health care practitioners (Kinsella, 2001). This places reflective practice as a process that goes beyond specific treatment scenarios to which clinical reasoning is bound. Overall, the relationship between these two processes warrants further exploration.

This review has several limitations related to comprehensiveness of findings, as the data included here were a secondary analysis of an existing scoping review. Because in the initial review we required an explicit definition of the terms of interest, we necessarily excluded articles that may have added to our understanding of how the terms are related by authors who do not define them explicitly. This is particularly relevant for authors who describe models of reasoning and/or reflection, which often include expansive but not explicit definitions of these constructs. Reasoning, reflection, and other professional thinking models should be further explored in connection to the findings from this review to contribute to our understanding of how reasoning and reflection are related in occupational therapy. A further limitation is that this review did not explore relationships between reasoning constructs themselves or between reflection constructs

themselves. For example, although we found that reflection is a core component of reasoning, it is certainly also a component of reflective practice (Nicola-Richmond et al., 2016; Wong et al., 2016). A structurally complete theory requires that each construct be related to one another (Mosey, 1996); therefore, further exploration of these relationships is needed.

Reasoning and reflection are essential parts of occupational therapy practice. By looking at the majority perspective of articles included in this review, it is possible to summarize a structure of professional thinking processes in occupational therapy: reflection is considered a core component of clinical/professional reasoning, and reasoning and reflective practice processes are iterative, each supporting the other (Figure 3.2). Occupational therapists can use this structure as a starting place for identifying their own view of how these processes are related and should be sure to be explicit about distinguishing features and relationships between professional thinking processes when communicating about them in practice, education, and research. The relationship between clinical/professional reasoning and reflective practice warrants further investigation. Overall, future research should continue to explore and be explicit about the relationship between reasoning and reflection in occupational therapy practice.



Figure 3.2

Relational Structure Between Reasoning and Reflection

Note. Only the relationships depicted by arrows here were explored through this review. Additional exploration of relationships not shown through arrows (for example, between reflection and reflective practice, or between reflection and critical reflection) require further investigation.

References

- *Alnervik, A., & Svidén, G. (1996). On clinical reasoning: Patterns of reflection on practice. *Occupational Therapy Journal of Research*, 16(2), 98–110.
<https://doi.org/10.1177/153944929601600202>
- *Andrews, J. (2000). The value of reflective practice: A student case study. *British Journal of Occupational Therapy*, 63(8), 396–398. <https://doi.org/10.1177/030802260006300807>
- *Arnold, S., Mackenzie, L., Millington, M., & James, C. (2019). Occupational therapy medicolegal assessment of domestic assistance requirements: Focus group perspectives. *Australian Occupational Therapy Journal*, 66(2), 239–248. <https://doi.org/10.1111/1440-1630.12552>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- *Arntzen, C. (2018). An embodied and intersubjective practice of occupational therapy. *OTJR Occupation, Participation and Health*, 38(3), 173–180.
<https://doi.org/10.1177/1539449217727470>
- *Atler, K., & Gavin, W. J. (2010). Service-learning-based instruction enhances students' perceptions of their abilities to engage in evidence-based practice. *Occupational Therapy in Health Care*, 24(1), 23–38. <https://doi.org/10.3109/07380570903410860>
- *Bailey, D. M., & Cohn, E. S. (2002). Understanding others: A course to learn interactive clinical reasoning. *Occupational Therapy in Health Care*, 15(1–2), 31–46.
https://doi.org/10.1080/J003v15n01_05

- *Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- *Barris, R. (1987). Clinical reasoning in psychosocial occupational therapy: The evaluation process. *Occupational Therapy Journal of Research*, 7(3), 147–162. <https://doi.org/10.1177/153944928700700302>
- *Bazyk, S., Glorioso, M., Gordon, R., Haines, J., & Percaciante, M. (2010). Service learning: The process of doing and becoming an occupational therapist. *Occup Ther Health Care*, 24(2), 171–187. <https://doi.org/10.3109/07380571003681194>
- Benfield, A. M. (2015). *Developing a measure of evidence-informed professional thinking* [Doctoral dissertation]. The University of Wisconsin-Milwaukee.
- *Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>
- Berg, C., Philipp, R., & Taff, S. D. (2021). Scoping review of critical thinking literature in healthcare education. *Occupational Therapy In Health Care*, 37(0), 1–18. <https://doi.org/10.1080/07380577.2021.1879411>
- Buchanan, H., Van Niekerk, L., & Moore, R. (2001). Assessing fieldwork journals: Developmental portfolios. *British Journal of Occupational Therapy*, 64(8), 398–402. <https://doi.org/10.1177/030802260106400805>
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, 11(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>

- *Carrier, A., Freeman, A., Desrosiers, J., & Levasseur, M. (2020). Institutional context: What elements shape how community occupational therapists think about their clients' care? *Health & Social Care in the Community*, 28(4), 1209–1219.
<https://doi.org/10.1111/hsc.12954>
- *Carrier, A., Levasseur, M., Bédard, D., & Desrosiers, J. (2010). Community occupational therapists' clinical reasoning: Identifying tacit knowledge. *Australian Occupational Therapy Journal*, 57(6), 356–365. <https://doi.org/10.1111/j.1440-1630.2010.00875.x>
- *Carrier, A., Levasseur, M., Bédard, D., & Desrosiers, J. (2012). Clinical reasoning process underlying choice of teaching strategies: A framework to improve occupational therapists' transfer skill interventions. *Australian Occupational Therapy Journal*, 59(5), 355–366. <https://doi.org/10.1111/j.1440-1630.2012.01017.x>
- *Cheung, T. W. C., Clemson, L., O' Loughlin, K., & Shuttleworth, R. (2018). Ergonomic education on housework for women with upper limb repetitive strain injury (RSI): A conceptual representation of therapists' clinical reasoning. *Disability and Rehabilitation*, 40(26), 3136–3146. <https://doi.org/10.1080/09638288.2017.1378928>
- *Cohn, E. S. (1989). Fieldwork education: Shaping a foundation for clinical reasoning. *American Journal of Occupational Therapy*, 43(4), 240–244. <https://doi.org/10.5014/ajot.43.4.240>
- Cohn, E. S., Schell, B. A. B., & Crepaeu, E. B. (2010). Occupational therapy as a reflective practice. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry* (pp. 131–157). Springer US.
https://doi.org/10.1007/978-0-387-85744-2_7

- Crabtree, M., & Lyons, M. (1997). Focal points and relationships: A study of clinical reasoning. *British Journal of Occupational Therapy*, 60(2), 57–64.
<https://doi.org/10.1177/030802269706000204>
- *Crowe, J. (2014). Professional reasoning and occupational therapist's use of a multi-sensory environment for clients with dementia. *Physical & Occupational Therapy in Geriatrics*, 32(3), 198–209. <https://doi.org/10.3109/02703181.2014.927947>
- da Silva Araujo, A., Anne Kinsella, E., Thomas, A., Demonari Gomes, L., & Quevedo Marcolino, T. (2022). Clinical reasoning in occupational therapy practice: A scoping review of qualitative and conceptual peer-reviewed literature. *The American Journal of Occupational Therapy*, 76(3), 7603205070. <https://doi.org/10.5014/ajot.2022.048074>
- *Dubroc, W., & Pickens, N. D. (2015). Becoming “at home” in home modifications: Professional reasoning across the expertise continuum. *Occupational Therapy in Health Care*, 29(3), 316–329. <https://doi.org/10.3109/07380577.2015.1010129>
- *Dunn, L., & Musolino, G. M. (2011). Assessing reflective thinking and approaches to learning. *Journal of Allied Health*, 40(3), 128–136.
- Finlayson, A. (2015). Reflective practice: Has it really changed over time? *Reflective Practice*, 16(6), 717–730. <https://doi.org/10.1080/14623943.2015.1095723>
- *Fitzgerald, B., & MacCobb, S. (2017). An occupational therapy and teaching partnership: Applying a scholarship of practice model. *Occupational Therapy in Health Care*, 31(3), 270–282. <https://doi.org/10.1080/07380577.2017.1342888>
- Fleming, M. H. (1991). The therapist with the three-track mind. *The American Journal of Occupational Therapy*, 45(11), 1007–1014. <https://doi.org/10.5014/ajot.45.11.1007>

- *Fone, S. (2006). Effective supervision for occupational therapists: The development and implementation of an information package. *Australian Occupational Therapy Journal*, 53(4), 277–283. <https://doi.org/10.1111/j.1440-1630.2006.00581.x>
- *Fortune, T., & Ryan, S. (1996). Applying clinical reasoning: A caseload management system for community occupational therapists. *British Journal of Occupational Therapy*, 59(5), 207–211. <https://doi.org/10.1177/030802269605900505>
- *Garcia, J., Copley, J., Turpin, M., Bennett, S., McBryde, C., & McCosker, J. L. (2021). Evidence-based practice and clinical reasoning in occupational therapy: A cross-sectional survey in Chile. *Australian Occupational Therapy Journal*, 68(2), 169–179. <https://doi.org/10.1111/1440-1630.12713>
- *Gee, B. M., Thompson, K. E., Strickland, J., & Miller, L. J. (2017). First year occupational therapy students' clinical reasoning approach to addressing challenging behaviors related to sensory processing using a simulated case study. *Journal of Occupational Therapy Education*, 1(2), 1–25. <https://doi.org/10.26681/jote.2017.010207>
- *Gibson, D., Velde, B., Hoff, T., Kvashay, D., Manross, P. L., & Moreau, V. (2000). Clinical reasoning of a novice versus an experienced occupational therapist: A qualitative study. *Occupational Therapy In Health Care*, 12(4), 15–31. https://doi.org/10.1080/J003v12n04_02
- Gillette, N., & Mattingly, C. (1987). Clinical reasoning in occupational therapy. *The American Journal of Clinical Nutrition*, 41(6), 399–400. <https://doi.org/10.4324/9781003150732-18>
- *Guy, L., Cranwell, K., Hitch, D., & McKinstry, C. (2020). Reflective practice facilitation within occupational therapy supervision processes: A mixed method study. *Australian*

- Occupational Therapy Journal*, 67(4), 320–329. <https://doi.org/10.1111/1440-1630.12660>
- *Hansen, A. M. (2013). Bridging theory and practice: Occupational justice and service learning. *Work*, 45(1), 41–58. <https://doi.org/10.3233/wor-131597>
- Johnston, M. V., & Benfield, A. M. (2015). Developing a Measure of Evidence-Informed Professional Thinking. *Archives of Physical Medicine and Rehabilitation*, 96(10), e106–e107. <https://doi.org/10.1016/j.apmr.2015.08.355>
- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, 11(5), 3–14.
- *Knis-Matthews, L., Mulry, C. M., & Richard, L. (2017). Matthews model of clinical reasoning: A systematic approach to conceptualize evaluation and intervention. *Occupational Therapy in Mental Health*, 33(4), 360–373. <https://doi.org/10.1080/0164212X.2017.1303658>
- *Kramer, P., Ideishi, R. I., Kearney, P. J., Cohen, M. E., Ames, J. O., Shea, G. B., Schemm, R., & Blumberg, P. (2007). Achieving curricular themes through learner-centered teaching. *Occupational Therapy in Health Care*, 21(1–2), 185–198. https://doi.org/10.1300/j003v21n01_14
- Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130. <https://doi.org/10.1177/0008417421994377>

- *Leicht, S. B., & Dickerson, A. (2002). Clinical reasoning, looking back. *Occupational Therapy in Health Care*, 14(3–4), 105–130. https://doi.org/10.1080/j003v14n03_07
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5(1), 1–9. <https://doi.org/10.1186/1748-5908-5-69>
- *Lowe, M., Rappolt, S., Jaglal, S., & Macdonald, G. (2007). The role of reflection in implementing learning from continuing education into practice. *Journal of Continuing Education in the Health Professions*, 27(3), 143–148. <https://doi.org/10.1002/chp.117>
- *Márquez-Álvarez, L. J., Calvo-Arenillas, J. I., Talavera-Valverde, M. Á., & Moruno-Millares, P. (2019). Professional reasoning in occupational therapy: A scoping review. *Occupational Therapy International*, 1–10. <https://doi.org/10.1155/2019/6238245>
- *Márquez-Álvarez, L.-J., Calvo-Arenillas, J.-I., Jiménez-Arberas, E., Talavera-Valverde, M.-Á., Souto-Gómez, A.-I., & Moruno-Miralles, P. (2021). A Q-method approach to perceptions of professional reasoning in occupational therapy undergraduates. *BMC Medical Education*, 21(1), 264. <https://doi.org/10.1186/s12909-021-02710-y>
- Mattingly, C. (1991). The narrative nature of clinical reasoning. *The American Journal of Occupational Therapy*, 45(11), 998–1005. <https://doi.org/10.5014/ajot.45.11.998>
- Mattingly, C., & Fleming, M. H. (1994). *Clinical reasoning: Forms of inquiry in a therapeutic practice*. F. A. Davis.
- *Mattingly, C., & Gillette, N. (1991). Anthropology, occupational therapy, and action research. *The American Journal of Occupational Therapy*, 45(11), 972–978. <https://doi.org/10.5014/ajot.45.11.972>

- Mosey, A. C. (1996). Theoretical information. In *Applied scientific inquiry in the health professions: An epistemological orientation* (2nd ed., pp. 143–170). The American Occupational Therapy Association.
- *Mu, K., Coppard, B. M., Bracciano, A., Doll, J., & Matthews, A. (2010). Fostering cultural competency, clinical reasoning, and leadership through international outreach. *Occupational Therapy in Health Care*, 24(1), 74–85.
<https://doi.org/10.3109/07380570903329628>
- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), 1–7. <https://doi.org/10.1186/s12874-018-0611-x>
- Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104.
<https://doi.org/10.1111/1440-1630.12252>
- *Royeen, C. B. (1995). Problem-based learning curriculum for occupational therapy education. *American Journal of Occupational Therapy*, 49(4), 338–346.
- *Schaber, P., & Shanedling, J. (2012). Online course design for teaching critical thinking. *Journal of Allied Health*, 41(1), e9-14.
- Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's Occupational Therapy* (13th ed.). Wolters Kluwer.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

- *Stewart, L. S. P. (2001). The role of computer simulation in the development of clinical reasoning skills. *British Journal of Occupational Therapy*, 64(1), 2–8.
<https://doi.org/10.1177/030802260106400102>
- Strong, J., Gilbert, J., Cassidy, S., & Bennett, S. (1995). Expert clinicians' and students' views on clinical reasoning in occupational therapy. *British Journal of Occupational Therapy*, 58(3), 119–123. <https://doi.org/10.1177/030802269505800309>
- *Toth-Cohen, S. (2008). Using cultural-historical activity theory to study clinical reasoning in context. *Scandinavian Journal of Occupational Therapy*, 15(2), 82–94.
<https://doi.org/10.1080/11038120701534975>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473. <https://doi.org/10.7326/M18-0850>
- *Tryssenaar, J. (1995). Interactive journals: An educational strategy to promote reflection. *The American Journal of Occupational Therapy*, 49(7), 695–702.
<https://doi.org/10.5014/ajot.49.7.695>
- *Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16.
<https://doi.org/10.1177/0308022615599994>

- *Vachon, B., Durand, M. J., & LeBlanc, J. (2010a). Empowering occupational therapists to become evidence-based work rehabilitation practitioners. *Work*, 37(2), 119–134.
<https://doi.org/10.3233/wor-2010-1063>
- *Vachon, B., Durand, M. J., & LeBlanc, J. (2010b). Using reflective learning to improve the impact of continuing education in the context of work rehabilitation. *Advances in Health Sciences Education*, 15(3), 329–348. <https://doi.org/10.1007/s10459-009-9200-4>
- Veritas Health Innovation. (2018). *Covidence systematic review software* [Computer software].
www.covidence.org
- Wong, K. Y., Whitcombe, S. W., & Boniface, G. (2016). Teaching and learning the esoteric: An insight into how reflection may be internalised with reference to the occupational therapy profession. *Reflective Practice*, 17(4), 472–482.
<https://doi.org/10.1080/14623943.2016.1175341>
- World Federation of Occupational Therapists. (2016). *Minimum standards for the education of occupational therapists*.
- Young, M. E., Thomas, A., Lubarsky, S., Gordon, D., Gruppen, L. D., Rencic, J., Ballard, T., Holmboe, E., Da Silva, A., Ratcliffe, T., Schuwirth, L., Dory, V., & Durning, S. J. (2020). Mapping clinical reasoning literature across the health professions: A scoping review. *BMC Medical Education*, 20(1). <https://doi.org/10.1186/s12909-020-02012-9>
- * Indicates article was included in review.

CHAPTER 4: EXPANDED LITERATURE REVIEW ON EVIDENCE-BASED PRACTICE AND EDUCATIONAL STRATEGIES

The scoping review findings presented in Chapters 2 and 3 give an overview of existing literature on conceptualization of clinical reasoning, professional reasoning, and reflective practice. In support of my additional research questions, literature beyond that reviewed for the scoping review was needed. Thus, in this chapter, I explore existing literature on evidence-based practice as well as literature related to educational strategies for facilitating the development of reasoning, reflective practice, and evidence-based practice skills in occupational therapy students.

Evidence-Based Practice in Occupational Therapy

To identify relevant literature, I searched CINAHL, PsycINFO, PubMed, and Web of Science. I used combinations of the terms “evidence-based practice” OR “evidence based practice” and “occupational therap*” across databases. Additional literature was found by hand searching references of relevant scholarship.

Constructing a Definition of Evidence-Based Practice

Evidence-based practice is a construct that originated within medicine and has spread across human service fields as an ideal way of integrating rigorous research evidence with clinical expertise (Sackett et al., 1996). Since that time, literature on evidence-based practice has been dominated by a focus on research evidence over clinical expertise (Thomas & Law, 2013). Occupational therapy as a profession has generally adopted a more expansive conceptualization of evidence-based practice; the AOTA (2022) defined evidence-based practice as an approach that integrates not only relevant research, but also clinical expertise *and* client preferences and values. A more expansive view appears to have been taken up by practitioners; a scoping review

of factors that support evidence-based practice in occupational therapy further found that many therapists acknowledge and value their own experience and expertise, as well as that of their clients, alongside research evidence (Thomas & Law, 2013). More recently, Jeffery and colleagues (2021) identified five sources of evidence for occupational therapists, including research evidence, factors related to the local context, the client's expertise, expertise of others, and the practitioner's own expertise. These findings suggest that occupational therapy as a profession views evidence-based practice more holistically than the medical field.

Despite this apparent consensus about evidence-based practice, health practitioners continue to disagree about, and be unsure of, what constitutes the evidence that makes up evidence-based practice (Hallé et al., 2021). Garcia and colleagues (2021) surveyed Chilean occupational therapists and found that more than two thirds of participants considered evidence-based practice to include only the application of research evidence. Similarly, Dougherty and colleagues (2016) found that although therapists identified using experience and client input when making decisions, they required prompting to associate these sources of evidence with evidence-based practice. Lack of clarity around what constitutes evidence-based practice may be due in part to the fact that the definition of "evidence" itself continues to expand and evolve (Marr, 2017), but these findings do suggest that the more expansive definition of evidence-based practice presented by occupational therapy professional bodies and literature has not been fully embraced.

How researchers frame the construct of evidence-based practice will delimit how participants view, and thus endorse engaging in, evidence-based practice. For example, although Bennett and colleagues (2003) acknowledged the importance of recognizing sources other than research evidence when considering evidence-based practice, when surveying Australian

occupational therapists' attitudes towards evidence-based practice, their questions still focused on research evidence. Implying a similar view, Bennett and colleagues (2016) described evidence-based practice in occupational therapy as involving application of research evidence but only *consideration of* clinical expertise and consumer preferences, taking their conceptualization from medical literature. This view does not position research, clinical expertise, and client factors as equal evidence sources, but rather indicates that clinician and client perspectives should merely be applied to research, which is the main source of evidence. This difference in how evidence is defined in evidence-based practice may be a contributing factor to why practicing occupational therapists tend to only recognize research as a relevant source of evidence. Further, considering evidence-based practice to be only the use of research as a source of evidence may be one reason therapists report less engagement in evidence-based practice as they gain, and begin to rely more on, professional experience (Iqbal et al., 2023). Research findings associated with these conceptualizations of evidence-based practice would be skewed towards use of research evidence, even if authors present a larger conceptualization of evidence-based practice in their writing.

Therefore, although as a profession occupational therapy claims to value multiple evidence streams when conceptualizing evidence-based practice, a claim validated by reports from practicing therapists in the literature, research on evidence-based practice itself focuses on the use of empirical evidence in practice. This focus in the evidence-based practice literature on research evidence may be because it is purportedly the least used source of evidence (as opposed to the more frequently used personal experience or client factors), which many lament (Bennett et al., 2003; Brangan et al., 2015; Glasdam et al., 2022). However, Dirette (2016) argued that too much focus on research evidence is a detriment to the profession. Confusion about what

constitutes evidence has led to multiple conflicting ideas as to what ultimately constitutes evidence-based practice in occupational therapy.

Lack of conceptual clarity for evidence-based practice has been implicated as a challenge in educating occupational therapy students about evidence-based practice (Hallé et al., 2023). In fact, some in the profession use alternative language like “evidence-informed practice” to emphasize the combination of research and other evidence-sources (Tomlin & Dougherty, 2014) or “practice-based evidence” to highlight the value of information derived from experience (Hallé et al., 2021; Margison et al., 2000; Parsonson, 2012). Evidence-based practice, then, although apparently clearly defined within occupational therapy, is a contentious construct that has many associated labels and distinguishing characteristics that make it appear to be understood differently by researchers and practitioners. Differing definitions of evidence-based practice could negatively impact how those in the profession communicate about this professional thinking skills, and thus how students learn and implement it in practice.

Situating Evidence-Based Practice in Relationship to Other Professional Thinking Skills

In Chapters 2 and 3 I summarized literature differentiating and relating clinical/professional reasoning and reflective practice/reflection. In general, literature described reflective practice as an overarching skill that encompasses reasoning, but there is complexity in how authors present this relationship and some present the hierarchy differently. The relationship of evidence-based practice to these constructs is similarly complex.

Evidence-Based Practice and Clinical/Professional Reasoning

The divergent perspectives on what constitutes evidence in evidence-based practice may be partially explained by differing perspectives on how evidence-based practice relates to clinical reasoning. For example, Bennett and Bennett (2000) suggested that evidence-based practice

involves application of research evidence and that clinical reasoning involves considering how research fits the clinical context (i.e., consideration of clinical expertise and client factors). In this view, evidence-based practice skills relate to research evidence, and clinical reasoning relates to other, non-research sources of evidence for professional decision-making.

Alternatively, clinical reasoning (Bennett et al., 2003), and the complementary skill of critical thinking (Velde et al., 2006), have been suggested as ways to integrate the multiple sources of knowledge inherent to evidence-based practice. In line with either of these two ways of conceptualizing reasoning and evidence-based practice, evidence-based practice is often considered to be dependent on clinical reasoning (Unsworth & Baker, 2016).

Benfield and Johnston (2020) developed a tool to measure professional expertise, or what they refer to as “evidence-informed professional thinking” that more clearly relates reasoning and evidence-based practice. For these authors, evidence-informed professional thinking encompasses critical clinical reasoning and evidence-informed practice activities (which accordingly make up the two scales of their measurement tool). Benfield and Johnston acknowledged that their Rasch analysis revealed that the two scales of their tool overlap significantly, pointing to the potential interdependence of reasoning and evidence-based practice. They also noted that “both clinical reasoning and EBP [evidence-based practice] involve outcomes measurement, which may tie clinical reasoning and EBP [evidence-based practice] together” (Benfield & Johnston, 2020, p. 310). The primary distinction they found between critical clinical reasoning and evidence-informed practice was the use of PICO (population, intervention, comparison intervention, and outcomes) thinking that occurred as part of evidence-informed practices versus the use of PIO (client problem, intervention, and outcomes) thinking that was characteristic of critical clinical reasoning. The authors suggested that PICO thinking

should be integrated more frequently as it invites consideration of alternative interventions that may be relevant to a given practice situation, thus activating both reasoning and evidence-based thinking. Regardless, their measurement tool for evidence-informed professional thinking clearly acknowledges the interrelated nature of reasoning and evidence-based practice, in alignment with previous theoretical understandings of these two skills.

Evidence-Based Practice and Reflective Practice

The term “evidence-based practice” suggests that there may be a correct intervention choice that is validated by clear, unequivocal evidence. However, this is often not the case in occupational therapy work, which must contend with complex human problems. Therefore, Kinsella and Whiteford (2009) suggested that reflection is a critical skill for therapists to apply when striving for evidence-based practice, acknowledging the many ways that knowledge may be generated in the profession. This goes against what they perceive to be the inherent value-judgments in traditional evidence-based practice as seeing certain kinds of evidence (i.e., randomized controlled trial research) as the highest form of evidence. In fact, Kinsella and Pitman (2012), although not directing their argument specifically at occupational therapy, contended that reflection is necessary for informing the ethics of knowledge within a profession. This argument further suggests that without reflection, the values inherent to the idea of evidence-based practice go unchecked; therefore, evidence-based practice and reflective practice must co-exist.

A model of professional thinking from Bannigan and Moores (2009) aligns with this view, positioning reflective practice and evidence-based practice as two behaviors that mutually support one another. Bannigan and Moores questioned the separation of the two skills in education, as they considered their integration to be necessary for effective practice. Recent

research supports this belief; Krueger and colleagues (2020) found that reflection promotes use of evidence-based practice. However, these authors also found that evidence-based practice was still limited amongst practicing therapists. Recent research in the educational context on how evidence-based practice skills are developed in students provides preliminary confirmation that integration of reflective practice and evidence-based practice constructs in coursework facilitates improvement in evidence-based practice knowledge (Atler & Stephens, 2020). It is still unclear how this integration in education will ultimately translate to engagement in these professional thinking skills in practice.

Evidence-Based Practice, Reasoning, and Reflective Practice

In occupational therapy, evidence-based practice “entails integrating research evidence into the reflective reasoning process” (Cohn et al., 2010, p. 140). In this one sentence, reasoning, reflection, and evidence-based practice are all connected, although it is unclear specifically what role each plays in a therapist’s thinking and practice. This is consistent with the literature presented here that often assumed or implied relationships amongst these professional thinking skills. Bannigan and Moores’ (2009) model of professional thinking considered professional thinking to be “closely aligned to clinical reasoning” (p. 343), and indicated that reasoning is made up of reflection and evidence-based practice. A more recent description from Jeffery and colleagues (2021) positioned evidence-based practice as an element of professional reasoning and as “not isolated from” reflective practice (p. 346). Similarly, critical reflection and clinical reasoning activities were found to have a strong relationship with evidence-based practice engagement for practicing therapists (Benfield & Jeffery, 2022). Combined, this literature establishes the integrated nature of professional thinking skills, but views on their relationships to one another vary.

Teaching Professional Skills to Occupational Therapy Students

Appreciating that definitions of and relationships amongst clinical/professional reasoning, reflective practice/reflection, and evidence-based practice are unclear within occupational therapy literature raises questions as to how these important professional thinking skills are taught to occupational therapy students. As threshold concepts, professional thinking skills are directly tied to professional identity in occupational therapy (O'Mahony et al., 2023), and are therefore essential components of occupational therapy education. Although there is literature discussing each of these skills individually, it is limited. Further, despite the fact that integration of these skills within education is suggested (Hitch et al., 2021; Krueger et al., 2020), there is little known about how they are taught together within programs or courses (Unsworth & Baker, 2016). Literature that does discuss development of reasoning, reflection, or evidence-based practice in occupational therapy students often does not operationalize these terms. Further, despite the existence of research on these topics, in a recent research agenda for occupational therapy education, the AOTA (2018) still acknowledged the need for research on specific instructional methods for supporting required competencies in students that match the pedagogy of the profession.

To explore what is known about educational strategies for supporting the development of professional thinking skills, I conducted a second review of the literature. I searched the same databases as above using combinations of the professional thinking skills of interest (Table 4.1) AND education OR education* strateg* OR education* approach AND occupational therap*. As in the scoping review reported in Chapters 2 and 3, I necessarily limited the labels for the sought professional thinking skills, but did include closely related terms like critical thinking and

reflective thinking to ensure a broad scope. I also hand searched recent literature in the *Journal of Occupational Therapy Education*.

Table 4.1

Search Terms

Related to Reasoning	Related to Reflection	Related to Evidence-Based Practice
Clinical reasoning	Reflective practice	Evidence-based practice
Professional reasoning	Critical reflection	Evidence based practice
Critical thinking	Reflective thinking	Evidence-informed practice
	Reflectiveness	

Note. These terms were used in combination with education OR education* strateg* OR education* approach AND occupational therap*.

From this search, I found that existing literature primarily highlights experiential learning and other active learning methods as strategies to help students develop clinical/professional reasoning, reflection/reflective practice, and evidence-based practice skills. These practices are in alignment with the profession through identified signature pedagogies for occupational therapy (Schaber, 2014) and transformative learning theory.

Experiential Learning: Practice Education

Practice education includes fieldwork and other direct, experiential learning opportunities. In these learning contexts, students can try out their reasoning, reflection, and evidence-based practice in real-world settings under the guidance of a supervising educator (Brown et al., 2021). All three of these skills are considered to benefit from experiential learning opportunities. For example, clinical reasoning is thought to improve through fieldwork activities (Coates & Crist, 2004; Oldenburg et al., 2020) as is critical thinking (Nielsen et al., 2020) although there is mixed understanding of how specific activities on fieldwork contribute to this improvement (Sladyk & Sheckley, 2001). Clinical reasoning (Tsubira et al., 2022) and critical thinking (Atler & Gavin, 2010) have also been found to improve following service-learning

experiences, where knowledge learned in a classroom can be transferred to a deeper level of understanding through application. Reflection is also considered to benefit from real-world experiences, since experience is the most effective trigger for reflection (Wong et al., 2016), and experiential learning has broadly been identified as an effective teaching strategy for developing reflexivity in students (Landy et al., 2016). Finally, evidence-based practice skills also appear to develop through fieldwork experiences. After investigating a classroom-based assignment, Johnson et al. (2020) indicated that clinical placement is an essential adjunct for learning evidence-based practice. Experiential learning opportunities are thus considered beneficial for development of each of these professional thinking skills.

Active Learning Approaches

Along with experiential learning, other forms of active learning also have been proposed as important to the development of skills like reasoning, reflection, and evidence-based practice. Active learning strategies may not include real-world contexts, as experiential learning does, but allow for students to be actively engaged in the learning process; these strategies include things like problem-based learning, case-based learning, and simulation activities (Harris & Bacon, 2019).

Problem-based learning is an education strategy where small groups of self-directed learners work through cases or scenarios to arrive at clinical decisions (Gewurtz et al., 2016). This teaching strategy has been found to support the development of clinical reasoning skills (Scaffa & Wooster, 2004) and evidence-based practice skills (Lusardi et al., 2002) in occupational therapy students.

Use of case studies in general appears to scaffold learning for students; engagement with case studies has been found to support the development of clinical reasoning (Murphy, 2017;

Tsubira et al., 2022) and critical thinking (Allen & Toth-Cohen, 2019) skills. Working through case studies, providing modeling, and engaging students in role play activities have also been found to be support strategies for the development of both reflection and evidence-based practice skills (Grajo et al., 2020; Myers & Lotz, 2017; Tsubira et al., 2022).

Although experiential learning is considered more beneficial for the development of clinical reasoning by occupational therapy educators, classroom active learning via lab experiences were cited by the same educators as more common in practice (Henderson et al., 2017). This suggests that active learning is an important complementary educational approach that may be more feasible across programs.

Alignment with Occupational Therapy: Signature Pedagogies and Transformative Learning

Theorists in occupational therapy have been working to identify signature pedagogies of the profession (AOTA, 2018). Existing signature pedagogies include relational learning, affective learning, and highly contextualized, active engagement (Schaber, 2014). Schaber described these pedagogies as establishing learning through human connection, through transformation of identity, and through doing; all of these practices connect to experiential and active learning approaches through the theory of transformative learning.

The theory of transformative learning articulates how adults learn through processes that lead to irreversible changes in how they interact with the world (Anand et al., 2020). In transformative learning theory, learning occurs when the learner reflects on assumptions and knowledge following a disorienting dilemma; the learner then plans a course of action based on their reflection to acquire needed knowledge and skills to explore a new approach to the dilemma. Transformative learning thus suggests that knowledge is built through the

interpretation of experiences. Experiential and active learning approaches thus fall under the umbrella of transformative learning practices for the way they enable students to experience events, engage in reflection, and actively explore learning to integrate into their experiences. Additionally, these transformative learning practices are coherent with general conceptualizations of professional thinking skills as threshold concepts for occupational therapy (Nicola-Richmond et al., 2016).

Integration of Skills in Education

Because professional thinking skills transcend content area, it is recommended that they be integrated throughout curricula (Hitch et al., 2021; Plastow & Bester, 2020). As threshold concepts, these skills are essential to learn as part of becoming an occupational therapist. However, the fact remains that inconsistencies in understanding what reasoning, reflection, and evidence-based practice *are* will limit the impact of any educational approaches used to teach them. How professional thinking skills are conceptualized should be necessarily linked to how they are taught to, and learned by, students.

Lack of distinction between professional thinking skills has been suggested as a possible factor leading to poor engagement with these skills when students advance into practice (Krueger et al., 2020). Specific terminology and precise conceptualizations are considered essential for supporting development of professional thinking skills (Márquez-Álvarez et al., 2021; Neistadt, 1996). Because the terms clinical/professional reasoning, reflective practice/reflection, and evidence-based practice are used so frequently, and so often their definitions are assumed, it is possible that students will be unclear on what they will be evaluated on in the school context and ultimately what they will be expected to be able to do in practice related to these skills. This may contribute to challenges with developing a sense of professional identity, which supports a sense

of competence and job satisfaction (Souto-Gómez et al., 2023). Professional thinking skills must be themselves defined and then differentiated from and related to one another to support learning and implementation in practice.

CHAPTER 5 – DEFINING REASONING, REFLECTIVE PRACTICE, AND EVIDENCE-BASED PRACTICE IN OCCUPATIONAL THERAPY EDUCATION: A DELPHI STUDY

In Chapters 2–4 I presented an overview of literature conceptualizations of reasoning, reflective practice, and evidence-based practice in occupational therapy. Conflicting conceptualizations suggest ongoing lack of clarity in how the field views these skills. Chapter 5 consists of a manuscript, which has been accepted by the *Journal of Occupational Therapy Education*. In this manuscript I present findings from a Delphi study on occupational therapy educator definitions of professional thinking skills.

Introduction

Professionalism in occupational therapy has been described as (a) requiring reflexivity as an antecedent, (b) involving reasoning as a key behavior, and (c) being complementary to evidence-based practice in supporting value-based practice (Lecours et al., 2021). Accordingly, reasoning, reflective practice, and evidence-based practice have been identified as essential skills for occupational therapy practice and, thus, essential skills for occupational therapy students to learn. These three skills are also highlighted as significant to practice by the American Occupational Therapy Association (AOTA) in the *Practice Framework* (2020).

Unfortunately, research indicates therapists report rarely engaging in reflection and evidence-based practice (Benfield & Krueger, 2021; Krueger et al., 2020). If these skills are essential but therapists do not engage in them, it raises the broader question of whether students learn these skills and, ultimately, “what it means to do, be, belong and become an occupational therapist” (Benfield & Krueger, 2021, p. 1).

One factor relevant to students learning these key skills is how they are defined and communicated by educators. In writing about how to teach clinical reasoning, Neistadt (1996)

identified the need for educators to use precise language when teaching professional skills and to connect their language to their teaching methods. Professional thinking skills must be made concrete, explicit, and visible for students, which requires a clear articulation of the skills themselves (Delany & Golding, 2014). And yet, these skills continue to be defined inconsistently (Burke et al., 2023), which limits educators' abilities to be precise and explicit in teaching them.

Clinical/Professional Reasoning

Use of the term clinical reasoning has evolved over time within occupational therapy. The AOTA and the American Occupational Therapy Foundation (AOTF) demonstrated their interest in developing the construct of clinical reasoning within occupational therapy by co-funding what is now known as the Clinical Reasoning Study, a 2-year project investigating therapist reasoning (Gillette & Mattingly, 1987; Mattingly & Gillette, 1991). Since that time, the terms clinical reasoning and professional reasoning have been used interchangeably in the AOTA *Practice Framework* (2020); literature reviews often use one term to refer to both concepts (da Silva Araujo et al., 2022; Unsworth & Baker, 2016). In the glossary of the *Practice Framework*, professional reasoning is defined as a “process that practitioners use to plan, direct, perform, and reflect on client care” (Schell, 2019, p. 482); the definition of clinical reasoning simply states, “see *Professional reasoning*” (AOTA, 2020, p. 75). In contrast, occupational therapy education standards in the United States define clinical reasoning but not professional reasoning. While both terms are used, clinical reasoning is used most frequently (Accreditation Council for Occupational Therapy Education [ACOTE®], 2018). Overall, recent reviews suggest that the term clinical reasoning has been evolving within the profession and is not consistently defined (da Silva Araujo et al., 2022; Gordon et al., 2022). Although these reviews propose

frameworks and define elements of clinical reasoning (da Silva Araujo et al., 2022; Maruyama et al., 2021), it is unclear how they align with current educator perspectives.

Reflective Practice

Reflective practice is broad and complex, making clear conceptualization difficult (Kinsella, 2001). The term reflective practice has been described both in simplistic terms, related to professional development, and as a multifaceted way to approach learning (Kinsella, 2001). Schön (1983), whose work influenced occupational therapy through his role in the Clinical Reasoning Study (Gillette & Mattingly, 1987), considered reflective practice to be a “dialogue of thinking and doing” (p. 31) that encompasses both reflection-in-action and reflection-on-action. More specific to occupational therapy, Nicola-Richmond and colleagues (2016) described reflective practice as “undertaking critical reflection of one’s own performance and all of the elements of the occupational therapy role” (p. 101) when identifying it as a threshold concept/capability of occupational therapists. These different views of reflective practice raise the question of how educators define reflective practice for students.

Evidence-Based Practice

Although evidence-based practice tends to be defined as integrating the “best available evidence” into practice (AOTA, 2020), practitioners appear to restrict the definition to the use of *research* evidence to the exclusion of other potential evidence sources (Bennett et al., 2003; Garcia et al., 2020; Graham et al., 2013). However, the AOTA (2021) explicitly described evidence-based practice as integrating not only critically appraised research, but also clinical expertise and client preferences, beliefs, and values. Therefore, although this definition may be used somewhat more consistently in literature, it does not appear to have been translated to practice.

The lack of consistent definitions for professional thinking skills may contribute to lack of clarity on what is taught in occupational therapy programs. The first step in identifying what needs to be taught is understanding how educators themselves define these multidimensional constructs. We conducted a Delphi study with occupational therapy educators to develop an understanding of how they define clinical reasoning, professional reasoning, reflective practice, and evidence-based practice.

Method

Delphi methodology involves iterative survey rounds with the aim of facilitating expert consensus. Thus, we chose it for this study due to its constructivist nature to capture the perspective of occupational therapy educators. The Delphi approach also is especially valuable in research areas where knowledge is lacking (Falzarano & Pinto Zipp, 2013), as in this case.

We followed the guidelines of Conducting and REporting DELphi Studies (CREDES) (Jünger et al., 2017). This paper presents one piece of a larger Delphi study. Data presented here relate to educator participant definitions of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. This first step serves as a move toward resolving existing inconsistencies in how these terms are defined and used. It also serves as a foundation to looking at the relationships among these constructs, as we appreciate that these constructs are not independent; therefore, we also collected data not presented here on relationships amongst these terms and about education approaches for supporting students to develop these skills. These additional findings will be reported in subsequent manuscript(s). Ethics approval was obtained from Colorado State University, #3212, and there were no conflicts of interest for researchers conducting the study.

Participants

We used purposive sampling to recruit occupational therapy educators as participants, as delineated in our research question. Recruitment took place through posts on professional message boards (AOTA's CommunOT general and academic forums) and social media (Instagram). Additionally, we sent invitation emails to educators with publication histories related to reasoning, reflection, and/or evidence-based practice in occupational therapy based on our literature review. Participants were required to have worked as an occupational therapy educator for at least 3 years at the master's level or higher and to be an occupational therapy educator at the time of participation. These criteria ensured participant views could be drawn from their perspectives as part of the education community. Participants also were required to be based in the United States, with the understanding that perspectives may vary across cultural and educational contexts. The final inclusion criterion was that participants express availability to participate over the course of multiple rounds of surveys. A specific focus on teaching reasoning, reflective practice, and/or evidence-based practice was not required, as these are considered core components of occupational therapy programs. Potential participants were screened through an online form to ensure they met inclusion criteria. We did not recruit through educational programs, but screening also allowed us to ensure no more than two participants were from the same institution to allow for a variety of professional contexts.

There are no clear guidelines on how many participants should be included on a Delphi panel, but a small sample size is appropriate for relatively homogeneous groups (Skulmoski et al., 2007) and a minimum of eight participants is recommended for panels where participant qualifications are well-defined (Hallowell & Gambatese, 2010). The participants in this study were expected to have potentially disparate theoretical perspectives on the constructs of interest.

However, the sample was also relatively homogeneous and well-defined, because it included only occupational therapists who had a baseline level of experience as educators and were working within the same broad professional context (the United States). For this study, then, we aimed for a minimum of 10 participants on the panel to meet the study purpose, which is consistent with similar research in occupational therapy (De Villiers et al., 2005; Mthembu et al., 2018; Nicola-Richmond et al., 2016).

Procedure/Data Collection and Analysis

Survey responses were collected between June and August of 2022. We chose in advance to conduct three survey rounds to increase the likelihood of continued participation while allowing for nuanced responses, and to limit the likelihood of forcing consensus amongst participants on the panel (Skulmoski et al., 2007). Surveys were distributed through an online platform, and participants were given 2 weeks to complete each survey, with a reminder sent after 1 week. Consistent with Delphi methodology, participants were kept anonymous from one another throughout the process. See Figure 5.1 for a summary of the methods.

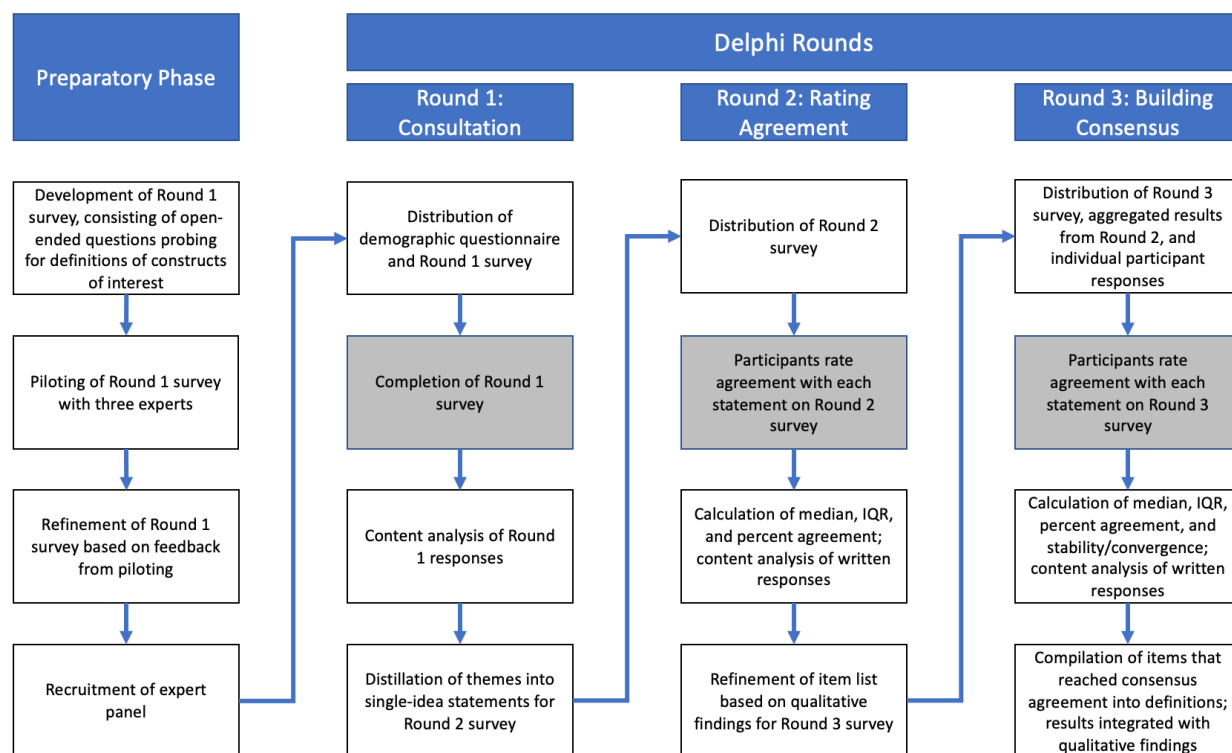


Figure 5.1

Summary of Delphi Process

Notes. Gray shading indicates steps completed by participants. IQR = interquartile range.

Round 1

The first survey round included a demographic questionnaire to identify professional experience, educational background, relevant courses taught, associated institution, and philosophy of occupational therapy. The Round 1 survey was exploratory to collect participant perspectives on conceptualizations of each term; it therefore consisted of open-ended questions that developed in accordance with the research question for this study and based on the literature. The initial survey was piloted by three occupational therapy educators and refined accordingly. Round 1 survey questions can be seen in Table 5.2.

Round 2

We analyzed participant responses to the Round 1 survey to develop the Round 2 survey. HKB used content analysis, a systematic approach to condensing material into discrete items (Hasson et al., 2000; Stemler, 2000), to distill open-ended responses from participants into statements that only contained one idea. Statements then were independently checked against the data by two researchers (SJL and PLS). We resolved disagreements through discussion. For each statement, we used participant wording as much as possible.

We asked participants to rate their agreement with each statement developed through the content analysis described above using a Likert scale from 1 (strongly disagree) to 4 (strongly agree). Alternatively, they could select “I don’t know.” We also invited participants to share any additional comments in a free-response box.

For each statement, we calculated the median response value, the interquartile range (IQR), and the overall percent agreement. IQR is a measure of dispersion associated with median values representing the middle 50% of responses (separating responses into quartiles). Median and IQR are generally accepted and recommended in healthcare literature using Delphi methodology (Boulkedid et al., 2011). Statements that achieved an IQR value ≤ 1 were considered to have reached consensus amongst participants (Raskin, 1994; von der Gracht, 2012). Percent agreement was calculated by counting the number of responses that achieve a rating of 3 (agree) or 4 (strongly agree) and dividing that by the total number of responses. Setting a threshold for consensus is one of the most contentious elements of Delphi studies (De Villiers et al., 2005). Therefore, to be consistent with similar Delphi studies in occupational therapy (De Villiers et al., 2005; Nicola-Richmond et al., 2016), statements with a percent

agreement of 70% or higher were considered to have reached agreement for inclusion. This also ensured findings were not unnecessarily limited, given our smaller sample size.

Round 3

For the final round, participants rated agreement for the same items from Round 2 plus two additional items added based on feedback from the previous round. We provided the median and IQR value of each statement along with a brief description of what these values meant. Each participant also was shown their individual Round 2 responses as feedback, enabling them to see how they compared to the group median. Participants again were able to write free response comments.

We calculated median, IQR, and percent agreement for Round 3 responses. We also calculated the difference between IQR values from the second round and the third round to investigate stability and/or convergence of responses (Landeta, 2006; von der Gracht, 2012). Differences close to 0 (meaning there was little or no change in IQR value across rounds) represented stability of opinion. Positive values – meaning the IQR value went from a higher value (indicating disagreement) to a lower value (indicating higher levels of agreement) – represented convergence. Negative values indicated increasing disagreement.

Results

Participants

A total of 20 potential participants completed the screening questionnaire and 14 met inclusion criteria based on responses to the online screening form. All 14 were associated with different institutions. Of those eligible, 11 completed the first round; 10 completed the second round; and 9 completed the third round. This yielded a completion rate across rounds of 81.8%.

Demographic information for participants who completed the Round 1 survey is included in Table 5.1.

Table 5.1

Participant Characteristics (n = 11)

Variable	Description
Years of Educator Experience in Occupational Therapy <i>n</i> (%)	
3-5 years	3 (27.3%)
6-10 years	3 (27.3%)
11-15 years	1 (9.1%)
>15 years	4 (36.4%)
Level of Education	
Clinical Doctorate	7 (63.7%)
Doctor of Philosophy	4 (36.4%)
Primary Focus Areas ^a <i>n</i> (%)	
Mental Health	3 (27.3%)
Community-Based	4 (36.4%)
Acute Care/Acute Inpatient	3 (27.3%)
Rehabilitation	
Pediatrics (Early Intervention, Schools, Inpatient, Outpatient)	4 (36.4%)
Teach Courses that Relate to Study Constructs ^b	
Explicitly (across 40 courses)	10 (90.9%)
Implicitly (across 21 courses)	11 (100%)

^a Participants could select more than one focus area. Other primary focus areas endorsed by only one participant each include hand therapy, neonatal intensive care unit, gerontology, and subacute rehabilitation.

^b These data come from questions in the demographic questionnaire asking participants if they teach courses that explicitly or implicitly address study constructs. Study constructs include: clinical reasoning, professional reasoning, reflective practice, and evidence-based practice.

Round 1

Responses to open-ended questions varied significantly in length and depth. Analysis of responses to open-ended questions in Round 1 (see Table 5.2 for questions and analysis example) led to the development of 15 items defining clinical reasoning, 19 items defining professional reasoning, 17 items defining reflective practice, and 11 items defining evidence-based practice (Table 5.3).

Table 5.2*Example of Item Development Process from Round 1*

Round 1: Please provide your definitions for the following terms as they relate to occupational therapy:	Consolidated Item Developed for Round 2 Survey with Corresponding Sample of Contributing Participant Data
Clinical Reasoning	1. Clinical reasoning is using all available data to inform decision-making in practice. • Ability to use knowledge and experience to inform best practices. • Considering all factors relevant to a situation (person, environment, occupation, best available evidence, and past experience) to make a decision. • Analysis of beliefs, theory, knowledge, skills, actions, etc. to identify a course of action.
Professional Reasoning	6. Professional reasoning is based more on information related to professional scope of practice than clinical reasoning is. • Based more on knowledge about scope of practice, roles, practice areas, etc. • Guided by our scope of practice. • Consideration of the context of the profession is an important component.
Reflective Practice	2. Reflective practice is reflection on practitioner attitudes, biases, assumptions, beliefs, knowledge, skills, and/or experiences. • Intentionally reflecting on attitudes involved in client care. • Uncovering personal biases and assumptions that may impact the therapeutic relationship. • Critical analysis of thinking, beliefs, actions, knowledge, skills, and/or experiences.
Evidence-Based Practice	4. Evidence-based practice is using client preferences, interests, and/or values to guide clinical decision-making. • Using client's preferences and interests as evidence. • Being mindful of specific needs of the specific client. • Using a combination of research, client beliefs, values, and interests, and practitioner expertise for decision-making.

Note. Item numbers correspond to the item numbers in Table 3.

In Round 1, one participant (DD12) proposed that clinical reasoning is not the correct term for the reasoning occupational therapists use. They commented that clinical reasoning “is too grounded in the medical model from which we are trying to get away [...] I prefer the term ‘therapeutic reasoning’ because I think it reflects more accurately what we do as occupational therapists.” This concern was not noted by other participants in Round 1, but statements were developed to reflect this perspective in the Round 2 survey.

Table 5.3

Items Distilled from Rounds 1 and 2

Clinical Reasoning
1. Clinical reasoning is using all available data to inform decision-making in practice.
2. Clinical reasoning is the reasoning occupational therapists use in a clinical/healthcare setting.
3. Clinical reasoning is a medical construct whereby medical practitioners reason to arrive at clinical decisions.
4. Clinical reasoning is engaging in critical thinking to inform decision-making.
5. Clinical reasoning is used when making a decision based on context-dependent information related to an individual/client in their environment.
6. Clinical reasoning is the process used to understand the occupational needs of a person/group, decide whether intervention is necessary, and determine what goals should be included.
7. Clinical reasoning is an umbrella term for a problem-solving process required to identify and address occupational performance problems in a client-centered way.
8. Clinical reasoning is used to guide decision-making in an ethical manner.
9. Clinical reasoning is a way of thinking about an issue where the best ideas guide your behavior.
10. Clinical reasoning is the thinking process occupational therapists use to engage clients in services.
11. Clinical reasoning is making decisions to maximize client occupational engagement and quality of life.
12. Clinical reasoning is a complex process that involves connecting various pieces of information together.
13. Clinical reasoning is not what occupational therapists use to reason.
14. Clinical reasoning is a process that includes reflection on decision-making.
15. Clinical reasoning is a process that includes the use of theory.
16. Clinical reasoning connotes the meta-cognitive activities that go into making a decision.

Professional Reasoning

1. Professional reasoning is the same as/very similar to clinical reasoning.
2. Professional reasoning is broader than clinical reasoning.
3. Professional reasoning is a process that involves considering the entire scope of care when making decisions.
4. Professional reasoning is a practice that goes beyond the clinical/healthcare setting.
5. Professional reasoning is using your knowledge, experience, and best available evidence to come to a conclusion.
6. Professional reasoning is based more on information related to professional scope of practice than clinical reasoning is.
7. Professional reasoning is a process that involves thinking about the patient, the assessment/treatment process, the focus of care, and the therapeutic relationship.
8. Professional reasoning is used by interdisciplinary teams.
9. Professional reasoning is a process that demonstrates occupational therapy's unique contribution.
10. Professional reasoning is a general way of thinking/problem solving that guides the occupational therapy process as a practitioner works with a client.
11. Professional reasoning is professional decision-making based on guiding principles.
12. Professional reasoning is a process with outcomes related to professional decisions (administrative, educational, clinical, etc.).
13. Professional reasoning is a process that requires that we assess the quality of our thinking, beliefs, and actions.
14. Professional reasoning is guided by the Person, Environment, Occupation, Performance model.
15. Professional reasoning is a process that includes clinical judgment.
16. Professional reasoning is a process that involves exploration, gathering new ideas, and imagining possibilities to guide practice and new ways of thinking.
17. Professional reasoning is a process that includes decision-making related to interpersonal interactions.
18. Professional reasoning is a process that includes decision-making related to ethics.
19. Professional reasoning is a process that includes decision making related to professional behaviors.

Reflective Practice

1. Reflective practice is reflection on the occupational therapy process.
2. Reflective practice is reflection on practitioner attitudes, biases, assumptions, beliefs, knowledge, skills, and/or experiences.
3. Reflective practice is applying a critical lens to practice.
4. Reflective practice is making changes to future practice to improve outcomes based on reflection.
5. Reflective practice is using outcome measurement to reflect on the quality of one's thinking/actions in a practice scenario.
6. Reflective practice is thinking about why something worked/did not work in a practice scenario.

7. Reflective practice is engaging in activities to improve professional competencies based on reflection.
8. Reflective practice is reflecting on how a client does things (which may involve activity analysis).
9. Reflective practice is reviewing notes, goals, intervention, and/or assessment to improve performance.
10. Reflective practice is making an intentional and regular effort to examine one's approach to practice.
11. Reflective practice is self-assessment of one's own strengths and weaknesses.
12. Reflective practice is soliciting feedback from others.
13. Reflective practice is required to achieve clinical/professional reasoning.
14. Reflective practice is taking time to process a situation before taking action.
15. Reflective practice is being constantly aware of what you are doing and why.
16. Reflective practice is meta-cognition.
17. Reflective practice is engaging in self-questioning to think about how you are progressing towards a stated objective.
18. Reflective practice is a continuous activity. (Round 3 only)

Evidence-Based Practice

1. Evidence-based practice is using the best available evidence to guide clinical decision-making.
 2. Evidence-based practice is being able to support practice decisions with evidence.
 3. Evidence-based practice is using peer-reviewed literature to guide clinical decision-making.
 4. Evidence-based practice is using client preferences, interests, and/or values to guide clinical decision-making.
 5. Evidence-based practice is using clinician expertise/experience to guide decision-making.
 6. Evidence-based practice is using diverse evidence-sources (both research and non-research) to guide clinical decision-making.
 7. Evidence-based practice is using population-based evidence to inform clinical decision-making.
 8. Evidence-based practice is conscious decision-making using outcome measurement.
 9. Evidence-based practice is conscious decision-making using reflection.
 10. Evidence-based practice is a process that must be combined with theory-based practice to ensure practice is grounded within occupational therapy.
 11. Evidence-based practice is using evidence to inform the application of scope of practice.
-

Round 2

For clinical reasoning, all but two items (Items #9 and #13) reached the agreement threshold after Round 2 (Table 5.4). One participant (DD06) commented, “Clinical reasoning

does not [connote] quality of thinking, only the meta-cognitive activities that go into the decision.” This led to the addition of one item (Item #16) to clarify the inclusion of meta-cognition in the definition of clinical reasoning. In response to Item #13, one participant (DD05) noted that “clinical reasoning is utilized in whatever situation you are in as an OT,” pushing back against the suggested idea that it applies only to a medical model. Further, feedback suggested that participants had difficulty thinking about statements that broke the terms of interest into single constructs (e.g., “clinical reasoning is a process that includes the use of theory”) rather than providing a holistic definition. One participant (DD07) commented, “There are elements in each of these statements that are accurate to some degree, however taking any one of these definitions in isolation narrows the scope of what clinical reasoning is” and another (DD09) clarified that “clinical reasoning is a complex process that involves many different skills and considerations.” In response to this, instructions were clarified to direct participants to view each statement as a piece of the definition, not the whole definition, when considering if they agreed with its inclusion in a definition.

Table 5.4

Descriptive Statistics of Consensus Ratings

Item	Round 2 (<i>n</i> = 10)			Round 3 (<i>n</i> = 9)			Agreement Stability ^a
	Median	IQR	Agreement (%)	Median	IQR	Agreement (%)	
Clinical Reasoning							
Item 1	3.5	1	100.00%	4	0	90.00%	1
Item 2	4	1	90.00%	4	0	90.00%	1
Item 3	3	1.75	70.00%	3	1	80.00%	1
Item 4	4	0	100.00%	4	0	90.00%	0
Item 5	3.5	1	100.00%	4	1	90.00%	0
Item 6	4	1	90.00%	4	0	90.00%	1
Item 7	3	1	80.00%	3	0	80.00%	1

Item	Round 2 ($n = 10$)			Round 3 ($n = 9$)			Agreement Stability ^a
	Median	IQR	Agreement (%)	Median	IQR	Agreement (%)	
Item 8	3	0	90.00%	3	0	90.00%	0
Item 9	3	1	50.00%	3	0	70.00%	1
Item 10	3	1.5	70.00%	3	0	80.00%	1
Item 11	3	1.5	70.00%	3	0	80.00%	1
Item 12	4	0	100.00%	4	0	90.00%	0
Item 13	1	0	10.00%	1	0	0.00%	0
Item 14	4	0	100.00%	4	0	90.00%	0
Item 15	3.5	1	90.00%	4	1	90.00%	0
Item 16 ^b	NA	NA	NA	4	1	90.00%	NA
Professional Reasoning							
Item 1	3	0.8	70.00%	3	0	80.00%	0
Item 2	4	1.3	60.00%	4	0	80.00%	1.5
Item 3	4	0	90.00%	4	0	80.00%	0.25
Item 4	4	0.8	100.00%	4	1	90.00%	0
Item 5	4	1	90.00%	4	1	90.00%	0
Item 6	4	1	80.00%	4	0	80.00%	1
Item 7	4	0	90.00%	4	0.3	80.00%	0
Item 8	4	0.3	70.00%	4	1	90.00%	-0.5
Item 9	3	0.8	80.00%	3	0	70.00%	0
Item 10	3	0	80.00%	3	0	80.00%	0
Item 11	3	1	90.00%	3.5	1	80.00%	0
Item 12	3	1	90.00%	3	1	90.00%	0
Item 13	4	1	80.00%	4	1	90.00%	0
Item 14	2	0.8	30.00%	2	0	0.00%	1
Item 15	3	0.3	70.00%	3	0	90.00%	0.5
Item 16	3.5	1	70.00%	3	1	80.00%	0
Item 17	3.5	1	80.00%	3.5	1	80.00%	0
Item 18	4	1	90.00%	4	1	90.00%	0
Item 19	4	0.3	80.00%	4	0	90.00%	0.5
Reflective Practice							
Item 1	4	1	80.00%	4	1	80.00%	0
Item 2	4	0	100.00%	4	0	90.00%	0
Item 3	4	0	100.00%	4	0	90.00%	0

Item	Round 2 (<i>n</i> = 10)			Round 3 (<i>n</i> = 9)			Agreement Stability ^a
	Median	IQR	Agreement (%)	Median	IQR	Agreement (%)	
Item 4	4	0	100.00%	4	0	90.00%	0
Item 5	3	1	90.00%	3	1	90.00%	0
Item 6	4	1	90.00%	4	0	90.00%	1
Item 7	3	1	90.00%	3	1	90.00%	0
Item 8	3.5	1	90.00%	4	1	80.00%	0
Item 9	4	1	90.00%	4	1	80.00%	0
Item 10	4	0	100.00%	4	0	90.00%	0
Item 11	4	0.8	100.00%	4	0	90.00%	0
Item 12	3	1	100.00%	3	1	90.00%	0
Item 13	4	1	90.00%	4	0	90.00%	1
Item 14	3	0.5	60.00%	3	0	80.00%	0.5
Item 15	3	0.8	100.00%	3	0	90.00%	1
Item 16	4	1	90.00%	4	0	90.00%	1
Item 17	3.5	1	100.00%	4	1	90.00%	0
Item 18 ^b	NA	NA	NA	4	0	90.00%	NA
Evidence-Based Practice							
Item 1	4	1	90.00%	4	1	90.00%	-0.75
Item 2	4	0.8	100.00%	4	0	90.00%	1
Item 3	3	1	100.00%	3	1	90.00%	0
Item 4	3	0.8	80.00%	3	0	80.00%	1
Item 5	3	0.8	90.00%	3	0	80.00%	1
Item 6	4	1	90.00%	4	0	90.00%	0.25
Item 7	3	0.8	90.00%	3	1	90.00%	0
Item 8	3	0	90.00%	3	0	90.00%	0
Item 9	3	0	70.00%	3	0	80.00%	0
Item 10	3	1	90.00%	3	0	90.00%	0.25
Item 11	4	1	90.00%	4	1	90.00%	0

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

^b Item was added for Round 3 and does not have Round 2 data.

For professional reasoning, all but two items (Items #2 and #14) reached the agreement threshold after Round 2. In response to Item #18, DD12 added that “ethical reasoning” – which they defined as “a process by which a practitioner arrives at an ethical, rather than a therapeutic

decision” – is a separate term from professional reasoning. Additionally, one participant (DD05) noted that Item #13 was how they define critical thinking, not professional reasoning.

For reflective practice, only Item #14 did not reach the agreement threshold in Round 2. One participant (DD07) commented, “I don’t think there is an end goal in mind with reflective process. It is a continual activity.” This led to the addition of Item #18 to explicitly identify reflective practice as continuous.

All evidence-based practice items met the agreement threshold after Round 2.

Round 3

For clinical reasoning, all items except Item #13 reached the 70% agreement threshold by Round 3. There was moderate consensus amongst participants for these items; 12 of the 16 items had an IQR value of 0 after Round 3. There was also moderate stability, with 7 of the 15 original items showing no change in IQR, and the remaining 8 showing a change of 1 towards increased agreement. One participant (DD09) still commented that they had difficulty rating agreement for the single statements, saying, “I was thinking about the statement not being the full picture or wanting to add to the statement to make it more accurate in my mind.”

For professional reasoning, only Item #14 had agreement below threshold by Round 3. Of all the terms, there was the least consensus across items defining the term; only 9 of the 19 items had IQRs of 0, and one item had increasing disagreement from Round 2 to Round 3.

For reflective practice, there was high agreement following Round 3, with all items at $\geq 80\%$ agreement. Regarding consensus, 10 of the 18 items had an IQR value of 0 after Round 3. There was high stability of responses, with only 5 items showing some convergence from Round 2 to Round 3.

For evidence-based practice, agreement for all items remained above the agreement threshold in Round 3. By Round 3, consensus across items was moderate; seven items had an IQR value of 0. One item (Item #7) had increasing disagreement from Round 2 to Round 3, because one participant switched from “strongly agree” to “agree.”

Discussion

In this study we aimed to synthesize occupational therapy educators’ consensus conceptualizations of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Our purpose was to identify commonly held beliefs about these constructs along with potential differences of opinion in service of enabling definitional consistency. We chose to survey educators to develop a beginning understanding of how these skills are being defined by those who teach them to occupational therapy students. Participants reached consensus around broad definitions for each construct (see Table 5.5). Some points of disagreement suggest the need for more clarity of definition.

Table 5.5

Summary of Consensus Definitions Following Round 3

Term	Summary of Consensus Definition
Clinical Reasoning	• used in a clinical/healthcare setting whereby practitioners arrive at context-dependent clinical decisions • meta-cognitive activities that go into making a decision, including: ○ critical thinking ○ reflection • problem-solving incorporating all data, including theory, to: ○ understand occupational needs of a person/group ○ decide whether intervention is necessary ○ determine goals ○ engage clients in client-centered, ethical services • goal of maximizing occupational engagement and quality of life
Professional Reasoning	• similar to clinical reasoning, but broader, as it is used by interdisciplinary teams • goes beyond clinical/healthcare setting

	• outcomes related to any professional decisions (administrative, educational, clinical) • based on professional scope of practice and guiding principles, demonstrating occupational therapy's unique contribution • involves exploration and imagining possibilities to guide practice using knowledge, experience, and best available evidence • requires assessment of quality of thinking, beliefs, and actions • guides occupational therapy process through entire scope of care, therapeutic relationship, interpersonal interactions, ethics, and professional behaviors
Reflective Practice	• continuous activity involving meta-cognitive reflection on the occupational therapy process, including: ○ how a client does things ○ why a thing worked/did not work ○ outcome measurement/assessment data, notes, goals, interventions • multiple regular, intentional activities, including: ○ processing before taking action ○ engaging in self-questioning ○ being constantly aware of what one is doing and why ○ improving professional competence ○ soliciting feedback from others ○ self-assessment of strengths and limitations • applying critical lens to attitudes, biases, assumptions, beliefs, knowledge, skills, experiences, and quality of thinking/actions • required to achieve reasoning • goal of improving performance and changing future practice to improve outcomes
Evidence-Based Practice	• using the best available evidence, including diverse evidence-sources such as: ○ peer-reviewed literature ○ population-based evidence ○ client preferences, interests, and/or values ○ clinician expertise/experience • used to guide and support clinical decision-making and inform the application of scope of practice • conscious decision-making using outcome measures and reflection • must be combined with theory-based practice to ensure practice is grounded in occupational therapy

Note. Although adequate definitions of terms do not involve reference to the term itself (Mosey, 1996), participant wording was used here as much as possible to best represent findings. See Table 5.3 for exact participant wording of items.

Clinical Reasoning as Defined by Occupational Therapy Educators

Considered together, occupational therapy educators described clinical reasoning as a collection of meta-cognitive activities that contribute to a complex process of decision-making and problem solving using all available data, including context-specific information and theory, to arrive at the best course of action. This definition of clinical reasoning is overall consistent with what can be found in the literature, including Young and colleagues' (2020) synthesis of clinical reasoning frameworks in occupational therapy. However, all of the components participants identified are not found in any one piece of work. For example, participants also described reasoning as being about the therapeutic process: understanding client occupational needs, determining relevant interventions and goals, and otherwise engaging clients in occupational therapy services. Specifically, reasoning was described as working towards maximizing client occupational engagement and quality of life, consistent with a recent scoping review of qualitative literature on clinical reasoning in occupational therapy by da Silva Araujo and colleagues (2022). It is therefore significant that in this study occupational engagement was specifically identified as the outcome of clinical reasoning by occupational therapy educators; an occupational focus may distinguish reasoning in occupational therapy from reasoning in other related health disciplines (da Silva Araujo et al., 2022).

Unsurprisingly, there was some disagreement about the context in which the term clinical reasoning applies. Participants highlighted that clinical reasoning is used in a clinical/healthcare setting, and that it is a “medical” construct. This is consistent with the idea that a different term such as professional reasoning (Schell & Schell, 2008; Unsworth & Baker, 2016) or therapeutic reasoning (Kielhofner & Forsyth, 2002) may be more inclusive of community-based or other non-clinical settings. As noted, however, one participant disagreed and indicated clinical

reasoning applies across professional contexts within occupational therapy, suggesting there is not a clear relegation of clinical reasoning to clinical contexts for all educators.

Participants also highlighted that clinical reasoning contributes to ethical decision-making in practice. In her Eleanor Clark Slagle Lecture, Rogers (1983) stated that clinical reasoning involves gathering ethical information (among other things) to make judgments in the therapeutic process and identified that “the clinical reasoning process terminates in an ethical decision, rather than in a scientific one, and the ethical nature of the goal of clinical reasoning projects itself over the entire sequence” (p. 602). Although the term “ethical reasoning” exists, along with the complementary term “moral reasoning,” within occupational therapy (Howard et al., 2020; Penny & You, 2011), it is often described as a “type” of reasoning that falls under the overall umbrella of clinical (or professional) reasoning (Unsworth & Baker, 2016). Although there was high consensus about elements that make up the definition of clinical reasoning, the disagreement about terminology – including disagreement about the terms clinical, professional, and therapeutic reasoning – is consistent with the findings that there are many terms in the health professions used to refer to reasoning processes (Young et al., 2020).

Participants saw critical thinking as an essential component of clinical reasoning that informs decision making. This is consistent with Berg and colleagues’ assertion (2021) that clinical reasoning and critical thinking are different constructs (though the terms are often used interchangeably) and that critical thinking is a precursor or necessary element of clinical reasoning. Further, in their concept analysis of professionalism, Lecours and colleagues (2021) found that critical thinking was an attribute of reasoning behaviors in occupational therapy.

Participants also saw reflection as an essential component of clinical reasoning. This is not surprising as a commonly-cited definition for clinical/professional reasoning from Schell (2019) includes “reflect” as one element of the process.

Professional Reasoning as Defined by Occupational Therapy Educators

While endorsing professional reasoning as a broader term that goes beyond the clinical/healthcare setting, most participants nonetheless agreed that professional reasoning is very similar to clinical reasoning. As noted, the perspective of similarity between these terms is supported by the OTPF-4’s use of the same definition for both terms and with some authors’ articulation that they see the term professional reasoning as more inclusive (Schell & Schell, 2008; Unsworth & Baker, 2016). Participants described professional reasoning as a process of decision making or problem solving using a variety of knowledge sources (e.g., education, experience, evidence) over the entire process of care (i.e., evaluation, assessment, treatment, and therapeutic relationship), which is consistent with the consensus definition of clinical reasoning from our panel. They also indicated that professional reasoning includes decision-making related to interpersonal interactions and ethics. These concepts are also seen in clinical reasoning literature (Maruyama et al., 2021; Rogers, 1983), suggesting further similarity in definitions of professional and clinical reasoning.

Whereas participants described critical thinking and reflection as components of clinical reasoning, they considered that professional reasoning includes clinical judgement and requires assessment of quality of thinking, beliefs, and actions. Interestingly, critical thinking and clinical judgment are interrelated concepts (Victor-Chmil, 2013). Further, reflection or reflective practice also includes assessment of quality of thinking, beliefs, and actions, as our participants also

identified (see reflective practice section below), further suggesting that participants thought about clinical and professional reasoning as involving similar or interrelated elements.

In contrast to existing literature, though, participants distinguished professional reasoning from clinical reasoning in endorsing that professional reasoning is related to professional decision-making, professional behaviors, and scope of practice, with outcomes related to professional decisions, including administrative decisions. They agreed, albeit through the only item that just met the 70% consensus threshold, that professional reasoning explicitly demonstrates occupational therapy's unique/distinct contribution and has particular relevance for practitioners on interdisciplinary teams. Interestingly, although literature distinguishes occupational therapists' clinical reasoning from reasoning in other professions (Gillette & Mattingly, 1987; Maruyama et al., 2021; Young et al., 2020), literature on how professional reasoning explicitly focuses on occupational therapy's unique value/contribution is sparse. Parkinson et al. (2011), however, did note that "practitioners should become as proficient as possible in their professional language" and "thereby, develop their professional reasoning skills, as opposed to the more general skills of clinical reasoning" (p. 149), thus suggesting a significant difference in how professional reasoning relates to professional identity and knowledge.

Finally, participants described that professional reasoning involves exploration and imagining new possibilities for/ways of thinking about practice/clients. This suggests a creative element. Creativity has been associated with clinical reasoning in occupational therapy (Hagedorn, 1995) and imagining new possibilities for clients is a component of narrative reasoning specifically (Mattingly, 1991). Beyond reasoning literature, creativity is broadly associated with occupational therapy as a profession (Oven & Lobe, 2020; Schmid, 2004), and artistry is often connected to Schön's construct of reflective practice (Kinsella, 2009). If, as our

participants agreed, professional reasoning is related to occupational therapy's unique contribution to practice, perhaps further research should explore professional reasoning in connection with creativity and reflective practice.

Reflective Practice as Defined by Occupational Therapy Educators

Participants considered reflective practice to be a continuous and intentional engagement in meta-cognitive reflection on the occupational therapy process. This idea ties in well with Schön's (1983) notion of reflective practice that encompasses both reflection-in-action and reflection-on-action. Participants did explicitly identify that reflective practice includes thinking *before* action and *after* action (i.e., about why something went well or did not work) to adjust future actions, a direct parallel to Schön's concept of reflection-on-practice. Participants did not, however, specifically identify reflection-in-action. However, in noting that the process is continuous, they may have been suggesting they saw it as occurring during practice also. Alternatively, this may be a place where ideas on reflective practice differ in education and theory/literature.

Reflection, about oneself as a practitioner and about the person receiving services, was identified as a complementary element of reflective practice. For our participants, practitioners' reflection about themselves included self-assessment of one's own strengths and limitations as a practitioner and progress towards one's own goals as well as soliciting feedback from others. Participants also described reflective practice as requiring engagement in professional development related to perceived competencies. These ideas are consistent with literature on reflective practice as "an approach to professional development" (Kinsella, 2001, p. 198) and requiring "critical reflection of one's own performance" (Nicola-Richmond et al., p. 101).

In relation to reflection on clients, participants described reflective practice as involving review of notes, goals, intervention, and/or assessment findings as well as specific use of outcome measures and *how* clients do things (e.g., through activity analysis) and making changes to future practice to improve those outcomes. This component of reflection most clearly ties to clinical reasoning, as described above, and parallels the second half of Nicola-Richmond and colleagues' (2016) definition of reflective practice, "understanding the role that critical reflection plays in professional practice and clinical reasoning" (p. 101). Participants agreed that reflective practice is required to achieve clinical or professional reasoning, further solidifying the idea that reflection is not the same as clinical reasoning (Knightbridge, 2019), but rather is part of the reasoning process.

Participants identified that reflective practice includes applying a critical lens to *what* you are doing and *why*, including attitudes, biases, assumptions, beliefs, knowledge, skills, and experiences. Mezirow (1991), an education researcher, included critical reflection as a step in the adult learning process where one reflects on concepts that fit uncomfortably within their point of view. This is similar to our participants' ideas that interrogation of perspectives should occur regardless of how well they match the context. Nonetheless, critical reflection has different meanings depending on the tradition from which it comes; for example, in connection to Critical Social Theory, critical reflection is about critiquing systems of power (Brookfield, 2000). Thus, terminology around critical reflection may warrant further investigation to clarify how it is viewed by occupational therapy educators.

Evidence-Based Practice as Defined by Occupational Therapy Educators

Participants described evidence-based practice as using the best available evidence, including peer-reviewed literature and population-based evidence, client factors, and clinical

expertise/experience, to guide decision-making. As noted, this is not always how evidence-based practice is understood by therapists, who have reported considering evidence-based practice as including only research-based evidence (Bennett et al., 2003; Garcia et al., 2020; Graham et al., 2013). However, it *is* consistent with AOTA's (2021) description of evidence-based practice as integrating not only critically appraised research, but also clinical expertise and client preferences, beliefs, and values.

Participants endorsed evidence-based practice as a conscious process, and one that included outcome measurement and reflection. Benfield and Johnston (2020) noted that outcome measurement is not explicitly part of evidence-based practice, but they did include it in their model of Evidence-Informed Professional Thinking. Educators' understanding of evidence-based practice thus seems to surpass the basic definition of using evidence and includes a cycle of reflecting on outcomes to inform future use of evidence.

Participants indicated that evidence-based practice should apply theory and inform the application of scope of practice to ensure work is grounded in the profession. Therapists do not always identify these as elements of evidence-based practice, although it is possible that better incorporating theory into evidence-based practice would enhance application/implementation (Garcia et al., 2020; Graham et al., 2013). Researchers continue to debate the contribution of theory to evidence-based practice (Marr, 2017).

Limitations

Although a small sample size is appropriate for this study's methodology, the relatively small number of participants on the panel may have influenced IQR values (Birko et al., 2015). Thus, these should be interpreted with caution. Further, although participants' ability to consider their perspective without undue influence from other panel members is a strength of the

methodology, the linear nature of the Delphi process makes evaluating complex constructs challenging as participants are not able to dialogue about their ideas. This was complicated, in our study, by the “I don’t know” response that participants may have used to indicate either that they did not understand the statement/concept or that they felt unqualified to evaluate it. Future Delphi research on this topic may benefit from having distinct responses for “I don’t understand the statement” and “I don’t feel qualified to respond.”

Finally, as noted, some participants expressed difficulty distilling the definitions of some terms into discrete statements. Some confusion may have been alleviated through use of the term “includes” instead of “is” (e.g., “clinical reasoning includes...” instead of “clinical reasoning is...”) as was suggested by one participant (DD12). In this study we wanted participants to consider core aspects of each construct, not just what might be included in a construct (Burke et al., 2023). Directions were thus further clarified in the final round; however, wording of statements and clear instructions about how to think about statements will be important for future researchers to consider to ensure agreement is rated appropriately. Additionally, other less linear methods for exploring educator definitions, like concept maps (Conceição et al., 2017), may lead to more expansive and/or comprehensive results.

Implications for Occupational Therapy Education

Occupational therapy educators can use the working definitions of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice developed through this research to examine their own conceptualizations of these professional skills. Conceptualizations developed by the occupational therapy educators comprising our participant panel can be compared to those in existing literature and those held by the individual to develop a working definition. Moving forward, educators should be clear in their use of an explicit definition for

these skills, including in course syllabi and assignment rubrics, laying a foundation for consistency in application of these terms to practice. Occupational therapy educators must be explicit with students about the potential differences in how professional skills are defined by other professionals within occupational therapy practice/education and within occupational therapy literature. Finally, occupational therapy educators should continue to reflect on current literature about essential professional skills to identify how it compares with their own conceptualizations of these skills. Such reflection will need to be iterative to enable concept clarification, as depicted in Figure 5.2.

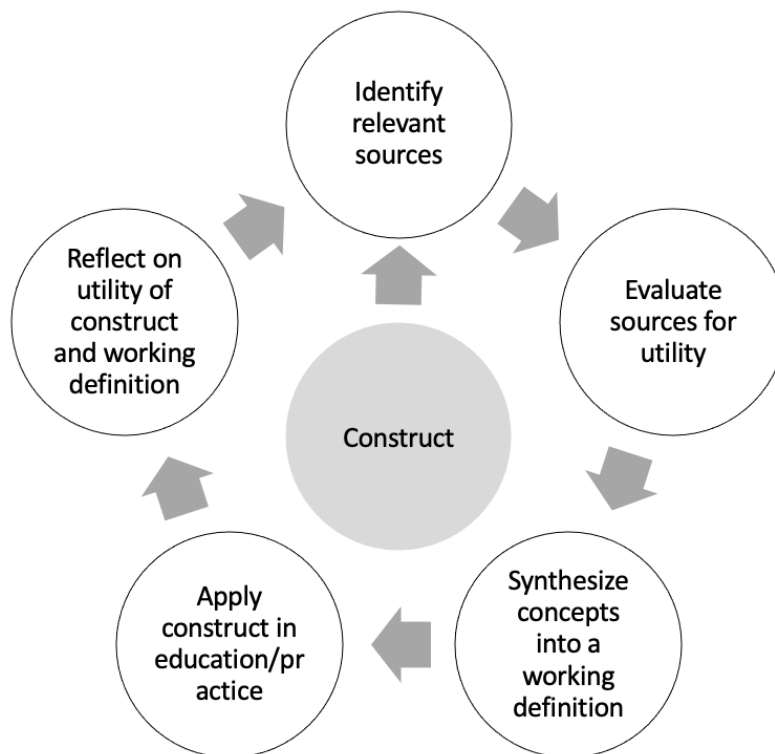


Figure 5.2

Suggested Iterative Process for Concept Clarification

Conclusion

Although occupational therapy literature is not always clear about definitions of professional skills, these findings suggest that occupational therapy educators agree about key elements of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. This agreement can be used to advance empirical work by supporting the development of item probes for measurement of professional thinking, as was suggested as needed by Benfield and Johnston (2023). Disagreement exists about terminology related to reasoning. The overlap between definitions of terms makes it difficult to disambiguate them. However, given the complexity of the constructs, it is promising that educators largely agreed about key features of each. Findings presented here have laid groundwork for future exploration of these participants' conceptualizations of relationships amongst these essential skills. In addition, researchers should explore areas of discrepancy amongst and between educators and the literature as this may elucidate reported lack of engagement in these key skills by practicing therapists. Beyond this, future research could explore practicing therapists' conceptualizations of these skills to further our understanding of how terms become integrated into clinical practice once students leave the educational context. Clarity of concept regarding reasoning, reflective practice, and evidence-based practice in occupational therapy will support both education and research related to these essential professional skills.

References

- Accreditation Council for Occupational Therapy Education (ACOTE®). (2018). *Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretive guide* (pp. 1–56). <https://doi.org/10.5014/ajot.2018.72S217>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Supplement_2), 7412410010p1-7412410010p87. <https://doi.org/10.5014/ajot.2020.74S2001>
- Benfield, A. M., & Johnston, M. V. (2023). Letter to the editor: Re: Burke, Bundy, & Lane (2023) article “If reasoning, reflection, and evidence-based practice are essential to practice, we must define them.” *The Open Journal of Occupational Therapy*, 11(3), 1–2. <https://doi.org/10.15453/2168-6408.2180>
- Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>
- Benfield, A. M., & Krueger, R. B. (2021). Topic: Professional competence in occupational therapy. *Australian Occupational Therapy Journal*, February, 1–2. <https://doi.org/10.1111/1440-1630.12724>
- Bennett, S., Tooth, L., McKenna, K., Rodger, S., Strong, J., Ziviani, J., Mickan, S., & Gibson, L. (2003). Perceptions of evidence-based practice: A survey of Australian occupational therapists. *Australian Occupational Therapy Journal*, 50(1), 13–22. <https://doi.org/10.1046/j.1440-1630.2003.00341.x>

- Berg, C., Philipp, R., Taff, S. D., Berg, C., Philipp, R., & Taff, S. D. (2021). Scoping review of critical thinking literature in healthcare education. *Occupational Therapy In Health Care*, 37(1), 18–39. <https://doi.org/10.1080/07380577.2021.1879411>
- Birko, S., Dove, E. S., Özdemir, V., & Dalal, K. (2015). Evaluation of nine consensus indices in Delphi foresight research and their dependency on Delphi survey characteristics: A simulation study and debate on Delphi design and interpretation. *PLoS ONE*, 10(8), 1–14. <https://doi.org/10.1371/journal.pone.0135162>
- Boulkedid, R., Abdoul, H., Loustau, M., Sibony, O., & Alberti, C. (2011). Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS ONE*, 6(6), 1–9. <https://doi.org/10.1371/journal.pone.0020476>
- Brookfield. (2000). The concept of critically reflective practice. In *Handbook of Adult and Continuing Education* (pp. 33–49). Jossey-Bass.
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, 11(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>
- Conceição, S. C. O., Samuel, A., & Yelich Biniecki, S. M. (2017). Using concept mapping as a tool for conducting research: An analysis of three approaches. *Cogent Social Sciences*, 3(1), 1404753. <https://doi.org/10.1080/23311886.2017.1404753>
- da Silva Araujo, A., Anne Kinsella, E., Thomas, A., Demonari Gomes, L., & Quevedo Marcolino, T. (2022). Clinical reasoning in occupational therapy practice: A scoping review of qualitative and conceptual peer-reviewed literature. *The American Journal of Occupational Therapy*, 76(3), 7603205070. <https://doi.org/10.5014/ajot.2022.048074>

- Delany, C., & Golding, C. (2014). Teaching clinical reasoning by making thinking visible: An action research project with allied health clinical educators. *BMC Medical Education*, 14(1), 20. <https://doi.org/10.1186/1472-6920-14-20>
- De Villiers, M. R., De Villiers, P. J. T., & Kent, A. P. (2005). The Delphi technique in health sciences education research. *Medical Teacher*, 27(7), 639–643. <https://doi.org/10.1080/13611260500069947>
- Falzarano, M., & Pinto Zipp, G. (2013). Seeking consensus through the use of the Delphi technique in health sciences research. *Journal of Allied Health*, 42(2), 99–105.
- Garcia, J., Copley, J., Turpin, M., Bennett, S., McBryde, C., & McCosker, J. L. (2020). Evidence-based practice and clinical reasoning in occupational therapy: A cross-sectional survey in Chile. *Australian Occupational Therapy Journal*, 1440-1630.12713. <https://doi.org/10.1111/1440-1630.12713>
- Gillette, N., & Mattingly, C. (1987). Clinical reasoning in occupational therapy. *The American Journal of Clinical Nutrition*, 41(6), 399–400. <https://doi.org/10.4324/9781003150732-18>
- Gordon, D., Rencic, J. J., Lang, V. J., Thomas, A., Young, M., & Durning, S. J. (2022). Advancing the assessment of clinical reasoning across the health professions: Definitional and methodologic recommendations. *Perspectives on Medical Education*, 11(2), 108–114. <https://doi.org/10.1007/S40037-022-00701-3>
- Graham, F., Robertson, L., & Anderson, J. (2013). New Zealand occupational therapists' views on evidence-based practice: A replicated survey of attitudes, confidence and behaviours. *Australian Occupational Therapy Journal*, 60(2), 120–128. <https://doi.org/10.1111/1440-1630.12000>
- Hagedorn, R. (1995). *Occupational therapy: Perspectives and processes*. Churchill Livingstone.

- Hallowell, M. R., & Gambatese, J. A. (2010). Qualitative research: Application of the Delphi method to CEM research. *Journal of Construction Engineering and Management*, 136(1), 99–107. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000137](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000137)
- Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32(4), 1008–1015. <https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x>
- Howard, B., Kern, C., Milliner, O., Newhart, L., & Burke, S. (2020). Comparing moral reasoning across graduate occupational and physical therapy students and practitioners. *Journal of Occupational Therapy Education*, 4(3), 1–19. <https://doi.org/10.5014/ajot.2020.74s1-po9019>
- Jünger, S., Payne, S. A., Brine, J., Radbruch, L., & Brearley, S. G. (2017). Guidance on Conducting and REporting DELphi Studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliative Medicine*, 31(8), 684–706. <https://doi.org/10.1177/0269216317690685>
- Kielhofner, G., & Forsyth, K. (2002). Thinking with theory: A framework for therapeutic reasoning. In G. Kielhofner (Eds.), *A model of human occupation: Theory and application* (3rd ed, pp. 162–178). Lippincott Williams & Wilkins.
- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, 11(5), 3–14.

- Knightbridge, L. (2019). Reflection-in-practice: A survey of Australian occupational therapists. *Australian Occupational Therapy Journal*, 66(3), 337–346. <https://doi.org/10.1111/1440-1630.12559>
- Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, 74(4_Supplement_1), 7411505100p1. <https://doi.org/10.5014/ajot.2020.74s1-po3025>
- Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, 73(5), 467–482. <https://doi.org/10.1016/j.techfore.2005.09.002>
- Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130. <https://doi.org/10.1177/0008417421994377>
- Marr, D. (2017). Fostering full implementation of evidence-based practice. *American Journal of Occupational Therapy*, 71(1), 7101100050. <https://doi.org/10.5014/ajot.2017.019661>
- Maruyama, S., Sasada, S., Jinbo, Y., & Bontje, P. (2021). A concept analysis of clinical reasoning in occupational therapy. *Asian Journal of Occupational Therapy*, 17(1), 17–25. <https://doi.org/10.11596/asiajot.16.119>
- Mattingly, C. (1991). The narrative nature of clinical reasoning. *The American Journal of Occupational Therapy*, 45(11), 998–1005. <https://doi.org/10.5014/ajot.45.11.998>
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.

- Mosey, A. C. (1996). Theoretical information. In *Applied scientific inquiry in the health professions: An epistemological orientation* (2nd ed., pp. 143–170). The American Occupational Therapy Association.
- Mthembu, T. G., Wegner, L., & Roman, N. V. (2018). Guidelines to integrate spirituality and spiritual care in occupational therapy education: A modified Delphi study. *Occupational Therapy in Mental Health, 34*(2), 181–201.
<https://doi.org/10.1080/0164212X.2017.1362367>
- Neistadt, M. E. (1996). Teaching strategies for the development of clinical reasoning. *The American Journal of Occupational Therapy, 50*(8), 676–684.
<https://doi.org/10.5014/ajot.50.8.676>
- Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal, 63*(2), 95–104.
<https://doi.org/10.1111/1440-1630.12252>
- Oven, A., & Lobe, B. (2020). Creative occupational therapist: It's about the client using focus groups to explore creativity in occupational therapy. *The Journal of Creative Behavior, 54*(1), 51–61. <https://doi.org/10.1002/jocb.344>
- Parkinson, S., Shenfield, M., Reece, K., & Fisher, J. (2011). Enhancing professional reasoning through the use of evidence-based assessments, robust case formulations and measurable goals. *British Journal of Occupational Therapy, 74*(3), 148–152.
<https://doi.org/10.4276/030802211X12996065859364>

- Penny, N. H., & You, D. (2011). Preparing occupational therapy students to make moral decisions. *Occupational Therapy In Health Care*, 25(2–3), 150–163.
<https://doi.org/10.3109/07380577.2011.565544>
- Raskin, M. S. (1994). The Delphi study in field instruction revisited: Expert consensus on issues and research priorities. *Journal of Social Work Education*, 30(1), 75–89.
- Rogers, J. C. (1983). Eleanor Clarke Slagle Lectureship—1983; Clinical reasoning: The ethics, science, and art. *The American Journal of Occupational Therapy*, 37(9), 601–616.
<https://doi.org/10.5014/ajot.37.9.601>
- Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's Occupational Therapy* (pp. 482–497). Wolters Kluwer.
- Schell, B. A. B., & Schell, J. S. (2008). *Clinical and professional reasoning in occupational therapy*. Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Schmid, T. (2004). Meanings of creativity within occupational therapy practice. *Australian Occupational Therapy Journal*, 51(2), 80–88. <https://doi.org/10.1111/j.1440-1630.2004.00434.x>
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Skulmoski, G., Hartman, F., & Krahm, J. (2007). The Delphi method for graduate research. *Journal of Information Technology Education*, 6, 93–105. https://doi.org/10.1007/3-540-47847-7_10
- Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research, and Evaluation*, 7(17), 1–6. <https://doi.org/10.7275/z6fm-2e34>

- Unsworth, C., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16.
<https://doi.org/10.1177/0308022615599994>
- Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment: Differential diagnosis. *Nurse Educator*, 38(1), 34–36.
<https://doi.org/10.1097/NNE.0b013e318276dfbe>
- von der Gracht, H. A. (2012). Consensus measurement in Delphi studies: Review and implications for future quality assurance. *Technological Forecasting and Social Change*, 79(8), 1525–1536. <https://doi.org/10.1016/j.techfore.2012.04.013>
- Young, M. E., Thomas, A., Lubarsky, S., Gordon, D., Gruppen, L. D., Rencic, J., Ballard, T., Holmboe, E., Da Silva, A., Ratcliffe, T., Schuwirth, L., Dory, V., & Durning, S. J. (2020). Mapping clinical reasoning literature across the health professions: A scoping review. *BMC Medical Education*, 20(1). <https://doi.org/10.1186/s12909-020-02012-9>

CHAPTER 6 – AN INITIAL DELPHI EXPLORATION OF OCCUPATIONAL THERAPY EDUCATORS’ PERCEPTIONS OF RELATIONSHIPS BETWEEN REASONING, REFLECTIVE PRACTICE, AND EVIDENCE-BASED PRACTICE

The manuscript that comprises this chapter presents further findings from the Delphi study concerning how the same educators conceptualized relationships amongst clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. The relationships they identified relate to the definitions they developed for each distinct skill.

Introduction

Reasoning, reflection, and evidence-based practice are key professional skills for occupational therapists, but their relationships to one another are muddled by lack of conceptual clarity (Burke et al., 2023). Having a clear understanding of relationships amongst professional skills is necessary for teaching them to occupational therapy students. Importantly, integration of professional skills in occupational therapy education has been suggested as a way to support their use in practice (Bannigan & Moores, 2009; Krueger et al., 2020). Therefore, building a model of how these skills are related is an important first step to increasing clarity about these skills in education and, potentially, for increasing skill uptake in practice (Mosey, 1996).

Clinical/Professional Reasoning

The American Occupational Therapy Association’s (AOTA) *Occupational Therapy Practice Framework (OTPF)* once defined clinical reasoning (Amini et al., 2014) and now defines professional reasoning (2020) as the “process that practitioners use to plan, direct, perform, and reflect on client care” (Schell, 2019, p. 482), considering professional reasoning simply a broader term in this context. In occupational therapy literature authors commonly cite Schell & Schell (2008, 2018) when defining reasoning and identify that they use the term

professional reasoning because “it is more inclusive of occupational therapy practice that is based in clinical as well as non-clinical settings such as in schools, workplaces or other community settings” (Unsworth & Baker, 2016, p. 5). Thus, the literature on clinical and professional reasoning indicates that they are the same construct with the distinction – and therefore relationship between them – being that professional reasoning is a more inclusive term. These definitions of clinical/professional reasoning include reflection as a component of the process, suggesting a relationship between reasoning and reflection. They also encompass the entire therapeutic process, suggesting relationships between reasoning and both reflective practice and evidence-based practice.

Reflective Practice

Reflection as a behavior critical to learning arose within the education literature through the work of Dewey (1933) who considered reflection to be the “active, persistent and careful consideration of any belief [...] in the light of the grounds that support it and the further conclusion to which it tends” (p. 9). Schön (1983) applied initial thinking on reflection to the context of professional practice and wrote about reflective practice, which he described as a “dialogue of thinking and doing through which I become [...] more skillful” (p. 31). Schön’s umbrella term “reflective practice” evokes a cyclical process and includes reflection-in-action, which occurs *during* practice, and reflection-on-action, which occurs retrospectively. Although more recently some authors appear to consider reflective practice to be practice in which one engages in reflection (Boniface, 2002), reflective practice also is described as a much more complex process than reflection alone, comprising a larger theory of professional knowledge (Kinsella, 2009). This complex theory as applied to all of occupational therapy professional practice thus must interact with clinical/professional reasoning and evidence-based practice.

Evidence-Based Practice

Evidence-based practice is a construct that originated within medicine and has spread across human service fields as an ideal of integrating rigorous research evidence with clinical expertise (Sackett et al., 1996). Evidence-based practice is often defined as integrating the “best available evidence” into practice (AOTA, 2020). However, focus on research as a source of evidence (over clinical expertise) has dominated the literature on evidence-based practice (Thomas & Law, 2013). The AOTA (2021) suggested that evidence-based practice integrates not only critically appraised research, but also clinical expertise, *and* client preferences, beliefs, and values. A scoping review of factors that support evidence-based practice in occupational therapy further found that many therapists acknowledge and value their own experience and expertise, as well as that of their clients, alongside research evidence (Thomas & Law, 2013). However, research has also found that practitioners appear to define evidence-based practice more narrowly as only the use of research evidence in practice to the exclusion of other potential evidence sources (Garcia et al., 2020). Regardless, integration of evidence is integral to the skill of evidence-based practice, which further suggests a connection between evidence-based practice and the potentially necessary associated skills of clinical/professional reasoning and/or reflective practice.

Relationships Amongst Skills

Existing literature involving more than one of these skills describes complex relationships amongst them. In their model of professional thinking, for example, Bannigan and Moores (2009) considered professional thinking to be “closely aligned to clinical reasoning” (p. 343) and indicated that reasoning is made up of reflection and evidence-based practice. These authors also positioned reflective practice and evidence-based practice as complementary,

supporting one another. They questioned the separation of the two practices in education as they considered their integration necessary for effective intervention. Similarly, Krueger and colleagues (2020) found that reflection promotes use of evidence-based practice. However, they also stated that engagement in evidence-based practice was still limited amongst practicing therapists and again encouraged integration of reflection and evidence-based practice in education.

More recently, Benfield and Johnston (2020) developed a tool to measure professional expertise, or what they referred to as “evidence-informed professional thinking.” Evidence-informed professional thinking encompasses critical clinical reasoning and evidence-informed practice activities. Interestingly, although the authors described clinical reasoning as involving the process of reflection, in their measurement tool the term reflection is only included in items related to evidence-informed practice; instead, critical clinical reasoning included similar items related to assessing, questioning, and appraising. Further, the authors acknowledged that Rasch analysis revealed that the two scales overlapped significantly, again pointing to the potential interdependence of reasoning and evidence-based practice.

When Cohn and colleagues (2010) discussed the significance of reflective practice to occupational therapy, they highlighted that evidence-based practice “entails integrating research evidence into the reflective reasoning process” (p. 140). In this one sentence they connected all three constructs, although, it is unclear specifically what role they considered each to play in a therapist’s thinking and practice. Nonetheless, occupational therapy literature suggests that relationships amongst these constructs are essential to occupational therapy practice and education, and that articulating these relationships potentially advances both an integrated educational approach for these skills and application of the skills as students enter practice. The

way that occupational therapy educators, who are tasked with integrating these constructs within their courses, themselves conceptualize relationships amongst reasoning, reflective practice, and evidence-based practice is worth considering for its impact on students and their practice.

Educators must be especially clear in how they conceptualize relationships amongst key professional skills so that they teach the skills successfully. The aim of this study, therefore, was to understand how occupational therapy educators conceptualize relationships amongst clinical reasoning, professional reasoning, reflective practice, and evidence-based practice.

Method

We used Delphi methodology and followed the guidelines of Conducting and REporting Delphi Studies (CREDES) (Jünger et al., 2017). Delphi methodology involves iterative survey rounds to facilitate the forming of consensus amongst a panel of experts (in this case, occupational therapy educators). Delphi methodology is therefore constructivist in nature, which is appropriate for our aim to capture the perspective of occupational therapy educators in an area where knowledge is lacking (Falzarano & Pinto Zipp, 2013). Data presented here comes from a larger Delphi study that also explored participant conceptualizations of definitions of these skills (Chapter 5) and teaching strategies to facilitate the development of these skills in occupational therapy students (Chapter 7). Ethical approval was obtained from Colorado State University, #3212.

Participants

Consistent with our aims, we recruited occupational therapy educators as participants. Recruitment occurred through posts on professional message boards and social media. We also used purposive sampling to send emails recruiting educators with publication histories related to reasoning, reflection, and/or evidence-based practice in occupational therapy. To ensure

participants were not newly acquainted with their educator roles and perhaps less established in their understanding of the skills of interest, participants were required to have worked as an occupational therapy educator for at least three years at the master's level or higher and to be an occupational therapy educator at the time of participation. Due to potential differences in education in other countries, participants were also required to be based in the United States. Finally, to increase the likelihood of participation across multiple rounds of surveys, participants were required to express availability given the expected time requirements for participation. We screened potential participants for these four criteria using an online form. We aimed for a sample size with a minimum of 10 participants due to the study purpose requiring a relatively homogeneous sample, consistent with similar studies in occupational therapy (De Villiers et al., 2005; Skulmoski et al., 2007).

Procedure/Data Collection and Analysis

Survey responses were collected over three rounds, using an online survey platform, between June and August of 2022. Participants were given two weeks to complete each survey. We sent reminders as needed after one week. Additional time was given for Round 3 as needed to support continued engagement. See Chapter 5 for a visual overview of the Delphi process I used.

Round 1

During the first round, participants completed a demographic questionnaire to identify professional experience, educational background, relevant courses taught, associated institution, and philosophy of occupational therapy. The Round 1 survey itself was exploratory to collect participant perspectives on relationships between clinical reasoning, professional reasoning, reflective practice, and evidence-based practice, including the option to share a visual model of

the relationship amongst all four. All surveys in this round consisted of open-ended questions, which had been refined through piloting by three occupational therapy educators who were not study participants. The question stem for each Round 1 question was “How would you describe the relationship between...?”.

Round 2

We analyzed participant responses to the Round 1 survey to develop the Round 2 survey. I used content analysis to condense open-ended responses to Round 1 questions into discrete statements, such that, to the extent possible, each contained only one idea (Hasson et al., 2000; Stemler, 2000). As much as possible, each statement was written using participant wording. Two of my committee members independently checked these statements against the data. We resolved disagreements about developed statements through discussion. Participant-created visual models appeared exactly as they were submitted as items in the Round 2 survey.

I asked participants to rate their agreement with each relational statement from 1 (strongly disagree) to 4 (strongly agree). They could also select “I don’t know” and could share any additional comments related to each combination of skills in a free-response box. For each statement, I calculated the median response value, the interquartile range (IQR), and the overall percent agreement. I considered statements that achieved an IQR value ≤ 1 to reflect consensus amongst participants (Raskin, 1994; von der Gracht, 2012). Percent agreement was determined by counting the number of responses that achieved a rating of three (agree) or four (strongly agree) and dividing that by the total number of responses. I considered statements with a percent agreement of 70% or higher to reflect agreement, consistent with Delphi literature in the field that has similar stakes (De Villiers et al., 2005; Nicola-Richmond et al., 2016). I also added

statements to the survey for Round 3 based on content analysis of participant comments from the Round 2 survey items.

Round 3

For Round 3, participants again rated agreement with each relational statement. As feedback to all participants, I provided the median and IQR value of each statement (along with a brief description of what these values signify). Participants were also shown their own original responses to the Round 2 items so they could compare their responses to the group median. Participants were again able to write free response comments for each relationship.

Responses in Round 3 were used to calculate median, IQR, and percent agreement for the final item set. I also calculated the difference between IQR values from Round 2 to Round 3 to investigate stability and/or convergence of responses (Landeta, 2006; von der Gracht, 2012). Differences close to zero represent stability of opinion, differences closer to three represent convergence, and negative values indicate increasing disagreement.

Results

Participants

A total of 20 potential participants were screened; 14 were eligible and invited to participate. Eleven participants completed Round 1, ten completed Round 2, and nine completed Round 3, for a completion rate across rounds of 81.8%. Across participants who completed at least one survey round, there was wide diversity of experience as an educator, with 27.3% ($n = 3$) reporting 3-5 years of experience, 27.3% ($n = 3$) reporting 6-10 years of experience, 9.1% ($n = 1$) reporting 11-15 years of experience, and 36.4% ($n = 4$) reporting more than 15 years of experience. Participants also endorsed a variety of primary focus areas within occupational therapy, with main categories of pediatrics (36.4%, $n = 4$), community-based (36.4%, $n = 4$),

mental health (27.3%, $n = 3$), and acute care and rehabilitation (27.3%, $n = 3$). For more information about the participants, see Chapter 5 and Table 6.1.

Table 6.1

Participant Characteristics

Participant	Years of Experience	Highest Degree	Primary Focus Area
DD02	8	OTD	Hand therapy
DD03	20	OTD	Mental health
DD04	4	OTD	Community-based, pediatrics, mental health
DD05	32	Ph.D.	Community-based, pediatrics
DD06	10	Ph.D.	Community-based, pediatrics
DD07	6	OTD	Acute care
DD08	4	OTD	Acute care/rehabilitation
DD09	4	OTD	Pediatrics
DD10	17	OTD	Mental health
DD11	11	Ph.D.	Acute care/rehabilitation, gerontology, community-based
DD12	23	Ph.D.	Mental health

Note. OTD = occupational therapy doctorate; Ph.D. = doctorate of philosophy.

Round 1

Open-ended responses describing relationships between skills led to the development of 47 discrete items (Table 6.2). Additionally, four participants created and shared visual models relating all four of the constructs to one another (Figure 6.1).

Table 6.2*Descriptive Statistics of Consensus Delphi Ratings*

Item	Round 2			Round 3			Stability ^a
	Md.	IQR	A	Md.	IQR	A	
Clinical Reasoning and Professional Reasoning							
1: Clinical reasoning and professional reasoning are the same.	2	0	20%	2	0	0%	0
2: Clinical reasoning and professional reasoning inform each other.	3	1	70%	3	0	90%	1
3: Clinical reasoning is professional reasoning applied in a clinical setting.	3	0.25	60%	3	0.25	60%	0.25
4: Professional reasoning is a broader term that includes clinical reasoning.	3.5	1	80%	4	1	90%	0
5: Professional reasoning is the foundation for clinical reasoning.	3	2	50%	3	1	50%	1
6: Professional reasoning (thinking about the goals and focus of treatment) comes after clinical reasoning (thinking about the client's case).	2	0	10%	2	0	0%	0
7: Professional reasoning demands critical thinking, which clinical reasoning does not explicitly require.	1.5	1	10%	1	1	0%	0
8: Professional reasoning is used on interdisciplinary teams.	4	1	70%	4	1	90%	0.25
9: Professional reasoning must be guided by theoretical reasoning, whereas clinical reasoning is not connected to theory.	2	0.75	10%	2	1	0%	0
Clinical Reasoning and Reflective Practice							
1: Clinical reasoning and reflective practice are cyclical processes that inform each other.	4	1	100%	4	0	90%	1
2: Reflective practice is a component of clinical reasoning.	4	0.75	90%	4	0	90%	0
3: Reflective practice allows for the development of clinical reasoning skills.	4	1	90%	4	0	80%	1
4: Clinical reasoning is used for initial decision-making; reflective practice is used during the therapy process.	2	0.75	30%	2	0	20%	1
5: Clinical reasoning is less specific than reflective practice.	2	0	0%	2	0	10%	0
6: Clinical reasoning and reflective practice are used together to analyze complex situations.	4	0.75	100%	4	0	90%	0
7: If I am doing theory-based therapeutic reasoning, I am necessarily a reflective practitioner.	2	0.25	10%	2	1	0%	-0.5

Item	Round 2			Round 3			Stability ^a
	Md.	IQR	A	Md.	IQR	A	
Clinical Reasoning and Evidence-Based Practice							
1: Clinical reasoning and evidence-based practice inform each other.	4	1	100%	4	0	90%	1
2: Evidence-based practice is a component of clinical reasoning.	3	1	90%	3	1	90%	0
3: Evidence-based practice allows one to engage in clinical reasoning.	3	0.75	70%	3	1	90%	-1
4: Evidence-based practice informs clinical reasoning.	3.5	1	100%	4	1	90%	0
5: Clinical reasoning informs evidence-based practice.	3	1	80%	3	0	90%	1
6: Clinical reasoning is required for evidence-based practice.	3	1	90%	3	1	90%	0
Professional Reasoning and Reflective Practice							
1: Professional reasoning and reflective practice inform each other.	4	1	90%	4	0	90%	1
2: Reflective practice is a component of professional reasoning.	4	1	100%	4	0	90%	1
3: Reflective practice allows for professional reasoning.	3	1	90%	3	1	90%	0
4: Reflective practice is a higher level skill than professional reasoning.	2	1	30%	2	0	0%	1.25
5: Reflective practice develops/improves professional reasoning.	3.5	1	90%	4	1	90%	0
6: Both professional reasoning and reflective practice are required to analyze complex situations.	4	1	100%	4	1	90%	0
7: Both professional reasoning and reflective practice improve the quality of professional service delivery.	4	1	100%	4	1	90%	0
8: Professional reasoning provides the professional practice foundation; reflective practice provides the framework for determining strengths and gaps in knowledge and performance.	3	1	70%	3	1	90%	0
Professional Reasoning and Evidence-Based Practice							
1: Professional reasoning and evidence-based practice inform each other.	3	0	90%	3	0	80%	0
2: Professional reasoning guides evidence-based practice.	3	0	90%	3	0	70%	0
3: Professional reasoning is developed through evidence-based practice.	3	0.75	90%	3	0	80%	0
4: Evidence-based practice is a component of professional reasoning.	3	1	100%	3	0	90%	1
5: Evidence-based practice supports/guides professional reasoning.	3.5	1	90%	4	1	80%	0
6: Evidence-based practice is used for the aspect of professional reasoning that includes decision-making with clients.	3	1	90%	3	0	90%	1
7: Evidence exists within a profession and guides that profession's reasoning.	3.5	1	90%	3	1	80%	0
8: Professional reasoning is guided by evidence across professions. ^b	NA	NA	NA	3	1	90%	NA

Item	Round 2			Round 3			Stability ^a
	Md.	IQR	A	Md.	IQR	A	
Reflective Practice and Evidence Based Practice							
1: Reflective practice and evidence-based practice inform each other.	3	1	100%	3	0	90%	1
2: Reflective practice encourages one to seek evidence.	3	1	90%	3	1	90%	0
3: Reflective practice includes consideration of evidence.	3.5	1	100%	4	1	90%	0
4: Reflective practice guides evidence-based practice.	3	0.75	100%	3	0	90%	0
5: Reflective practice is required for evidence-based practice (i.e., one must reflect in order to apply evidence to practice).	3.5	1	90%	4	1	80%	0
6: Evidence encourages reflection.	3	1	90%	3	1	90%	0
7: Evidence-based practice is an outcome of reflective practice.	2.5	2	50%	2	1	40%	1
8: Evidence-based practice informs reflective practice.	3.5	1	100%	3	0	70%	1
9: Evidence-based practice is a part of reflective practice.	3.5	1	80%	3	0.25	70%	0.75
Visuals							
Visual 1	3.5	1.75	70%	3	1	60%	1
Visual 2	2	0.75	30%	2	0	10%	1
Visual 3	2	0	20%	2	0	10%	0
Visual 4	3	0	70%	3	1	50%	-0.75
Visual 5 ^b	NA	NA	NA	3	0	80%	NA

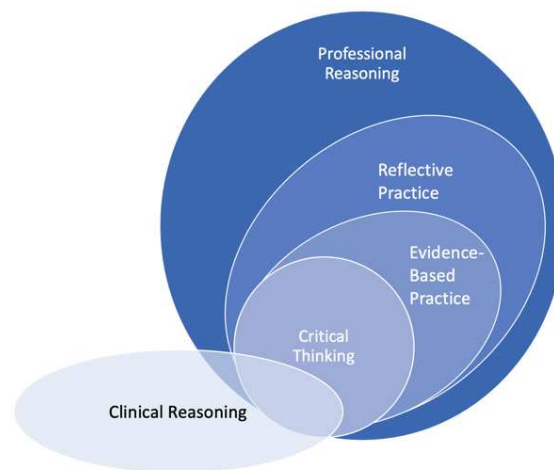
Note. Md. = median; IQR = interquartile range; A = agreement.

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

^b Item was added for Round 3 and does not have Round 2 data.



Visual 1



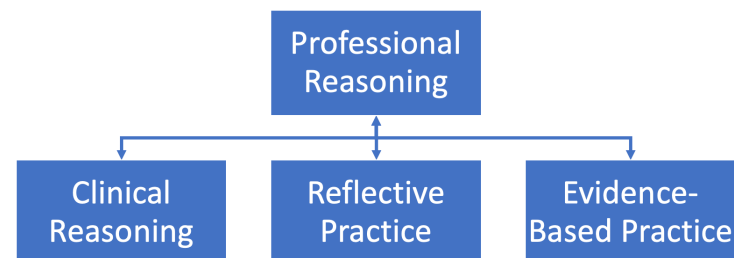
Visual 2



Visual 3



Visual 4



Visual 5

Figure 6.1

Participant Developed Visual Models of Construct Relationships

Round 2

Three of the nine items describing the relationship between clinical and professional reasoning reached the $\geq 70\%$ agreement threshold in Round 2. Two participants (DD05 and DD09) noted that Item 6 was confusing because it also gave definitions of clinical and professional reasoning.

Four of the seven items describing the relationship between clinical reasoning and reflective practice reached the agreement threshold in Round 2. One participant (DD05) noted that Item 7 introduced a different type of reasoning that they were not sure how to incorporate into the relationship. Another participant (DD06) clarified that it is the combination of reflective practice and insight that supports the development of clinical reasoning.

All six of the items describing the relationship between clinical reasoning and evidence-based practice reached the agreement threshold in Round 2. One participant (DD06) did note that insight and critical thinking are “not officially part of clinical reasoning,” to them, but that they are necessary to link reasoning to evidence-based practice.

Seven of the eight items describing the relationship between professional reasoning and reflective practice reached the agreement threshold in Round 2. There were no additional comments made about these items.

All seven of the items describing the relationship between professional reasoning and evidence-based practice reached the agreement threshold in Round 2. One participant (DD05) commented that professional reasoning can also be informed by evidence outside of occupational therapy, especially when used in interdisciplinary contexts, which led to the addition of Item 8 (“Professional reasoning is guided by evidence across professions”) in this section for Round 3.

Eight of the nine items describing the relationship between reflective practice and evidence-based practice reached the agreement threshold in Round 2. There were no additional comments made about these items.

Two of the four visuals reached the agreement threshold in Round 2. In commenting on the visuals, one participant (DD10) identified that the model combining clinical and professional reasoning (Visual 1) best signified the concepts because they are conceptualized that way in the American Occupational Therapy Association's most recent *Occupational Therapy Practice Framework (OTPF; 2020)*. However, another participant (DD05) disliked combining clinical and professional reasoning because they had spent "too much time differentiating [them] to lump them together." Another participant (DD07) noted they liked Visual #4 but that it needed bidirectional arrows, which led to the addition of Visual #5 for Round 3. One participant (DD06) also noted overall that they thought the given relationship statements were too limiting, saying they were "more thinking of a Bayesian network vs. linear" relationships, although they did not share a visual exploring this way of thinking.

Round 3

Across all relationships, only items that had already met the agreement threshold in Round 2 met the agreement threshold in Round 3. Two items (Visuals 1 and 4) that had met the agreement threshold in Round 2 no longer met the agreement threshold in Round 3. Both of the new items that were added in Round 3 (Item 8 describing the relationship between professional reasoning and evidence-based practice, and Visual 5), met the agreement threshold. Items that met the agreement threshold are summarized in Table 6.3. There was moderate stability of opinion between Rounds 2 and 3; 57.4% ($n = 27$) of items had a change in IQR equal to 0.

Table 6.3*Summary of Consensus Relationships Amongst Professional Skills*

Professional Skills	Relationship
Clinical Reasoning and Professional Reasoning	Clinical reasoning and professional reasoning inform each other. Professional reasoning is a broader term that includes clinical reasoning, and professional reasoning is used on interdisciplinary teams.
Clinical Reasoning and Reflective Practice	Reflective practice is a component of clinical reasoning which allows for the development of clinical reasoning skills. Clinical reasoning and reflective practice are cyclical processes that inform each other, and they are used together to analyze complex situations.
Clinical Reasoning and Evidence-Based Practice	Clinical reasoning and evidence-based practice inform each other. Clinical reasoning is required for evidence-based practice and evidence-based practice allows for engagement in clinical reasoning. Evidence-based practice is also a component of clinical reasoning.
Professional Reasoning and Reflective Practice	Professional reasoning and reflective practice inform each other. Both are required to analyze complex situations, and both improve the quality of professional service delivery. Reflective practice is a component of professional reasoning that allows for and develops/improves professional reasoning. Professional reasoning provides the professional practice foundation; reflective practice provides the framework for determining strengths and gaps in knowledge and performance.
Professional Reasoning and Evidence-Based Practice	Professional reasoning and evidence-based practice inform each other. Professional reasoning both guides and is developed through evidence-based practice. Evidence-based practice is both a component of and supports/guides professional reasoning, as professional reasoning is guided by evidence both within and across professions. Evidence-based practice is used for the aspect of professional reasoning that includes decision-making with clients.
Reflective Practice and Evidence-Based Practice	Reflective practice and evidence-based practice inform each other. Reflective practice guides evidence-based practice, encouraging one to seek out evidence and including the consideration of evidence. Reflective practice guides and is required for evidence-based practice. Evidence encourages reflection, and evidence-based practice is a part of reflective practice.

Participants did make some additional comments about the relational statements.

Regarding the relationship between clinical and professional reasoning, one participant (DD06)

commented that clinical reasoning does not require you to consider outcomes whereas professional reasoning does. Another participant (DD05) commented that they still do not think the statements capture the relationship between clinical and professional reasoning. Regarding the relationship between professional reasoning and evidence-based practice, one participant (DD09) noted that they do not “think of professional reasoning as having to do with clinical decision making” in terms of direct intervention. Finally, regarding the visual models, two participants (DD07 and DD05) commented that they appreciated the newly added visual (Visual 5), although DD05 noted that more arrows between terms should be added to represent the fluidity of the relationships amongst the elements. Of note, two other participants (DD10 and DD06) did not see the distinction between Visual 4 and Visual 5.

Discussion

The aim of this study was to identify agreed upon educator conceptualizations of the relationships amongst key professional skills in occupational therapy: clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Participants in this study did indicate they see clinical reasoning, professional reasoning, reflective practice, and evidence-based practice as related to one another. However, they disagreed about details of the relationships, which may in turn suggest disagreement about their overall conceptualizations of the skills themselves.

Reciprocal Relationships

Within each potential relationship participants agreed that the skills informed each other reciprocally. After Round 3, the only visual model that reached consensus amongst participants was Visual 5, which depicts clinical reasoning, reflective practice, and evidence-based practice under the umbrella construct of professional reasoning and has these three sub-constructs in

bidirectional (i.e., reciprocal) relationships with professional reasoning. Still, although participants did agree on these reciprocal relationships, their comments broadly suggested that relationships amongst these skills are too complex to describe with linear statements. This is unsurprising given the complexity of defining these constructs individually (Burke et al., 2023; Kinsella, 2001). However, finding ways to be explicit about relationships amongst these skills is important for building a larger model or theory of professional skills in occupational therapy (Mosey, 1996).

Disagreement About Clinical and Professional Reasoning

The relationship between clinical and professional reasoning was the most difficult for participants to agree on in this study. Participants agreed that professional reasoning is a broader term than clinical reasoning and that it includes clinical reasoning. This perspective is consistent with literature descriptions of professional reasoning as a similar but more inclusive term than clinical reasoning (Schell & Schell, 2018; Unsworth & Baker, 2016). However, we found only 60% agreement with the reverse of that statement, that “clinical reasoning is professional reasoning applied in a clinical setting,” which indicates participants may view this relationship with more nuance than is commonly described in the literature. Further, participants agreed that clinical reasoning and professional reasoning inform each other, suggesting one practitioner could engage in both skills within the same professional context. Occupational therapy educators appear to view these skills as more significantly different from each other than does the literature.

Potentially because of conceptual confusion about the individual skills, participants here largely described the relationship between clinical reasoning and professional reasoning in terms of their similarities and differences. Participants described professional reasoning as being

unique from clinical reasoning because it is used on interdisciplinary teams, suggesting they view the skill as more closely connected to occupational therapy's distinct professional identity and scope of practice. This is in line with comments from Parkinson et al. (2011), who noted that "practitioners should become as proficient as possible in their professional language" and "thereby, develop their professional reasoning skills, as opposed to the more general skills of clinical reasoning" (p. 149). Moreover, one participant did comment that professional reasoning does not involve clinical decision-making at all, further differentiating professional and clinical reasoning in a way that is not consistent with the literature.

Ultimately, after the final survey round there was still a fair amount of disagreement about the given statements relating clinical and professional reasoning, suggesting there is more complexity in how these constructs are related than was identified here. As noted, in literature the difference between these two terms is largely semantic, suggesting they are more or less the same skill. However, from these data we cannot draw firm conclusions about educator conceptualizations of the overlap between these two terms. In general, both clinical and professional reasoning are understood as being essential for occupational therapy practice. Further, participant views on clinical and professional reasoning by themselves were consistent with how they viewed each of their relationships to reflective practice and evidence-based practice; for that reason, we will use the term clinical/professional reasoning going forward when both skills were conceptualized the same way by participants.

Reasoning and Reflective Practice

Participants agreed that clinical/professional reasoning and reflective practice are cyclical processes that can be used together to analyze complex situations. This is consistent with how clinical/professional reasoning and reflective practice are described in occupational therapy

professional documents and literature. For example, professional reasoning must be iterative, since it facilitates the occupational therapy process, which is an “ongoing interaction among evaluation, intervention, and outcomes” (AOTA, 2020, p. 16). In the broader literature, reflective practice also is commonly described as an iterative process or cycle (Boniface, 2002; Duffy, 2007; Schön, 1983).

Participants also agreed that reflective practice is a component of clinical/professional reasoning and that it allows for the development of reasoning skills. Reflection itself is commonly included in the definition of reasoning, as in the *OTPF* definition. Although there are a variety of models of clinical/professional reasoning, across models, reflection (on practice, knowledge, beliefs, and values) as well as activities related to lifelong learning are both considered essential (Benfield & Johnston, 2020). Other researchers have specified the term reflective practice when identifying its significance to reasoning. For example, in their model of professional thinking, Bannigan and Moores (2009) described reflective practice (along with evidence-based practice) as contributing to clinical reasoning. Vachon et al. (2010) described becoming a reflective practitioner as supporting “clinicians in describing their clinical reasoning processes” (p. 120). Gomes and colleagues (2022) also identified that reflective practice activities support development of professional reasoning. In this conceptualization, reflective practice is not part of reasoning, but does support reasoning to guide practice. Further delineation of how reflection and reflective practice are themselves related may clarify their distinct connections to reasoning.

A way that our participants differentiated professional reasoning from clinical reasoning in relation to reflective practice was in describing professional reasoning as providing a foundation while reflective practice provides a framework for determining strengths and gaps in

professional performance. These elements of the relationship further distinguish professional reasoning from clinical reasoning, suggesting again that professional reasoning is more related to scope of practice and perhaps overall professionalism for these participants. This view was not found within the occupational therapy literature and may warrant further consideration.

Reasoning and Evidence-Based Practice

Participants agreed that the relationship between clinical/professional reasoning and evidence-based practice was relatively straightforward. They reached a consensus for all items in Round 2 and maintained consensus through Round 3. Participants agreed that evidence-based practice is a component of clinical/professional reasoning. This is consistent with models of professional thinking, such as that of Bannigan and Moores (2009), which describes evidence-based practice as integrated into professional thinking/reasoning. Literature also presents the opposite idea that evidence-based practice is dependent on reasoning (Unsworth & Baker, 2016), and that reasoning provides the means for integrating evidence as part of evidence-based practice (Gustafsson et al., 2014). Alternatively, researchers have suggested that reasoning and evidence-based practice may be connected by the fact that both involve outcome measurement (Benfield & Johnston, 2020). This may be further indication of the complexities and non-linear nature of these relationships.

There were some differences in how participants considered clinical and professional reasoning in relation to evidence-based practice, though. They agreed that clinical reasoning is *required for* evidence-based practice, but that only professional reasoning is *developed through* evidence-based practice. This distinction may or may not be significant. Participants also identified that evidence-based practice is used for the parts of professional reasoning that include decision-making with clients, based on evidence within and outside occupational therapy. These

statements suggest participants viewed evidence-based practice as related to the part of professional reasoning that most closely aligns with their conceptualization of clinical reasoning.

Reflective Practice and Evidence-Based Practice

Participants considered reflective practice to be required for, and to guide, evidence-based practice by encouraging one to seek out evidence. Evidence was also considered to encourage reflection, with evidence-based practice existing as a part of reflective practice. This is also consistent with the model of professional thinking from Bannigan and Moores (2009), who positioned reflective practice and evidence-based practice as complementary behaviors that support one another. Krueger and colleagues (2020) upheld the relationship between reflective practice and evidence-based practice and found that reflection promotes the use of evidence-based practice for practicing therapists. Habits of reflection, or critical examination of practice, have also been found to be significantly related to engagement in evidence-based practice (Benfield & Jeffery, 2022). Taken together, there appears to be agreement on the reciprocal nature of the relationship between these two practices in occupational therapy.

Other Significant Skills

Within their descriptions of relationships amongst these four professional skills, participants also identified other potentially relevant skills. For example, they suggested critical thinking as a component of reasoning, which is consistent with occupational therapy literature about critical thinking in the context of education (Allen & Toth-Cohen, 2019). Additionally, theory-based therapeutic reasoning was described as being used by reflective practitioners. Therapeutic reasoning is a term used in occupational therapy literature (Kielhofner & Forsyth, 2002), as is the term theoretical reasoning (Ikiugu & Smallfield, 2011). Both terms may help clarify the reasoning occupational therapists engage in as part of practice. Finally, one participant

highlighted the significance of insight to the application of reflective practice to all the other skills. Insight is often considered alongside reflection as necessary for producing change or improving performance (Grant et al., 2002). Although none of these terms was explicitly explored through this research, they may be worth investigating in future research on professional skills in occupational therapy education.

Limitations

Although a small sample size is appropriate for this study's aims and methodology, the relatively small number of participants on the panel can have an influence on IQR values (Birko et al., 2015). Delphi methodology also is inherently linear, and the organization of the surveys instructed participants to first describe each relationship in isolation, which limited development of participant ideas about more complex relationships amongst the skills. Researchers exploring these relationships in the future should consider using less linear processes.

Implications

Occupational therapy educators should use the results presented here to engage in their own professional reflection on how they conceptualize relationships amongst professional skills. Participants in this study agreed about overlapping reciprocal skills amongst clinical reasoning, professional reasoning, reflective practice, and evidence-based practice, suggesting that the most accurate visual model to describe participant perspectives may depict each of the skills as reciprocally connected to one another (Figure 6.2). This visual may be a useful starting place for educators in considering their own understanding of how the skills are related and to potentially make their own visual model. Explicating relationships amongst professional skills at the level of the occupational therapy educator will support the development of clarity across educational programs to support student uptake of these skills in practice.

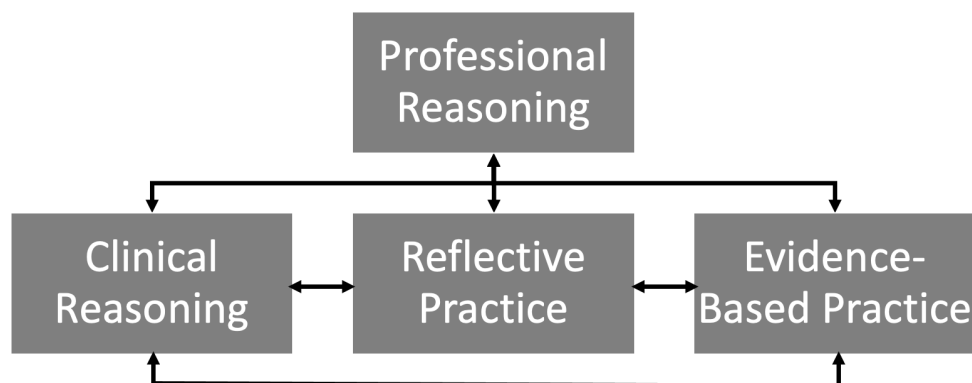


Figure 6.2

Proposed Relational Model for Professional Skills in Occupational Therapy Education

Conclusion

Clinical reasoning, professional reasoning, reflective practice, and evidence-based practice are essential skills for occupational therapy students to learn and apply in their practice. Occupational therapy educators are tasked with integrating these skills in their courses. Educators appear to agree that all these skills are reciprocally related, but they disagree about the details of relationships amongst these key skills, which they understand as complex and non-linear. Future research on the nuances in relationships amongst these skills is needed to support clarity of communication about them in occupational therapy education, with the expectation that this clarity will positively impact student engagement in these skills when they enter practice and ultimately positively impact outcomes for clients.

References

- Allen, D. D., & Toth-Cohen, S. (2019). Use of case studies to promote critical thinking in occupational therapy students. *Journal of Occupational Therapy Education*, 3(3).
<https://doi.org/10.26681/jote.2019.030309>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Supplement_2), 7412410010p1-7412410010p87.
<https://doi.org/10.5014/ajot.2020.74S2001>
- Amini, D. A., Kannenberg, K., Bodison, S., Chang, P. F., Colaianne, D., Goodrich, B., Mahaffey, L., Painter, M., Urban, M., Handley-More, D., Cooluris, K., McElroy, A., Lieberman, D., & American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, 68(2), S1–S51. <https://doi.org/10.5014/ajot.56.6.609>
- Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- Benfield, A. M., & Jeffery, H. (2022). Exploring evidence based practice implementation by occupational therapists: Implications for fieldwork. *Journal of Occupational Therapy Education (JOTE)*, 6(4). <https://doi.org/10.26681/jote.2022.060410>
- Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>

- Birko, S., Dove, E. S., Özdemir, V., & Dalal, K. (2015). Evaluation of nine consensus indices in Delphi foresight research and their dependency on Delphi survey characteristics: A simulation study and debate on Delphi design and interpretation. *PLoS ONE*, *10*(8), 1–14. <https://doi.org/10.1371/journal.pone.0135162>
- Boniface, G. (2002). Understanding reflective practice in occupational therapy. *British Journal of Therapy and Rehabilitation*, *9*(8), 294–298. <https://doi.org/10.1017/CBO9781107415324.004>
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, *11*(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>
- Cohn, E. S., Schell, B. A. B., & Crepaeu, E. B. (2010). Occupational therapy as a reflective practice. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry* (pp. 131–157). Springer US. https://doi.org/10.1007/978-0-387-85744-2_7
- De Villiers, M. R., De Villiers, P. J. T., & Kent, A. P. (2005). The Delphi technique in health sciences education research. *Medical Teacher*, *27*(7), 639–643. <https://doi.org/10.1080/13611260500069947>
- Dewey, J. (1933). *How we think*. D. C. Heath.
- Duffy, A. (2007). A concept analysis of reflective practice: Determining its value to nurses. *British Journal of Nursing*, *16*(22), 1400–1407. <https://doi.org/10.12968/bjon.2007.16.22.27771>
- Gomes, L. D., Ferigato, S. H., Araujo, A. da S., Cid, M. F. B., & Marcolino, T. Q. (2022). Let's think about practice? The applicability of a reflective tool to support professional

- reasoning in occupational therapy. *Cadernos Brasileiros de Terapia Ocupacional*, 30, e2964. <https://doi.org/10.1590/2526-8910.ctoao22462964>
- Grant, A. M., Franklin, J., & Langford, P. (2002). The self-reflection and insight scale: A new measure of private self-consciousness. *Social Behavior and Personality*, 30(8), 821–836. <https://doi.org/10.2224/sbp.2002.30.8.821>
- Gustafsson, L., Molineux, M., & Bennett, S. (2014). Contemporary occupational therapy practice: The challenges of being evidence based and philosophically congruent. *Australian Occupational Therapy Journal*, 61(2), 121–123. <https://doi.org/10.1111/1440-1630.12110>
- Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32(4), 1008–1015. <https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x>
- Ikiugu, M. N., & Smallfield, S. (2011). Ikiugu's eclectic method of combining theoretical conceptual practice models in occupational therapy. *Australian Occupational Therapy Journal*, 58(6), 437–446. <https://doi.org/10.1111/j.1440-1630.2011.00968.x>
- Jünger, S., Payne, S. A., Brine, J., Radbruch, L., & Brearley, S. G. (2017). Guidance on Conducting and REporting DELphi Studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliative Medicine*, 31(8), 684–706. <https://doi.org/10.1177/0269216317690685>
- Kielhofner, G., & Forsyth, K. (2002). Thinking with theory: A framework for therapeutic reasoning. In G. Kielhofner (Ed.), *A model of human occupation: Theory and application* (3rd ed, pp. 162–178). Lippincott Williams & Wilkins.

- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, 11(5), 3–14.
- Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, 74(4_Supplement_1), 7411505100p1. <https://doi.org/10.5014/ajot.2020.74s1-po3025>
- Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, 73(5), 467–482. <https://doi.org/10.1016/j.techfore.2005.09.002>
- Mosey, A. C. (1996). Theoretical information. In *Applied scientific inquiry in the health professions: An epistemological orientation* (2nd ed., pp. 143–170). The American Occupational Therapy Association.
- Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104. <https://doi.org/10.1111/1440-1630.12252>
- Parkinson, S., Shenfield, M., Reece, K., & Fisher, J. (2011). Enhancing professional reasoning through the use of evidence-based assessments, robust case formulations and measurable goals. *British Journal of Occupational Therapy*, 74(3), 148–152. <https://doi.org/10.4276/030802211X12996065859364>

- Raskin, M. S. (1994). The Delphi study in field instruction revisited: Expert consensus on issues and research priorities. *Journal of Social Work Education*, 30(1), 75–89.
- Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's Occupational Therapy* (pp. 482–497). Wolters Kluwer.
- Schell, B. A. B., & Schell, J. W. (Eds). (2008) *Clinical and professional reasoning in occupational therapy*. Lippincott Williams & Wilkins.
- Schell, B. A. B., & Schell, J. W. (Eds). (2018) *Clinical and professional reasoning in occupational therapy* (2nd ed.). Wolters Kluwer.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Skulmoski, G., Hartman, F., & Krahn, J. (2007). The Delphi method for graduate research. *Journal of Information Technology Education*, 6, 93–105. https://doi.org/10.1007/3-540-47847-7_10
- Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research, and Evaluation*, 7(17), 1–6. <https://doi.org/10.7275/z6fm-2e34>
- Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16. <https://doi.org/10.1177/0308022615599994>
- Vachon, B., Durand, M. J., & LeBlanc, J. (2010). Using reflective learning to improve the impact of continuing education in the context of work rehabilitation. *Advances in Health Sciences Education*, 15(3), 329–348. <https://doi.org/10.1007/s10459-009-9200-4>
- von der Gracht, H. A. (2012). Consensus measurement in Delphi studies: Review and implications for future quality assurance. *Technological Forecasting and Social Change*, 79(8), 1525–1536. <https://doi.org/10.1016/j.techfore.2012.04.013>

CHAPTER 7 – OCCUPATIONAL THERAPY EDUCATOR CONSENSUS ON STRATEGIES TO TEACH REASONING, REFLECTIVE PRACTICE, AND EVIDENCE-BASED PRACTICE: A DELPHI STUDY

This final manuscript of this dissertation presents the remaining results of the Delphi study. Here I share the educational strategies participants agreed are best-practice for supporting the development of professional thinking skills.

Introduction

“Belonging” to occupational therapy as a profession requires embodiment of essential qualities (Benfield & Krueger, 2021). Learning these qualities begins in occupational therapy education programs, where the soft and hard skills of the profession are taught. The principles behind the core attributes of a profession are sometimes referred to as threshold concepts; once acquired, a transformation occurs and the learning cannot be undone (Nicola-Richmond et al., 2016). Occupational therapy educators must support this transformation for students to take on the professional identity of an occupational therapist.

Three professional thinking skills that have been identified as threshold concepts in occupational therapy are: reasoning, reflection, and evidence-based practice (American Occupational Therapy Association (AOTA), 2020; Burke et al., 2023; Lecours et al., 2021; Nicola-Richmond et al., 2016). In occupational therapy, clinical or professional reasoning is defined as “the process that practitioners use to plan, direct, perform, and reflect on client care” (Schell, 2019, p. 482); although the terms clinical and professional reasoning are sometimes used interchangeably, professional reasoning is described as a more encompassing term as it is inclusive of non-clinical practice settings (Unsworth & Baker, 2016). Reflective practice is more difficult to define, but is generally considered a cycle of thinking and doing that involves

critiquing one's own practice to increase skilled service delivery (Kinsella, 2001; Nicola-Richmond et al., 2016; Schön, 1983). Reflective practice also incorporates paying attention to assumptions, biases, and the tacit aspects of one's reasoning. In some definitions this includes emotion, the somatic, and personal past experiences (Chaffey et al., 2012; Moon, 2001). Finally, evidence-based practice is described as the use of current, best available evidence to guide decision-making in practice (Sackett et al., 1996); within occupational therapy, this commonly includes "research evidence, information from clients, and clinicians' experience" (Bennett & Bennett, 2000, p. 179).

Occupational therapy educators acknowledge the importance of these three professional thinking skills (Marr, 2017). However, poor engagement in these skills by practicing therapists has been blamed on lack of integration of professional thinking skills – notably evidence-based practice and reflection – within occupational therapy education programs (Bannigan & Moores, 2009; Krueger et al., 2020). Further, core competencies that go beyond clinical knowledge – such as the skills to evaluate and reason through evidence from multiple sources – may not be adequately included in educational programs to equip students for the transition to practice (Chun et al., 2020). Understanding how professional thinking skills are taught may shed light on the skills entry-level clinicians ultimately bring to practice.

The pedagogy of occupational therapy education is broadly aligned with pragmatism, a "philosophy of mind/body integration" (Breines, 1987, p. 523), which includes both cognitive and bodily-experiential components (Zafran, 2019), as opposed to more didactic education philosophies. Accordingly, experiential and active learning strategies have been identified as relevant to many threshold concepts in the profession and to the overall philosophy of occupational therapy education (American Occupational Therapy Association, 2018b; Hooper et

al., 2017; Krishnagiri et al., 2019). Perhaps unsurprisingly, these transformational learning approaches have long been identified as valuable for the development of professional thinking skills like reasoning, reflection, and evidence-based practice (Brown et al., 2021; DeAngelis et al., 2013; Henderson et al., 2017; Neistadt, 1996; Royeen, 1995). Designed to support the integration of knowledge and theory in practice, experiential learning is the process of learning through doing in real-world contexts, combining hands-on activities and reflection on these experiences (Kolb, 2015). Active learning techniques are, broadly, methods of instruction that hold students accountable for their own learning; these include problem-based learning, case-based learning, and simulation activities (Harris & Bacon, 2019). Within occupational therapy education, active learning approaches to greater or lesser degrees simulate and scaffold the clinical decision-making process for students, which can involve reasoning, reflection, and/or evidence-based practice activities. Experiential and active learning approaches are therefore well-matched with one another in providing opportunities for students to actively engage with learning reasoning, reflective practice, and evidence-based practice skills.

Despite what is known about these education strategies, in their most recent research agenda for occupational therapy education, the AOTA (2018a) acknowledged the need for research on specific instructional methods for supporting required competencies in students that match the pedagogy of the profession. Gaining a clear understanding of how occupational therapy educators view best practice approaches to teaching reasoning, reflective practice, and evidence-based practice would allow for more targeted research related to pedagogy. The aim of this study was therefore to understand what occupational therapy educators view as best-practice teaching strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice in occupational therapy students.

Method

We used Delphi methodology following the guidelines of Conducting and REporting DElphi Studies (CREDES; Jünger et al., 2017). The data presented here is part of a larger Delphi study also examining educator definitions of these skills (see Chapter 5) and their relationships to one another (see Chapter 6). Delphi methodology involves iterative survey rounds with the aim of facilitating formation of expert consensus. Delphi methodology was therefore chosen for its constructivist nature to capture the perspective of occupational therapy educators. Ethics approval was obtained from Colorado State University, #3212.

Participants

We used purposive sampling for recruitment, sending invitation emails to occupational therapy educators with publication histories related to reasoning, reflection, and/or evidence-based practice. We also invited educators to participate through posts on professional message boards and social media. Inclusion criteria were: 1) worked as an occupational therapy educator for at least three years at the master's level or higher; 2) currently an occupational therapy educator; 3) based in the United States; and 4) expressed availability to participate over the course of multiple rounds of surveys. We screened potential participants on these criteria using an online form.

There are no clear guidelines on how many participants should be included on a Delphi panel, but a small sample size is appropriate for relatively homogenous groups (Skulmoski et al., 2007). Because our participant qualifications were well-defined (Hallowell & Gambatese, 2010), we aimed for a minimum of 10 participants. Although small, this panel size meets the study's exploratory purpose and is consistent with similar studies (De Villiers et al., 2005; Nicola-Richmond et al., 2016).

Procedure/Data Collection and Analysis

We collected survey responses between June and August of 2022. In a modification of the standard Delphi procedure, we chose in advance to conduct three survey rounds; this increases the likelihood of consistent participation while allowing for nuanced responses and limits the likelihood of forcing consensus amongst participants (Skulmoski et al., 2007).

Participants had two weeks to complete each survey, which we distributed through an online platform. Reminder emails were sent after one week as needed. For a visual overview of the Delphi process used in this study, see Chapter 5.

Round 1

The first survey round included a demographic questionnaire to identify professional experience, educational background, relevant courses taught, associated institution, and philosophy of occupational therapy. The Round 1 survey itself was exploratory to collect participant perspectives on educational strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. Participant definitions of these skills were examined in Chapter 5; a condensed summary of those definitions is presented for reference in Table 7.1.

Table 7.1

Condensed Summary of Consensus Definitions From Chapter 5

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Meta-cognitive activities that go into decision-making (i.e., critical thinking, reflection) in a clinical/healthcare setting. Involves problem-solving incorporating all available data. Has the goal of maximizing occupational engagement and quality of life.	Similar to clinical reasoning, but broader, as it is used by interdisciplinary teams and goes beyond clinical/healthcare setting. Has outcomes related to professional decisions and is based on professional scope of practice, demonstrating occupational therapy's unique contribution.	Continuous, intentional activity involving meta-cognitive reflection on the occupational therapy process. Requires applying a critical lens to attitudes, biases, assumptions, beliefs, knowledge, skills, experiences, and quality of thinking/actions. Has the goal of improving performance to improve outcomes.	Using the best available evidence to guide decision-making in practice. Evidence includes peer-reviewed literature, population-based evidence, client preferences, interests, and/or values, and clinician expertise/experience.

Note. These definitions have been condensed. See Chapter 5 for exact participant wording of items.

The Round 1 survey consisted of open-ended questions that we refined based on feedback from three occupational therapy educators who participated in pilot testing. For data related to educational strategies, the first-round open-ended questions were: What do you think are the most effective teaching strategies to facilitate development of clinical reasoning/professional reasoning/reflective practice/evidence-based practice?

Round 2

We analyzed participant responses to the Round 1 survey to develop the Round 2 survey. Using content analysis, a systematic approach to condensing material into discrete items (Hasson et al., 2000; Stemler, 2000), I distilled open-ended responses into discrete teaching strategies. These strategies served as the items for Round 2. Two of my committee members then independently checked all items against the data. We reached resolution of disagreements about the analysis through group discussion. For each item we used participant wording as much as possible.

I asked participants to rate their agreement with the effectiveness of each teaching strategy in relation to the given skill from 1 (strongly disagree) to 4 (strongly agree). I also asked them to rate the importance of each strategy for facilitating the development of the skill from 1 (not at all important) to 4 (extremely important). For both agreement and importance, they could also select “I don’t know.” Participants had the opportunity to share any additional comments in free-response boxes.

For each item, I calculated the median response value and the interquartile range (IQR) along with overall percent agreement. To calculate percent agreement, I counted the number of responses that achieved a rating of three (agree) or four (strongly agree) and divided that by the total number of responses. I considered items that achieved an IQR value less than or equal to

one to have reached consensus amongst participants (Raskin, 1994; von der Gracht, 2012); I considered items with a percent agreement of 70% or higher to have reached agreement for inclusion, consistent with similar Delphi research in occupational therapy (De Villiers et al., 2005; Nicola-Richmond et al., 2016). I also calculated median importance ratings. Finally, as needed and based on content analysis of participant comments related to the Round 2 survey items, I added items to the survey.

Round 3

For the third and final round, participants rated agreement and importance for the same items (and any additional items added based on data from Round 2). As feedback to the participants, I shared the median and IQR values for agreement and importance of each item along with a brief description of what these values mean. I also gave each participant their own individual response to the Round 2 items for comparison to the group median. Participants were again able to write free response comments for each section of the survey.

I used Round 3 responses to calculate median, IQR, and percent agreement for agreement ratings and median values for importance ratings. I also calculated the difference between IQR values for agreement ratings from the second round to the third round to investigate stability and/or convergence of responses (Landeta, 2006; von der Gracht, 2012). Last, I conducted a final round of content analysis on all of the agreed-upon items across professional thinking skills to identify themes.

Results

Participants

Twenty potential participants completed the screening questionnaire; 14, all from different institutions, were found eligible to participate based on inclusion criteria. Of those

eligible, 11 completed Round 1, 10 completed Round 2, and 9 completed Round 3, for a completion rate across rounds of 81.8%. Overall, participants had high levels of experience as occupational therapy educators; 36.4% ($n = 4$) had 15+ years, 9.1% ($n = 1$) had 11-15 years, 27.3% ($n = 3$) had 6-10 years, and 27.3% ($n = 3$) had 3-5 years. Participants each identified multiple focus areas, which spanned occupational therapy contexts, including pediatrics (36.4%, $n = 4$), community-based (36.4%, $n = 4$), mental health (27.3%, $n = 3$), and acute care/acute inpatient rehabilitation (27.3%, $n = 3$). One participant each also endorsed hand therapy, neonatal intensive care, gerontology, and subacute rehabilitation as focus areas.

Round 1

Open-ended responses to Round 1 questions led to the generation of 67 unique teaching strategies across professional thinking skills; 17 applied to clinical reasoning (Table 7.2), 23 to professional reasoning (Table 7.3), 26 to reflective practice (Table 7.4), and 27 to evidence-based practice (Table 7.5). One participant (DD12) identified that they do not use the term clinical reasoning, they use the term therapeutic reasoning; however, the participant groups' definition of clinical reasoning aligned with that participant's definition of therapeutic reasoning, so the teaching strategies still applied.

Table 7.2*Data Analysis of Educational Strategies Related to Clinical Reasoning*

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
1: Case studies	3.5	1	100	4	3	1	90	4	0
2: Simulations	4	0	100	4	4	0	90	4	0
3: Problem-based learning	3.5	1	100	4	3	1	90	4	0
4: Standardized patients	4	0	90	4	4	0	90	4	0
5: Fieldwork	4	1	90	4	4	0	80	4	1
6: Requiring students to find and give evidence-based support for chosen interventions	4	1	90	3	4	0	90	3	1
7: Cognitive mapping	3	1	50	3	3	0.25	80	3	0.5
8: Practitioner modeling	3	1	80	3	3	0	80	3	1
9: Instructor modeling	3	1	80	3	3	0	70	3	1
10: Peer modeling	2	1	30	3	2	0	20	3	0.25
11: Practicals	2.5	1	50	3	2	1	30	3	0
12: Explicit teaching of clinical reasoning	3	1	80	3	3	1	90	3	-0.75
13: Explicit teaching of critical thinking	3	1	70	3	3	1	90	3	-0.5
14: Providing students explicit feedback on their use of clinical reasoning	3.5	1	90	4	4	1	70	4	0
15: Requiring reflection on experiences	4	1	90	4	4	0	90	4	1
16: Discussions of different approaches to reasoning about the same case	3.5	1	100	3	4	0	90	4	1
17: Breaking down the process of clinical reasoning into concrete steps	3	1	100	4	3	1	90	3	0
18: Identifying for students instances where clinical reasoning is being used ^b	NA	NA	NA	NA	4	1	90	4	NA

Notes. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of clinical reasoning/professional reasoning/reflective practice/evidence-based practice.”

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

^b Item was added for Round 3 and does not have Round 2 data.

Table 7.3

Data Analysis of Educational Strategies Related to Professional Reasoning

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
1: Case studies	3	0	80	3	3	0	80	3	0
2: Simulations	3	1	70	3	3	0	80	3	0.5
3: Problem-based learning	3	2	60	3	3	0	70	3	1.25
4: Standardized patients	3	1.25	60	3	3	0	70	3	1
5: Evidence-based practice activities	3	0.25	70	3	3	0	80	3	0
6: Cognitive mapping	2.5	1.75	30	2	2	0.5	20	2	0.5
7: Explicitly teaching professional reasoning	3	1	80	3	3	0	90	3	0.25
8: Explicitly teaching critical thinking	3	1	80	3	3	0	90	3	0.25
9: Providing explicit examples of what professional reasoning looks like	4	1	70	3	4	1	90	3	0
10: Using content that requires the application of reasoning skills	3	1	90	3.5	3	0	90	3	1
11: Discussing ethics in occupational therapy	3	0.5	60	3	3	0.25	80	3	0.75
12: Teaching about the interconnectedness of knowledge	3	1	90	3	3	0	90	3	1
13: Providing opportunities for students to reflect on their own professional reasoning	4	0	80	4	4	0	90	4	0
14: Providing opportunities for students to reflect on feedback received regarding professional reasoning	4	1	90	4	4	1	90	4	0
15: Having students complete occupational profiles	2.5	1	40	3	2.5	1	40	3	0
16: Program development activities	3	1.5	40	2.5	3	0.25	70	3	0.75
17: Advocacy activities	3	1	70	3	3	0	80	3	0.5

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
18: Discussion of the roots of occupational therapy as a profession	2	1	30	2	2	0	20	2	0.25
19: Discussion of the Occupational Therapy Practice Framework	3	1.25	60	3	3	0	80	3	1
20: Discussion of factors that impact the profession's approach to working with clients	3	1.25	60	3	3	0	80	3	1
21: Providing interdisciplinary opportunities	4	0.25	80	4	4	0	90	4	0.5
22: Discharge planning discussions from different disciplines' perspectives	3.5	1	70	4	3	1	80	4	0
23: Debriefs after simulations or standardized patients	3	1	80	3	3	0	90	3	0.5

Note. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of clinical reasoning/professional reasoning/reflective practice/evidence-based practice.”

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Table 7.4

Data Analysis of Educational Strategies Related to Reflective Practice

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
1: Case studies	3	1.75	60	3	3	0	70	3	1
2: Simulations	3.5	1	90	4	3	0	80	3	1
3: Problem-based learning	3	1	70	3	3	0	90	3	0.5
4: Fieldwork	4	0.75	90	4	4	0	80	4	1
5: Evidence-based practice activities	3	0.75	90	3	3	0	80	3	0
6: Cognitive mapping	3	0.5	60	3	3	0	80	3	0
7: Modeling	4	1	70	4	4	1	90	4	0.25

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
8: Providing opportunities for explicit consideration of what did not go well/areas for improvement	4	0	100	4	4	0	90	4	0
9: Explicit discussion of/reflection on what went well/strengths	4	0.75	100	4	4	0	90	4	1
10: Having students re-do assignments after feedback	3	0	70	3	3	0	90	3	0.25
11: Revisiting material across semesters to show student's their growth	3	0	70	3	3	0	80	3	0.25
12: Having students reflect on others' practice through videos	3	0	80	3	3	0	90	3	0
13: Having students reflect on their own videotaped performance	4	1	100	4	4	1	90	4	0
14: Student journaling	3	0	80	3	3	0	80	3	0
15: Writing treatment notes	3	1	50	3	3	0	70	3	1
16: Writing intervention plans	2	1	40	3	2	0	20	3	1
17: Group reflective discussions	3	1	80	3.5	3	0	90	3	1
18: Discussion boards	2	1	30	2	2	1	30	2	-0.5
19: Providing opportunities to reflect on what students have observed	3	1	90	3	3	1	90	3	-0.75
20: Debriefs following labs/simulations	3	1	100	3	3	0	90	3	1
21: Giving students opportunities to provide feedback to peers	3	0	70	3	3	0	80	3	0.25
22: Reflection assignments	3	0.75	90	3	3	0	80	3	0
23: Asking students reflective questions	3	0.75	90	3	3	0	80	3	0
24: Explicit discussion of "why" to do something differently next time	3	0.75	90	3	3	0	90	3	0
25: Creating brave spaces so students are willing to share	4	1	90	4	4	1	90	4	0
26: Providing experiences that are uncomfortable/ unfamiliar to give students an opportunity for reflection	3.5	1	90	4	4	1	90	4	0

Note. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of clinical reasoning/professional reasoning/reflective practice/evidence-based practice.”

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Table 7.5*Data Analysis of Educational Strategies Related to Evidence-Based Practice*

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
1: Complex case presentations	3	0.75	70	3	3	0	90	3	1
2: Problem-based learning	3	1	80	3	3	0	80	3	0.25
3: Teaching students how to search for/find evidence/research	4	1	100	4	4	0	90	4	1
4: Having students practice finding evidence	3.5	1	100	3	4	1	90	4	0
5: Teaching students how to read research	3.5	1	90	4	4	1	90	4	0
6: Providing opportunities to read research	3	0.75	90	4	3	1	80	4	-1
7: Teaching students how to analyze research	3	1	90	3	3	1	90	3	0
8: Teaching students how to reflect on research	3.5	1	100	4	4	1	90	4	0
9: Having students complete article critiques	3	1	80	3	3	1	80	3	0
10: Teaching students how to apply evidence to clinical practice	4	1	100	4	4	0	90	4	1
11: Teaching students strategies for developing evidenced-based materials for clinical practice	3.5	1	100	4	4	1	90	4	0
12: Demonstrating use of evidence by incorporating it into courses/instruction	4	0.75	100	4	4	0	90	4	1
13: Requiring students to include evidence as support for their decisions in assignments	4	0.75	100	4	4	0	90	4	1
14: Teaching students how to assess their own knowledge/gaps in knowledge	3	1	100	3	3	1	90	3	0
15: Having students make professional development goals related to evidence-based practice	4	1	70	4	4	1	80	4	0
16: Grand rounds	3	1	40	3	3	1	60	3	0
17: Journal clubs	3	0	70	3	3	0	90	3	0.25
18: Teaching principles of translational health science	3	0.25	80	3	3	0	80	3	0
19: Explicitly teaching what evidence-based practice is	3	0	90	3	3	0	90	3	0
20: Explicitly discussing why evidence-based practice is important	3	0	80	3	3	0	90	3	0
21: Having students participate in systematic/scoping reviews	3	0.75	80	3	3	0	80	3	0

Item	Round 2				Round 3				Stability ^a
	MA	IQR	A(%)	MI	MA	IQR	A(%)	MI	
22: Being honest about what we know/don't know in the profession	3	1	100	3	3	0	90	3	1
23: Having discussions of how to make objective decisions in practice	3	1	100	3	3	0	90	3	1
24: Teaching about AOTA's Choosing Wisely resources	3	0.75	90	3	3	0	80	3	0
25: Teaching an eclectic method of using theory to support decision-making	3	1	60	3	3	0	70	3	1
26: Guiding the development of strategies/habits to support curiosity and information seeking	3.5	1	100	4	4	1	90	4	0
27: Research courses	2.5	1	50	3	3	1	60	3	0

Note. MA = median agreement; IQR = interquartile range; A = agreement; MI = median importance. Each item was concluded with “is/are an effective teaching strategy for facilitating the development of clinical reasoning/professional reasoning/reflective practice/evidence-based practice.”

^a Agreement stability is calculated by subtracting the Round 3 IQR from the Round 2 IQR. For this calculation, only agreement ratings from participants who completed both Round 2 and Round 3 were used in the Round 2 IQR calculation.

Round 2

Of the 17 strategies for teaching clinical reasoning that participants generated, 14 reached agreement in Round 2, with five reaching 100% agreement. Despite some not reaching the agreement threshold, all strategies had median importance ratings ≥ 3.0 . We added one item (Item 18) in response to feedback from one participant (DD03) who clarified that they think “to learn clinical reasoning, it is important to provide students with examples of when it is used.” Three other participants provided additional nuance to strategies in this section, with one noting strategies were too broad and that “it is critical to teach the thinking – not the patient match” (DD06) and another noting that clinical reasoning can often be too abstract for students (DD07). In relation to Item 8, one participant (DD11) also specified that modeling clinical reasoning can be detrimental if the clinician is not skilled.

Of the 23 strategies for teaching professional reasoning, 14 reached agreement in Round 2; none reached 100% agreement. All but three items (Items 6, 16, and 18) had importance ratings ≥ 3.0 . One participant (DD05) noted that if Items 1-5 had specified “interdisciplinary” then they would have agreed with the listed strategies. Additionally, one participant (DD07) commented that discussion is only helpful as a complement to doing an activity and that discussion “is maybe not the most effective approach to the development of professional reasoning.”

Of the 26 strategies for teaching reflective practice, 21 reached agreement in Round 2, with four reaching 100% agreement. All but one item (Item 18) had importance ratings ≥ 3.0 . One participant (DD06) highlighted that reflection is impossible without insight, and another (DD11) clarified that the quality of reflection prompts contribute to the learning outcome.

Of the 27 strategies for teaching evidence-based practice, 24 reached agreement in Round 2, with 11 reaching 100% agreement. All items had importance ratings ≥ 3.0 . One participant (DD06) noted that they think the “AOTA Choosing Wisely lacks the teeth that other professions are doing.” Relatedly, regarding education strategies for teaching all of these skills, one participant (DD05) commented that they were not sure if there were ACOTE® standards related to these professional skills, stating “we need to rethink the standards!”

Round 3

In Round 3, none of the items reached 100% agreement. All but one item had the same importance ratings of ≥ 3.0 from Round 2 to Round 3. The one exception was Professional Reasoning Item 16, which newly achieved an importance rating of 3.0 in Round 3 (up from 2.5 in Round 2). Nonetheless, this item did not meet the agreement threshold in this round.

One additional strategy for teaching clinical reasoning reached the agreement threshold in Round 3 (Item 7); the newly added item (Item 18) also reached the agreement threshold, for a total of 16 (of 18) agreed-upon strategies. There was moderate stability of responses; seven items had no change in IQR, eight changed by one point or less towards agreement, and two showed change representing increasing disagreement. Regarding Item 15, one participant (DD06) identified that it is not just reflection but *critical* reflection that facilitates the development of clinical reasoning.

Six additional strategies for teaching professional reasoning (Items 3, 4, 11, 16, 19, and 20) reached the agreement threshold in Round 3, for a total of 20 (of 23) agreed-upon strategies. There was again moderate stability of responses. Seven items had no change in IQR and the remaining 17 items had a change of one point or less.

Three additional strategies for teaching reflective practice (Items 1, 6, and 15) reached the agreement threshold in Round 3, for a total of 24 (out of 26) agreed-upon strategies. One participant (DD06) noted that “reflective assignments” (Item 22) is too broad of a designation, and that “specific components are required in the assignments.” Eleven items had good stability of responses, with no change in IQR values. Thirteen items had a change in IQR of one or less, and two had changes in IQR suggesting increasing disagreement.

One additional strategy for teaching evidence-based practice (Item 25) reached the agreement threshold in Round 3, for a total of 25 (of 27) agreed-upon strategies. Evidence-based practice items had the highest stability, with 16 items having no change in IQR value, 10 with a change of one point or less, and only one with a change in IQR representing increasing disagreement.

Qualitative Findings

Teaching strategies that met the consensus threshold after Round 3 for more than one professional thinking skill fell into two main categories: 1) experiential and active learning opportunities and 2) explicit teaching of skills (Table 7.6). The remaining strategies, some of which also fall within these two categories, were related to only one professional thinking skill each (Table 7.7). For teaching clinical reasoning, participants endorsed primarily *explicit teaching* approaches. For the other three professional thinking skills, participants identified active, explicit, and other teaching strategies; for professional reasoning they endorsed strategies related to *scope of practice*, for reflective practice they endorsed *reflective learning activities*, and for evidence-based practice they endorsed *evidence-based practice activities*.

Table 7.6*Summary of Overarching Teaching Strategies Endorsed by Participants*

Teaching Strategy	Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Experiential and Active Learning				
Problem-based learning	X	X	X	X
Case studies/complex case presentations	X	X	X	X
Simulations	X	X	X	
Standardized patients	X	X		
Debriefs after simulations, labs, or standardized patients		X	X	
Fieldwork	X		X	
Modeling	X		X	
Explicit Teaching				
Explicit teaching of the skill	X	X		X
Explicit teaching of critical thinking	X	X		
Cognitive mapping	X		X	
Evidence-based practice activities		X	X	
Requiring students to find and give evidence-based support for their decisions	X			X
Requiring reflection on experiences	X		X	

Table 7.7

Summary of Skill-Specific Teaching Strategies Endorsed by Participants

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
Identifying for students instances where the skill is being used	Providing opportunities to reflect on feedback regarding use of professional reasoning	Reflection on own performance (videotaped) or others (video or observation)	Teaching/practicing searching for, finding, reading, analyzing, critiquing, reflecting on, and applying research
Breaking down the process of the skill into concrete steps	Providing opportunities for students to reflect on their use of professional reasoning	Reflection assignments	Teaching strategies for developing evidenced-based materials for clinical practice
Providing students explicit feedback on their use of the skill	Discussion of the Occupational Therapy Practice Framework	Asking students reflective questions	Demonstrating use of evidence by incorporating it into courses/instruction
Discussions of different approaches to using the skill with the same case	Discussion of factors that impact the profession's approach to working with clients	Explicit discussion of "why" to do something differently next time	Having students participate in systematic/scoping reviews
	Providing interdisciplinary opportunities	Student journaling	Journal clubs
	Discharge planning discussions from different disciplines' perspectives	Group reflective discussions	Having students make professional development goals related to the evidence-based practice
	Teaching about the interconnectedness of knowledge	Providing experiences that are uncomfortable/unfamiliar to give students an opportunity for reflection	Guiding the development of strategies/habits to support curiosity and information seeking
	Discussing ethics in occupational therapy	Writing treatment notes	Having discussions of how to make objective decisions in practice

Clinical Reasoning	Professional Reasoning	Reflective Practice	Evidence-Based Practice
	Using content that requires the application of reasoning skills	Giving students opportunities to provide feedback to peers	Teaching students how to assess their own knowledge/gaps in knowledge
	Advocacy activities	Having students re-do assignments after feedback	Teaching about AOTA's Choosing Wisely resources
	Professional development activities	Revisiting material across semesters to show student's their growth	Teaching an eclectic method of using theory to support decision-making
	Providing explicit examples of what the skill looks like	Creating brave spaces so students are willing to share	Teaching principles of translational health science
			Being honest about what we know/don't know in the profession
			Explicitly discussing why the skill is important

Note. AOTA = American Occupational Therapy Association.

Discussion

In this study we aimed to understand how educators conceptualize best-practice teaching strategies for facilitating the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice in occupational therapy students. We found consensus on many, but not all, of the identified teaching strategies, which, in accordance with the pragmatic pedagogy of the profession, largely fell under the umbrella of experiential/active learning. Participants also agreed on many explicit teaching strategies for supporting the development of professional thinking skills.

Experiential and Active Learning

Participants identified that fieldwork supports the development of clinical reasoning and reflective practice. Fieldwork has been previously identified as an essential way to instill professional skills like reasoning and reflection in occupational therapy students (Bolton & Dean, 2018; Mattila et al., 2018). ACOTE® (2018) also provided that simulations and standardized patient experiences, which are active learning approaches (Harris & Bacon, 2019), can be substituted as an experiential learning option for Level I fieldwork. Experiential learning is expected to occur through acting and experiencing and then reflecting on the experience, which makes it logically suited to the development of reasoning and reflection skills.

Participants also identified both problem-based learning and case studies – two active learning methods – as best-practice teaching strategies across professional skills. Problem-based learning involves small groups of self-directed learners working through a given case/scenario (Gewurtz et al., 2016). Research is inconsistent on whether problem-based learning is effective for developing reasoning skills (McCarron & Amico, 2002; Scaffa & Wooster, 2004), but problem-based learning has been described as helpful for developing evidence-based practice

skills within health professional education (Lusardi et al., 2002) and professional reflection within occupational therapy curricula (McNulty et al., 2004). Case-based learning, on the other hand, has been shown to promote the development of clinical reasoning (Bathje et al., 2022). Interestingly, problem-based learning and case studies were the only teaching strategies identified as best-practice approaches for facilitating all four skills. As such, future research could be focused on investigating how these strategies could be harnessed to foster skill integration.

In relation to clinical reasoning and reflective practice, participants also identified modeling as a best-practice teaching strategy, including modeling in general (for reflective practice skills) and practitioner or instructor modeling (for clinical reasoning). Although instructor/practitioner modeling are not direct hands-on or active learning approaches, modeling often exists within the context of experiential learning, such as on fieldwork. One participant noted that the quality of the modeling has an impact on student learning. Similarly, Benfield and Jeffery (2022) noted that practitioners who continue to report low levels of engagement in evidence-based practice are most likely poorly modeling evidence-based practice activities to students. We suggest that inadequate modeling may pose a similar problem for the arguably less easily demonstrable skills of reasoning and reflection. Therefore, although modeling may be an effective teaching strategy broadly, participants and research literature agree that the quality of the modeling matters.

Participants also identified advocacy and program development activities as useful for facilitating the development of professional reasoning. Although these are not clinical activities, they do provide experiential learning opportunities for other activities in occupational therapy's scope of practice. Interestingly, the question of the best way to teach advocacy skills has recently

started to be explored (Alden et al., 2021; Eglseder et al., 2022), and program development activities have been identified as the most common way occupational therapy doctoral students complete their capstone projects (Kiraly-Alvarez et al., 2022). These skills and activities are themselves important for occupational therapy practice (ACOTE®, 2018). Further exploration of how advocacy and program development skills relate to other professional skills like those endorsed by participants in this study may contribute to higher level integration of skills across curricula.

Explicit Teaching

Participants also reached consensus around the significance of explicit teaching approaches for developing clinical reasoning, professional reasoning, reflective practice, and evidence-based practice skills. Within the field of education, explicit teaching is described as the presentation of material, which is often broken down into small steps/pieces, alongside clear explanations, giving students opportunities for active practice, and providing frequent and systematic feedback (Rosenshine, 1986). In this study, participants endorsed explicit teaching of clinical and professional reasoning and evidence-based practice, including breaking the skill down into steps (for clinical reasoning), discussing why the skill is important (for evidence-based practice), giving specific examples of what the skill looks like (for professional reasoning) or where it is being used (for clinical reasoning), and giving feedback about skill use (for clinical reasoning).

Participants also agreed about cognitive mapping (for clinical reasoning and reflective practice), another explicit teaching practice. Cognitive maps are visual representations of knowledge; concept maps, one type of cognitive map, have been used in occupational therapy education to support active engagement with material and to support critical thinking (Grice,

2016). Visually mapping information results in explicit delineation of steps, elements, or considerations related to each concept, making it a visual explicit teaching approach.

Occupational therapy education literature has not extensively explored explicit teaching by that name; still, principles of explicit teaching are endorsed as useful for teaching complex professional thinking skills (Benfield & Jeffery, 2022; Chan & Lee, 2021; Henderson et al., 2017; Hills et al., 2017; Neistadt, 1996).

In addition to explicitly teaching the four specified skills, participants also agreed with each other that explicitly teaching *critical thinking* was important for facilitating the development of clinical and professional reasoning. Critical thinking has been described as a component of clinical reasoning that is essential for providing evidence-based services and is related to reflection about practice (Allen & Toth-Cohen, 2019). Clinical reasoning has been defined as the application of critical thinking (Jones, 1988; Victor-Chmil, 2013) and as an umbrella term that includes critical thinking (Berg et al., 2021). Berg and colleagues (2021) described critical thinking as essential to exposing assumptions and biases that filter clinical reasoning processes, which connects both these skills to reflective practice. Alternatively, Benfield and Jeffery (2022) described the application of critical thinking to clinical situations as “critical clinical reasoning.” Participant perspectives and the literature therefore emphasize the significance of critical thinking to the development of reasoning, and potentially reflective practice, in occupational therapy. Further exploration of how educators facilitate integration of these skills is needed.

Explicit teaching approaches appear to be valuable for developing clinical reasoning, professional reasoning, reflective practice, and evidence-based practice skills in occupational therapy students. However, it is important to note that educators must themselves have a clear

understanding of the skills being taught and be able to communicate about them explicitly for these approaches to be effective. Unfortunately, this is not always the case. For example, research has shown that educators have found their own lack of adequate knowledge to be a barrier to teaching reflection to students (Chan & Lee, 2021). Explicit teaching approaches may be especially valuable for requiring educators to themselves become more aware of their own conceptualizations of skills they are teaching.

Skill-Specific Strategies

Professional Reasoning

From other data collected as part of this study (see Table 7.1) we know that participants defined professional reasoning as a professional thinking skill that is used on interdisciplinary teams and is related to professional identity. This differentiates professional reasoning from clinical reasoning for participants. It makes sense, then, that many of the activities identified for facilitating the development of professional reasoning would be related to occupational therapy's scope of practice, such as discussing the Occupational Therapy Practice Framework (AOTA, 2020) and factors that impact the profession's approach towards working with clients. Teaching content related to occupational therapy's scope and professional identity would necessarily support students in appreciating what they uniquely bring to interdisciplinary teams and to think in ways specific to occupational therapy. Although not all authors agree with this distinction between clinical and professional reasoning (Unsworth & Baker, 2016), there is some discussion of the significance of professional identity to the development of professional reasoning specifically (Parkinson et al., 2011). Further, it is significant that although this conceptualization of professional reasoning might not be common within occupational therapy literature, participants agreed on teaching strategies that were consistent with their own definition. These

findings suggest again the importance of being explicit within the educational context about which definition of a construct is being used to, at minimum, support instructional cohesion.

Reflective Practice

Although reflective practice is a complex construct (Kinsella, 2001), participants largely agreed on reflective strategies to support its development. These included activities such as reflecting on recordings of practice scenarios or observations, asking reflective questions, providing opportunities that are uncomfortable/unfamiliar to students, and journaling. Providing opportunities for authentic reflection is essential to becoming a reflective practitioner (Wong et al., 2016). Additionally, participants noted the importance of creating “brave spaces” to allow for student reflection. The term “brave space” has been proposed in social justice literature as an alternative to the phrase “safe space,” acknowledging that there may still be risk in a given classroom situation, but that teachers and students must foster active, brave engagement with one another around challenging content (Arao & Clemens, 2013). Creating safe/brave spaces (Mann et al., 2009) and creating the appropriate conditions for fostering reflective capacity (Wong et al., 2016) are similarly described in literature as essential for engaging in this skill.

Reflective practice is notably removed from technical rationality within occupational therapy literature (Kinsella, 2009). Technical rationality is an epistemology of practice that is aligned with positivist thinking and largely positions practitioners as solving problems by selecting the objectively best technical means (Schön, 1987). Alternatively, the epistemology of reflective practice centers the professional as agentic in the problem-solving process, able to use pragmatic thinking to address messier problems (Kinsella, 2007). It is thus important to note the tension that exists around using reflection in a reductionist way (for example, for assessment of learning outcomes) that removes it from the more artistic, pragmatic realm necessary for

professional practice (Fragkos, 2016; Wong et al., 2016). Therefore, as participants noted, it is important to explicitly teach reflective practice and provide opportunities to personally experience reflection, rather than merely expecting that engagement in reflection is sufficient to facilitate the development of applied habits of reflection in practice.

Evidence-Based Practice

For facilitating the development of evidence-based practice, participants identified the importance of teaching students research-related activities (how to find, read, analyze, and critique research articles) and teaching theory to support decision-making, which is aligned with findings from previous research (DeAngelis et al., 2013). The continued lack of reported engagement in evidence-based practice by practicing therapists, though, raises the question of how effective these teaching strategies truly are (Ramis et al., 2019; Thomas et al., 2011). Interestingly, participants did not specifically identify teaching strategies related to using client perspectives or personal/clinical experience as evidence. Focusing on integration of various sources of evidence is cited as an important strategy to increase uptake of evidence-based practice activities (Benfield & Jeffery, 2022; Jeffery et al., 2021). A recent review of evidence-based practice competencies by healthcare professionals concluded that there are widespread misunderstandings in practice about what constitutes “evidence” (Saunders et al., 2019), and occupational therapy curricula appear to focus largely on research while excluding other types of evidence (Murphy et al., 2019). Advocates and researchers also have highlighted the need for allied health professionals to integrate evidence from individuals’ and communities’ lived experiences into practice decisions (Barclay et al., 2020; Jane, 2023). Participants may have considered “evidence integration” to be an inherent component of the strategies they identified

here. Still, literature suggests educators may need to be clearer about *how* to integrate evidence as one approach to addressing the gap in implementation of evidence-based practice.

Although participants agreed that reflective and evidence-based practice activities support the development of reasoning, they did not identify any specific reasoning-related activities to teach evidence-based practice. However, the literature does suggest that supporting engagement in reasoning and reflection may increase engagement in evidence-based practice (Benfield & Jeffery, 2022). Further research is needed on the value of integrating reasoning, reflection, and evidence-based practice within education and how this relates to their application in practice (Benfield & Krueger, 2021; Krueger et al., 2020; Lehane et al., 2019).

Limitations

Although the size of the participant panel in this study is consistent with similar Delphi studies (De Villiers et al., 2005; Skulmoski et al., 2007), a larger sample size may have returned a wider breadth of perspectives and allowed for clearer interpretation of IQR values (Birko et al., 2015). For this study we aimed to develop a complete picture of educational strategies used to facilitate the development of professional thinking skills and, therefore, we did not ask participants to narrow down or rank the strategies in any way. However, asking participants to prioritize the importance of teaching strategies may have given a clearer picture of which are considered essential (vs. just “best practice”). Finally, the linear nature of the Delphi process did not allow for participant discussion of relationships between educational strategies for different professional thinking skills. Future research in this area may add to an understanding of the integration of these skills in education.

Implications for Occupational Therapy Education

Findings from this study can inform occupational therapy educators in their approach to supporting students to develop clinical and/or professional reasoning, reflective practice, and evidence-based practice. Occupational therapy educators endorsed provision of experiential and active learning opportunities and explicit teaching as best practice approaches to teaching these professional thinking skills. The fact that these broad teaching strategies are considered relevant across professional thinking skills suggests that educators should consider how they apply these strategies to support integration of skills. Further, problem-based learning and case studies were considered best practice approaches for teaching all four professional thinking skills, making them potentially appropriate specific strategies for exploration of skill integration. Educators may benefit from comparing their teaching strategies to those that reached consensus in this study to support their own professional reflection and development.

Finally, although not the only arbiter of what goes into an occupational therapy curriculum, it is interesting to acknowledge how ACOTE® (2018) recognizes these professional thinking skills in their education standards. For instance, there are accreditation standards related to student development of clinical reasoning and ACOTE® notes that fieldwork should support reflective practice. Relative to the latter it is important to recognize that there is not a related educational standard for this skill, although ongoing professional development is expected. ACOTE® also describes the importance of students learning to consume research evidence and learning to integrate evidence, although these are not described together as contributing to evidence-based practice, and this professional thinking skill is itself not defined. As research continues to explore the significance of these skills and their integration to uptake in practice, it

is necessary to go beyond these standards to support professional practice in occupational therapy.

Occupational therapy educators are tasked with supporting students to develop professional thinking skills they can use to deliver high-quality services to clients. Findings from this study suggest that occupational therapy educators in the United States endorse supporting the development of clinical reasoning, professional reasoning, reflective practice, and evidence-based practice largely through experiential and/or active learning opportunities and explicit teaching approaches. They also acknowledge the significance of skill-specific teaching strategies. Literature suggests that educators should support students in integrating professional thinking skills to support students in becoming occupational therapists. Accordingly, future research should explore how professional thinking skills are taught alongside one another and how teaching strategies relate to implementation of professional thinking skills in practice by students entering the field. Continued research in this area will add to our understanding of how occupational therapy students learn and ultimately work with professional competence.

References

- Accreditation Council for Occupational Therapy Education (ACOTE®). (2018). *Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretive guide* (pp. 1–56). <https://doi.org/10.5014/ajot.2018.72S217>
- Alden, J., Hill, L., Banks, F., Connolly, R., & Ngwa, J. (2021). Designing an educational program to promote diversity and student engagement in professional advocacy (SEPA). *Journal of Occupational Therapy Education (JOTE)*, 5(3).
<https://doi.org/10.26681/jote.2021.050315>
- Allen, D. D., & Toth-Cohen, S. (2019). Use of case studies to promote critical thinking in occupational therapy students. *Journal of Occupational Therapy Education*, 3(3).
<https://doi.org/10.26681/jote.2019.030309>
- American Occupational Therapy Association. (2018a). Occupational therapy education research agenda—Revised. *The American Journal of Occupational Therapy*, 72(2), 1–5.
<https://doi.org/10.5014/ajot.2018.72S218>
- American Occupational Therapy Association. (2018b). Philosophy of occupational therapy education. *American Journal of Occupational Therapy*, 61(6), 678.
<https://doi.org/10.5014/ajot.61.6.678>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Supplement_2), 7412410010p1-7412410010p87.
<https://doi.org/10.5014/ajot.2020.74S2001>

- Arao, B., & Clemens, K. (2013). From safe spaces to brave spaces: A new way to frame dialogue around diversity and social justice. In L. M. Landreman (Ed.), *The art of effective facilitation: Reflections from social justice educators* (pp. 135–150). Styles Publishing.
- Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- Barclay, L., Callaway, L., & Pope, K. (2020). Perspectives of individuals receiving occupational therapy services through the National Disability Insurance Scheme: Implications for occupational therapy educators. *Australian Occupational Therapy Journal*, 67(1), 39–48. <https://doi.org/10.1111/1440-1630.12620>
- Bathje, M., Escobar, K., Crisp, M., Killian, C., & Royeen, C. (2022). The impact of a psychosocial-focused experiential learning activity on occupational therapy students' perceived clinical reasoning. *Journal of Occupational Therapy Education (JOTE)*, 6(3). <https://doi.org/10.26681/jote.2022.060304>
- Benfield, A. M., & Jeffery, H. (2022). Exploring evidence based practice implementation by occupational therapists: Implications for fieldwork. *Journal of Occupational Therapy Education (JOTE)*, 6(4). <https://doi.org/10.26681/jote.2022.060410>
- Benfield, A. M., & Krueger, R. B. (2021). Topic: Professional competence in occupational therapy. *Australian Occupational Therapy Journal*, February, 1–2. <https://doi.org/10.1111/1440-1630.12724>
- Bennett, S., & Bennett, J. W. (2000). The process of evidence-based practice in occupational therapy: Informing clinical decisions. *Australian Occupational Therapy Journal*, 47(4), 171–180. <https://doi.org/10.1046/j.1440-1630.2000.00237.x>

- Berg, C., Philipp, R., & Taff, S. D. (2021). Scoping review of critical thinking literature in healthcare education. *Occupational Therapy In Health Care*, 37(0), 1–18.
<https://doi.org/10.1080/07380577.2021.1879411>
- Birko, S., Dove, E. S., Özdemir, V., & Dalal, K. (2015). Evaluation of nine consensus indices in Delphi foresight research and their dependency on Delphi survey characteristics: A simulation study and debate on Delphi design and interpretation. *PLoS ONE*, 10(8), 1–14.
<https://doi.org/10.1371/journal.pone.0135162>
- Bolton, T., & Dean, E. (2018). Self-determination theory and professional reasoning in occupational therapy students: A mixed methods study. *Journal of Occupational Therapy Education (JOTE)*, 2(3). <https://doi.org/10.26681/jote.2018.020304>
- Breines, E. (1987). Pragmatism as a Foundation for Occupational Therapy Curricula. *The American Journal of Occupational Therapy*, 41(8), 522–525.
<https://doi.org/10.5014/ajot.41.8.522>
- Brown, T., Yu, M. lin, Hewitt, A., Cousland, R., & Etherington, J. (2021). Professionalism, resilience and reflective thinking: How do these influence occupational therapy student fieldwork outcomes? *Occupational Therapy in Health Care*, 0(0), 1–26.
<https://doi.org/10.1080/07380577.2021.1978606>
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, 11(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>
- Chaffey, L., Unsworth, C. A., & Fossey, E. (2012). Relationship between intuition and emotional intelligence in occupational therapists in mental health practice. *The American Journal of Occupational Therapy*, 66(1), 88–96. <https://doi.org/10.5014/ajot.2012.001693>

- Chan, C. K. Y., & Lee, K. K. W. (2021). Reflection literacy: A multilevel perspective on the challenges of using reflections in higher education through a comprehensive literature review. *Educational Research Review*, 32(May 2020), 100376.
<https://doi.org/10.1016/j.edurev.2020.100376>
- Chun, I., Taff, S., Mehta, A., & Chang, C.-H. (2020). Identifying essential competency areas for occupational therapy education: A scoping review. *Journal of Occupational Therapy Education (JOTE)*, 4(4). <https://doi.org/10.26681/jote.2020.040402>
- De Villiers, M. R., De Villiers, P. J. T., & Kent, A. P. (2005). The Delphi technique in health sciences education research. *Medical Teacher*, 27(7), 639–643.
<https://doi.org/10.1080/13611260500069947>
- DeAngelis, T. M., DiMarco, T. G., & Toth-Cohen, S. (2013). Evidence-based practice in occupational therapy curricula. *Occupational Therapy In Health Care*, 27(4), 323–332.
<https://doi.org/10.3109/07380577.2013.843115>
- Eglseder, K., Lawson, S., & Beatty, R. (2022). Situated cognition and self-directed learning: Pedagogical approaches to developing skills in advocacy. *Journal of Occupational Therapy Education (JOTE)*, 6(4). <https://doi.org/10.26681/jote.2022.060413>
- Fragkos, K. C. (2016). Reflective practice in healthcare education: An umbrella review. *Education Sciences*, 6(3), 27. <https://doi.org/10.3390/educsci6030027>
- Gewurtz, R. E., Coman, L., Dhillon, S., Jung, B., & Solomon, P. (2016). Problem-based learning and theories of teaching and learning in health professional education. *Journal of Perspectives in Applied Academic Practice*, 4(1), 59–70.
<https://doi.org/10.14297/jpaap.v4i1.194>

- Grice, K. (2016). Concept mapping as a learning tool in occupational therapy education. *Occupational Therapy In Health Care, 30*(3), 309–318.
<https://doi.org/10.3109/07380577.2015.1130886>
- Hallowell, M. R., & Gambatese, J. A. (2010). Qualitative research: Application of the Delphi method to CEM research. *Journal of Construction Engineering and Management, 136*(1), 99–107. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000137](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000137)
- Harris, N., & Bacon, C. E. W. (2019). Developing cognitive skills through active learning: A systematic review of health care professions. *Athletic Training Education Journal, 14*(2), 135–148. <https://doi.org/10.4085/1402135>
- Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing, 32*(4), 1008–1015.
<https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x>
- Henderson, W., Coppard, B., & Qi, Y. (2017). Identifying instructional methods for development of clinical reasoning in entry-level occupational therapy education: A mixed methods design. *American Journal of Occupational Therapy, 72*(4_Supplement_1), 7211505146p1. <https://doi.org/10.5014/ajot.2018.72s1-po7010>
- Hills, C. M., Levett-Jones, T., Lapkin, S., & Warren-Forward, H. (2017). Generation Y health professional students' preferred teaching and learning approaches: A systematic review. *The Open Journal of Occupational Therapy, 5*(1). <https://doi.org/10.15453/2168-6408.1278>
- Hooper, B., Krishnagiri, S., Price, P., Taff, S. D., & Bilics, A. (2017). Curriculum-level strategies that U.S. occupational therapy programs use to address occupation: A

- qualitative study. *The American Journal of Occupational Therapy*, 72(1), 7201205040p1-7201205040p10. <https://doi.org/10.5014/ajot.2018.024190>
- Jane, S. (2023, March 9). Lived experience informed practice: An alternative to evidence based practice. *Lived Experience Educator*.
<https://livedexperienceeducator.com/blog/livedexperienceinformedpractice>
- Jeffery, H., Robertson, L., & Reay, K. L. (2021). Sources of evidence for professional decision-making in novice occupational therapy practitioners: Clinicians' perspectives. *British Journal of Occupational Therapy*, 84(6), 346–354.
<https://doi.org/10.1177/0308022620941390>
- Jones, J. A. (1988). Clinical reasoning in nursing. *Journal of Advanced Nursing*, 13(2), 185–192.
<https://doi.org/10.1111/j.1365-2648.1988.tb01407.x>
- Jünger, S., Payne, S. A., Brine, J., Radbruch, L., & Brearley, S. G. (2017). Guidance on Conducting and REporting DElphi Studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliative Medicine*, 31(8), 684–706. <https://doi.org/10.1177/0269216317690685>
- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A. (2007). Technical rationality in Schön's reflective practice: Dichotomous or non-dualistic epistemological position. *Nursing Philosophy*, 8(2), 102–113.
<https://doi.org/10.1111/j.1466-769X.2007.00304.x>
- Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, 11(5), 3–14.

- Kiraly-Alvarez, A. F., Clegg, A., Lucas Molitor, W., & Friberg, D. (2022). An exploration of the occupational therapy doctoral capstone: Perspectives from capstone coordinators, graduates, and site mentors. *Journal of Occupational Therapy Education*, 6(1).
<https://doi.org/10.26681/jote.2022.060114>
- Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (Vol. 2). Pearson Education Inc.
- Krishnagiri, S., Hooper, B., Price, P., Taff, S. D., & Bilics, A. (2019). A national survey of learning activities and instructional strategies used to teach occupation: Implications for signature pedagogies. *The American Journal of Occupational Therapy*, 73(5), 7305205080p1-7305205080p11. <https://doi.org/10.5014/ajot.2019.032789>
- Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, 74(4_Supplement_1), 7411505100p1.
<https://doi.org/10.5014/ajot.2020.74s1-po3025>
- Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change*, 73(5), 467–482.
<https://doi.org/10.1016/j.techfore.2005.09.002>
- Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130.
<https://doi.org/10.1177/0008417421994377>
- Lehane, E., Leahy-Warren, P., O’Riordan, C., Savage, E., Drennan, J., O’Tuathaigh, C., O’Connor, M., Corrigan, M., Burke, F., Hayes, M., Lynch, H., Sahm, L., Heffernan, E., O’Keeffe, E., Blake, C., Horgan, F., & Hegarty, J. (2019). Evidence-based practice

- education for healthcare professions: An expert view. *BMJ Evidence-Based Medicine*, 24(3), 103–108. <https://doi.org/10.1136/bmjebm-2018-111019>
- Lusardi, M. M., Levangie, P. K., & Fein, B. D. (2002). A problem-based learning approach to facilitate evidence-based practice in entry-level health professional education. *Journal of Prosthetics and Orthotics*, 14(2), 40–50.
- Mann, K., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., MacLeod, A., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education*, 14(4), 595–621. <https://doi.org/10.1007/s10459-007-9090-2>
- Marr, D. (2017). Fostering full implementation of evidence-based practice. *American Journal of Occupational Therapy*, 71(1), 7101100050. <https://doi.org/10.5014/ajot.2017.019661>
- Mattila, A., DeJuliis, E. D., & Cook, A. B. (2018). Increasing self-efficacy through role emerging placements: Implications for occupational therapy experiential learning. *Journal of Occupational Therapy Education*, 2(3), 1–20. <https://doi.org/10.26681/jote.2018.020303>
- McCarron, K. A., & Amico, F. D. (2002). The impact of problem-based learning on clinical reasoning in occupational therapy education. *Occupational Therapy In Health Care*, 16(1), 1–13. https://doi.org/10.1080/J003v16n01_01
- McNulty, M. C., Crowe, T. K., & VanLeit, B. (2004). Promoting professional reflection through problem-based learning evaluation activities. *Occupational Therapy In Health Care*, 18(1–2), 71–82. https://doi.org/10.1080/J003v18n01_08
- Moon, J. (2001). Reflection in higher education learning (PDP working paper 4). *The Higher Education Academy*. Retrieved August 28, 2023, from

https://www.researchgate.net/publication/255648945_PDP_Working_Paper_4_Reflection_in_Higher_Education_Learning

Murphy, K., Parnell, T., Pope, R., Hughes, C., Bramble, M., Biles, J., O'Connor, S., Curtin, M., Speedie, L., & Plowman, E. (2019, June 26). *Improving evidence-based practice education in healthcare courses: A participatory action research multiple-case study*. Fifth International Conference on Higher Education Advances.

<https://doi.org/10.4995/HEAD19.2019.9152>

Neistadt, M. E. (1996). Teaching strategies for the development of clinical reasoning. *The American Journal of Occupational Therapy*, 50(8), 676–684.

<https://doi.org/10.5014/ajot.50.8.676>

Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104.

<https://doi.org/10.1111/1440-1630.12252>

Parkinson, S., Shenfield, M., Reece, K., & Fisher, J. (2011). Enhancing professional reasoning through the use of evidence-based assessments, robust case formulations and measurable goals. *British Journal of Occupational Therapy*, 74(3), 148–152.

<https://doi.org/10.4276/030802211X12996065859364>

Ramis, M.-A., Chang, A., Conway, A., Lim, D., Munday, J., & Nissen, L. (2019). Theory-based strategies for teaching evidence-based practice to undergraduate health students: A systematic review. *BMC Medical Education*, 19(267), 1–13.

<https://doi.org/10.1186/s12909-019-1698-4>

- Raskin, M. S. (1994). The Delphi study in field instruction revisited: Expert consensus on issues and research priorities. *Journal of Social Work Education*, 30(1), 75–89.
- Rosenshine, B. (1986). Synthesis of research on explicit teaching. *Educational Leadership*, 43(7), 60–69.
- Royeen, C. B. (1995). Problem-based learning curriculum for occupational therapy education. *American Journal of Occupational Therapy*, 49(4), 338–346.
- Sackett, D. L., Rosenberg, W. M., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, 312, 71–72. <https://doi.org/10.1115/1.2899246>
- Saunders, H., Gallagher-Ford, L., Kvist, T., & Vehviläinen-Julkunen, K. (2019). Practicing healthcare professionals' evidence-based practice competencies: An overview of systematic reviews. *Worldviews on Evidence-Based Nursing*, 16(3), 176–185. <https://doi.org/10.1111/wvn.12363>
- Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 58(3), 333–336. <https://doi.org/10.5014/ajot.58.3.333>
- Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's Occupational Therapy* (13th ed.). Wolters Kluwer.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.

- Skulmoski, G., Hartman, F., & Krahn, J. (2007). The Delphi method for graduate research. *Journal of Information Technology Education*, 6, 93–105. https://doi.org/10.1007/3-540-47847-7_10
- Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research, and Evaluation*, 7(17), 1–6. <https://doi.org/10.7275/z6fm-2e34>
- Thomas, A., Saroyan, A., & Dauphinee, W. D. (2011). Evidence-based practice: A review of theoretical assumptions and effectiveness of teaching and assessment interventions in health professions. *Advances in Health Sciences Education*, 16(2), 253–276. <https://doi.org/10.1007/s10459-010-9251-6>
- Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16. <https://doi.org/10.1177/0308022615599994>
- Victor-Chmil, J. (2013). Critical thinking versus clinical reasoning versus clinical judgment: Differential diagnosis. *Nurse Educator*, 38(1), 34–36. <https://doi.org/10.1097/NNE.0b013e318276dfbe>
- von der Gracht, H. A. (2012). Consensus measurement in Delphi studies: Review and implications for future quality assurance. *Technological Forecasting and Social Change*, 79(8), 1525–1536. <https://doi.org/10.1016/j.techfore.2012.04.013>
- Wong, K. Y., Whitcombe, S. W., & Boniface, G. (2016). Teaching and learning the esoteric: An insight into how reflection may be internalised with reference to the occupational therapy profession. *Reflective Practice*, 17(4), 472–482. <https://doi.org/10.1080/14623943.2016.1175341>

Zafran, H. (2019). A narrative phenomenological approach to transformative learning: Lessons from occupational therapy reasoning in educational practice. *The American Journal of Occupational Therapy*, 74(1), 7401347010p1-7401347010p6.
<https://doi.org/10.5014/ajot.2020.033100>

CHAPTER 8: DISCUSSION

The overarching aim of this dissertation was to synthesize consensus conceptualizations of clinical/professional reasoning, reflective practice/reflection, and evidence-based practice in occupational therapy. To achieve this aim, I conducted two studies that resulted in five prepared manuscripts. In this chapter, I will synthesize findings and overall implications across my two studies.

Synthesizing Findings of Literature and Educator Perspectives

Taking the findings from my scoping review and Delphi studies together allows for comparison of literature and educator perspectives. Although both data sources were primarily aligned, key differences suggest areas for further exploration.

Defining Professional Thinking Skills

To compare definitions from the literature with those developed by educators, I explored linkages across findings from the scoping review and Delphi studies. Linkages suggested data convergence (where study findings were in agreement), divergence (where study findings conflicted), or expansion (where study findings overlapped and added details to each other); a summary of this integration of findings can be seen in Table 8.1.

Table 8.1

Comparison of Definitions Across Dissertation Studies

Professional Skill	Definitions from Study 1: Literature Perspective	Definitions from Study 2: Educator Perspective	Linkage
Clinical Reasoning	• Process or form of thinking • Used in, during, and/or to support all components of occupational therapy practice • Results in decision-making and/or synthesis/integration of information • Includes reflection and meta-cognition • Draws from a variety of evidence sources (knowledge, experience, client perspective/choice) • Context-dependent • Phenomenological	• Problem-solving process • Used in a clinical/healthcare setting • Involves meta-cognitive activities that go into making a decision, including critical thinking and reflection • Involves connecting information • Draws from a variety of evidence sources (theory, context-dependent client and environment factors, and all available data) • Has goal of maximizing client occupational engagement and quality of life	Convergence: clinical reasoning is a context-dependent process occupational therapists engage in throughout all stages of the therapeutic process that draws on multiple sources of evidence and results in decision-making and integration of information. Reflection and meta-cognition are components of clinical reasoning. Expansion: educators explicitly noted that clinical reasoning is used in clinical/healthcare settings; this was not specified in the literature. Additionally, educators noted that clinical reasoning should draw from theory and have a goal of clinical reasoning to be maximizing occupational engagement and quality of life. Literature perspectives indicated clinical reasoning is phenomenological.
Professional Reasoning	• Process • Includes all elements of occupational therapy process • Near synonym for clinical reasoning	• Process • Draws on information related to professional scope of practice and a variety of other evidence sources (knowledge, experience, best available evidence) • Involves self-assessment	Convergence: professional reasoning is a process related to the entire scope of occupational therapy practice. Divergence: although both perspectives indicated that professional reasoning is a near synonym for clinical reasoning,

Professional Skill	Definitions from Study 1: Literature Perspective	Definitions from Study 2: Educator Perspective	Linkage
		- Guides entire scope of occupational therapy process, including thinking about the therapeutic relationship, interpersonal interactions, ethics, and professional behaviors - Broader than clinical reasoning – used by interdisciplinary teams and outside clinical/healthcare settings - Has outcomes related to professional decisions	educators identified that it is broader because it is used by interdisciplinary teams and is more related to professional scope of practice, which was not a finding from the literature. Expansion: educators explicitly noted that professional reasoning draws from multiple evidence sources, involves self-assessment, and is related to professional decisions. These factors were not included in definitions of professional reasoning from the literature.
Reflective Practice	- Cyclical process - Used in complex/messy situations - Draws from experience - Involves thinking (about practice), self-assessment, and reflection - Related to improving professional practice	- Continuous process - Involves meta-cognitive reflection on the occupational therapy process (practitioner factors, outcome measure data, client factors and performance, notes, feedback from others, etc.) - Involves multiple activities related to self-assessment (applying a critical lens to practice and self, including attitudes, biases, assumptions, beliefs, knowledge, skills, experiences, etc.) - Has goal of improving professional competence to support client outcomes	Convergence: reflective practice is a process that involves reflection on practice and self-assessment. It is used to improve professional skills/practice. Expansion: educators noted that reflection and action are part of reflective practice as a continuous activity, but did not explicitly comment on it being iterative or cyclical, which was a main finding from the literature. Educators also explicitly noted that reflective practice involves applying a critical lens to practice and has the goal of supporting client outcomes. The literature specified that reflective practice is useful for complex practice situations.

Professional Skill	Definitions from Study 1: Literature Perspective	Definitions from Study 2: Educator Perspective	Linkage
Evidence-Based Practice ^a	• Approach to practice that involves integrating relevant research, clinical expertise, and client preferences and values • May or may not position research as the primary source of evidence to guide decision-making	• Using best available evidence (literature, client factors, clinician factors) • Guides/supports decision-making • Draws on outcome measures and reflection • Must be combined with theory-based practice to ensure grounding in occupational therapy • Informs application of scope of practice	Convergence: evidence-based practice involves integrating evidence to support decision-making in practice. Divergence: some literature positions research evidence as the primary source guiding evidence-based practice; this was not consistent across the literature or with educator perspectives. Expansion: educators added nuance to the broad literature definition of evidence-based practice. They specified a need for incorporation of theory into evidence-based practice, and they tied evidence-based practice in to scope of practice.

Note. Study 1 = the scoping review presented in Chapters 2 and 3. Study 2 = the Delphi study presented in Chapters 4-6.

^aThe definition of evidence-based practice is summarized from the expanded literature review for this dissertation (see Chapter 4), not from data collected as part of Study 1.

Definitions of clinical reasoning were largely consistent across the literature and educator perspectives. However, in the literature, some authors characterized clinical reasoning as a phenomenological process, a term not used by the educators. On the other hand, educators explicitly connected clinical reasoning to the ultimate goal of occupational therapy practice, suggesting that clinical reasoning is used to support client occupational engagement and quality of life. These ideas are not contradictory, and may represent a difference in how clinical reasoning is described when it is viewed academically compared to how it is described when teaching it to students who must apply it practically in their work.

Similar to clinical reasoning, professional reasoning definitions were broadly in agreement across literature and educator perspectives. Both identified professional reasoning as a process related to the entire scope of occupational therapy practice. However, a key divergence in definitions of professional reasoning did emerge from my two studies. In occupational therapy literature, the labels “clinical reasoning” and “professional reasoning” are used interchangeably. If they are differentiated, it is to identify that professional reasoning is a more inclusive term, suggesting it is situated hierarchically above clinical reasoning. Educators in the Delphi study, though, defined professional reasoning as being uniquely related to professional scope of practice in occupational therapy. It is possible that the questions in the Delphi survey biased participants towards identifying a distinction between clinical and professional reasoning. However, educators did agree on this distinction of professional reasoning not just in its definition, but also in relating it to other professional thinking skills and in their agreed upon associated educational strategies. This agreement suggests coherence in their conceptualization of professional reasoning. These two complementary but divergent definitions of professional reasoning may both be useful. However, lack of agreement between literature and educators on

how professional reasoning is defined further emphasizes the need for clarity in communicating about this construct for which the definition is often assumed to be understood.

Despite the acknowledged challenges in defining reflective practice, educators and the literature largely agreed on how to define it. Across both, agreed upon elements of reflective practice included that: it involves action and reflection informing each other over time; it includes self-appraisal related to professional practice; and that it involves broader engagement in professional development. The literature did explicitly identify reflective practice as iterative or cyclical, and used in complex situations, which aligns with but was not explicitly mentioned in educator definitions. Educators also described reflective practice as including appraisal of attitudes and biases, a characteristic commonly specifically ascribed in the literature to critical reflection, a component of reflective practice.

Finally, educator definitions of evidence-based practice align with the more holistic perspective – including multiple streams of evidence, and not just research evidence – purported by the profession of occupational therapy. Although there is continued disagreement about what constitutes the evidence of evidence-based practice across health professions, it appears that when explicitly defining evidence-based practice, occupational therapy as a profession is largely consistent.

Relating Professional Thinking Skills

Across these manuscripts, we developed three visuals illustrating relationships between professional thinking skills according to different data sources (reproduced in Figure 8.1). From literature definitions identified through the scoping review, authors described professional thinking skills mainly as nested processes. From scoping review data specifically relating professional thinking skills, authors described professional thinking skills as iterative and

informing one another. Note that scoping review findings only covered reasoning and reflection related skills. Finally, educators in the Delphi study described professional reasoning as an overarching construct, and clinical reasoning, reflective practice, and evidence-based practice as being reciprocally related to one another and professional reasoning.

Chapter 2 – Figure 2.3	Chapter 3 – Figure 3.2	Chapter 6 – Figure 6.2
<i>Visual Model of Professional Thinking Processes from Occupational Therapy Literature</i>	<i>Relational Structure Between Reasoning and Reflection from Occupational Therapy Literature</i>	<i>Relational Model for Professional from Occupational Therapy Educator Perspectives</i>

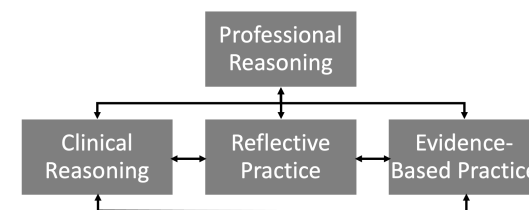
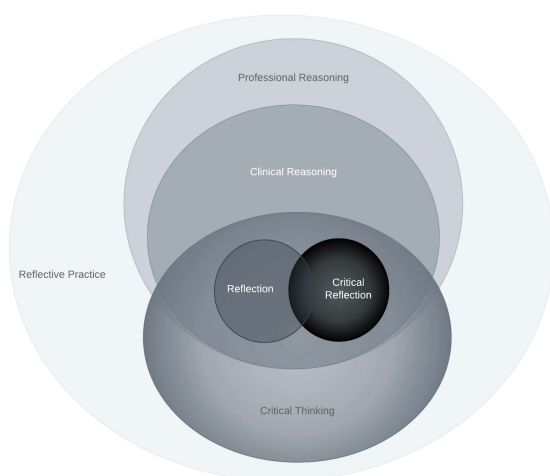


Figure 8.1

Visual Models Developed in this Dissertation

A few elements of these findings appear directly contradictory. Findings from the literature and the educators alternately situate reflective practice or professional reasoning as more encompassing processes that subsume the other professional thinking processes; other findings from the literature present reasoning and reflective practice as more equivalent and reciprocal. As described in the literature reviews, reasoning skills are often more aligned with scientific thinking; reasoning is applied to, or consists of, evidence-based thinking and supports integration of multiple sources of evidence. Reflective practice, on the other hand, is often more aligned with “messier” elements of occupational therapy work, supporting therapists to consider their own experiences, biases, and emotions and how they influence practice. Possibly the preference for placement of one or the other as a more overarching skill could relate to one’s orientation to practice as more scientific or “artistic” (Paterson et al., 2005). Bundy and Hacker (2020) describe an artistic approach to practice as one where “practitioners respond to complexity in what seems to be simple ways and without disrupting the flow” (p. 286). Scientific and artistic orientations do not need to be contradictory, and one view may be more warranted in certain practice contexts than others. In fact, “the most effective intervention reflects a partnership between art and science. As in all good partnerships, the relationship is fluid” (Bundy & Hacker, 2020, p. 298).

Integrating perspectives across these studies leads to a still vaguely defined model, but one where reflective practice and professional reasoning are iterative, overlapping processes that inform one another (Figure 8.2). Evidence-based practice is positioned as a core contributor to reasoning, just as critical reflection and reflection are activities of reflective practice. Critical thinking is involved in and connects to both reflective practice and reasoning.

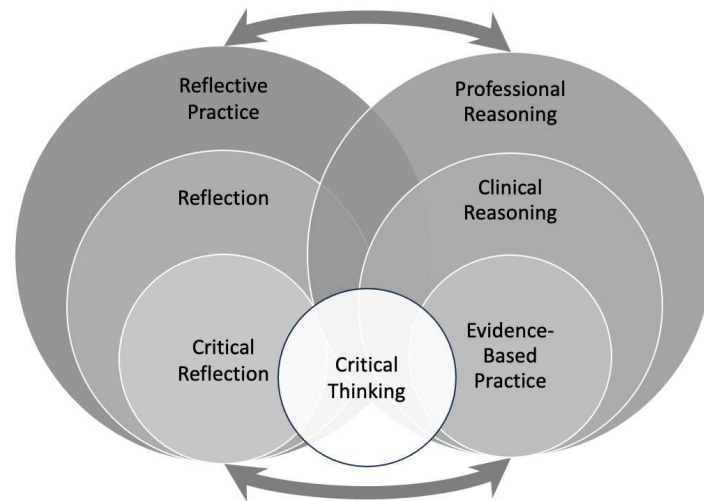


Figure 8.2

Model of Professional Thinking Skills Synthesized from Combined Findings of this Dissertation

Comparing this model to others in occupational therapy reveals areas where further refinement is needed. This model aligns with Bannigan and Moores' (2009) description of reflective practice and evidence-based practice as components that interact as part of professional thinking in occupational therapy; it differs in that it does not position reflective practice and evidence-based practice as unidirectionally contributing to clinical reasoning, which they see as closely aligned to professional thinking itself. This model also aligns with Benfield and Johnston's (2020) model of Evidence-Informed Professional Thinking that identified clinical reasoning and evidence-based practice as significantly correlated, overlapping skills that both involve reflective activities; however, it positions reflective practice as a much larger component of professional thinking. Overall it is promising that models of professional thinking in occupational therapy literature have consistent elements. The differences reflected in the model developed through integration of this dissertation's findings demonstrate the need for clear communication about one's orientation to professional thinking. This orientation may be

connected to different ways of *relating*, *integrating*, and on a basic level *understanding* these threshold concepts in occupational therapy.

Becoming an Occupational Therapist

Professional identity is formed through the convergence of many factors, including personal attributes, professional beliefs and values, professional knowledge, and professional skills like those studied here (Souto-Gómez et al., 2023). As noted, clinical/professional reasoning, reflective practice, and evidence-based practice are all threshold concepts, essential pieces of knowledge that contribute to an occupational therapist's professional identity. My findings suggest there is educator consensus that transformational learning experiences (i.e., experiential and active learning) are best practice for supporting students in learning these skills. Transformational learning requires both cognitive processes and bodily-experiential processes (Zafran, 2019). Thus, educator perspectives here suggest that the components of clinical/professional reasoning and reflective practice are both *processes* and *outcomes* of transformational learning in occupational therapy. These findings reinforce an understanding of the essential nature of these professional thinking skills to occupational therapy education.

Dissertation Implications

Although the goal of this dissertation was to present a model of professional thinking skills in occupational therapy that included adequate definitions of constructs and identified relationships amongst constructs, this was not possible. From the integrating findings from this dissertation it is clear that: 1) there continues to be a need for more detailed and specific definitions of reasoning and reflective practice in occupational therapy; and, 2) largely agreed upon characteristics of each of these constructs do exist. Occupational therapy educators have complementary and somewhat divergent perspectives from the literature on definitions of

clinical reasoning, professional reasoning, reflective practice, and evidence-based practice. This indicates that despite the suggestion that reasoning and reflection have already been clarified enough within occupational therapy (Benfield & Johnston, 2023), there is continued disagreement about these constructs which may have far reaching implications for how these skills are taught and how students internalize them.

My findings also have implications for educators. Importantly, educators should continue to work for clarity of definition and in their own thinking about relationships amongst professional thinking skills. The summary of integrated findings in Table 8.1 can be used as a starting place to support educators in conceptualizing professional thinking skills that include actionable, identifiable features, as continues to be recommended (Hallé et al., 2023). Identifying adequate definitions of professional thinking skills allows for each of these skills to be explicitly related to one another; educators can compare their own relational structure to consensus findings from this research, synthesized in Figure 8.2. Finally, educational strategies for teaching these skills should match conceptualizations of the skills themselves (Hallé et al., 2021) to support coherence. As noted, occupational therapists as individual practitioners, occupational therapy educators tasked with supporting student learning, and the profession of occupational therapy as a whole should continue to work towards cohesion in definition, relationship, and educational approaches for professional thinking skills – as this cohesion will ultimately support a stronger sense of professional identity in the field.

CHAPTER 9: REFLECTIONS

I completed this dissertation as part of the requirements for a Ph.D. in occupation and rehabilitation science. I conclude this work by reflecting on how my research is connected to occupational science and rehabilitation science, and then by reflecting on my development as a scholar as it relates to the philosophy at the core of a Ph.D.

Connections to Occupational Science and Rehabilitation Science

I initially set out on this dissertation journey to advance literature related to reflective practice in occupational therapy. I will therefore discuss how my research is situated within occupational science and rehabilitation science because of its revolution around the core construct of reflection (Figure 9.1), which is essential to both sciences. As I have shown, reflection is uniquely connected to other professional thinking skills in occupational therapy; these skills are thus also of central importance to both sciences.

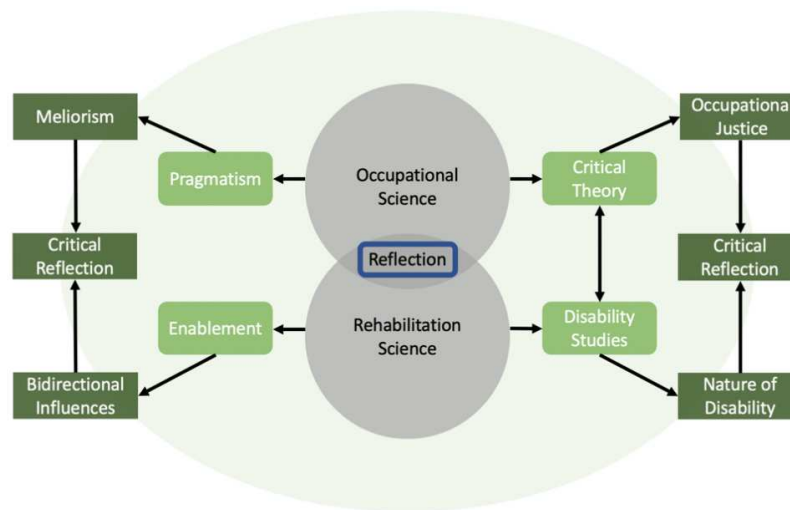


Figure 9.1

Connections Between Occupational Science, Rehabilitation Science, and this Dissertation

Occupational Science

Occupational science is a young academic discipline concerned with the nature of being human and “the study of humans as occupational beings” (Yerxa et al., 1990, p. 6). The field values the complexity of human occupation and acknowledges the challenges facing occupational therapists in their work supporting client occupational engagement. Occupational science therefore informs, and is informed by, occupational therapy practice. My dissertation research on reflection thus directly connects to occupational science’s grounding in pragmatism and also to its attempts at integration of critical theory.

One key construct from pragmatism that necessitates professional thinking skills in occupational therapy is “meliorism,” the belief that, with effort, humans can improve the world or their circumstances (Hildebrand, 2013). Specifically within occupational science, meliorism refers to the belief that occupations “can be used to mobilize learning, reflection, and action to hopefully achieve some desired change” (Baranek et al., 2020, p. 276). In other words, a person’s occupational engagement can improve their circumstances, which is relevant not only to clients, but also to the professional occupational engagement of the therapist. The pragmatism of occupational therapy espouses that mind and body are unified through active occupation (Breines, 1987). Through this dissertation I have identified one way of viewing professional thinking, which integrates clinical/professional reasoning, reflective practice, and evidence-based practice, as a strategy for integrating cognitive and experiential processes to guide therapeutic action. In this pragmatic view, professional “thinking” is a holistic process that is necessary to facilitate positive change both in practice for the professional and for clients.

Researchers have identified that basic metacognitive reflection involves interrogating experiences to arrive at new understandings (Kinsella, 2001). As identified through my scoping

review, *critical* reflection requires consideration of power dynamics and unconscious biases that influence therapeutic relationships to address potential occupational injustices (Laliberte Rudman, 2013; Ng et al., 2019). Occupational justice – which refers to the belief that access to occupation is a human right (Durocher et al., 2014) – is a concept that originated within occupational science. As the field has continued to develop, theorists have argued that to adequately address occupational justice, occupational science must exist as a critical discipline (Calhoun, 2020). Critical theories aim to link individual concerns to larger contexts, including structural, social, and political systems, and especially those contexts related to power imbalances (Arnold, 2015). Critical theory is being adopted in various modes by occupational science and occupational therapy – especially in acknowledging the importance of intersubjectivity to the nature of occupation (Hammell & Iwama, 2012; Lawlor, 2020).

Awareness of the value of critical reflection within practice and research has developed, in part, alongside an appreciation for the need within both occupational therapy and occupational science to adequately support a diverse population. Respect for diversity of clientele has called attention to the variety of ways that marginalization may impact individuals and their occupational engagement (Laliberte Rudman, 2019). In arguing for researchers and therapists to take a critical eye to practice, with the larger goal of providing better services to marginalized groups (Huff et al., 2020), occupational science demands increased depth of reflection by therapists and researchers. Deepening of reflective capacity is required to advance the science and practice of supporting occupational engagement and addressing occupational injustices.

Rehabilitation Science

Rehabilitation science is an interdisciplinary academic field that studies human functioning with the aim of supporting participation and quality of life across the lifespan

(Institute of Medicine, 1997). Although rehabilitation science cannot center occupational therapy as a profession in the way occupational science might, it too has implications for occupational therapists. My dissertation research connects to rehabilitation science's focus on enablement and integration of disability studies, thereby facilitating the generalizability of these findings.

A primary focus of rehabilitation science is the process of enablement. The Institute of Medicine (1997) released a report describing the enabling-disabling process as a continuum that includes four elements: no disabling condition, pathology, impairment, and functional limitation. These elements are influenced by biology, environment, lifestyle, and behavior to produce an overall quality of life. Paralleling the changing perspective on disability and functioning that was occurring within occupational therapy, the continuum was then placed into a larger conceptual model of the environment as helpful or hindering based on its responsiveness to a person and their needs. The Institute of Medicine's report, therefore, framed the role of rehabilitation professionals as *enablers*, working with individuals to address barriers to quality of life. This connects to my dissertation findings where educators suggested that practitioners should engage in professional thinking skills for the purpose of supporting client occupational engagement.

Rehabilitation science has since adopted a broad conceptual framework – the International Classification of Functioning, Disability, and Health, referred to as the ICF and developed by the World Health Organization (2002) – that allows for a common language and supports practitioner reasoning and reflection in their work to enable clients. The ICF provides an explicit relational structure for factors that influence client functioning. As the ICF has developed, its elements have been situated in bidirectional relationships (Rouquette et al., 2015), emphasizing the potential for layered, and potentially contradictory, influences amongst factors that contribute to human functioning. This change acknowledges that the ICF is not a linear

thinking tool, mirroring the non-linear process I identified as central to professional thinking skills themselves in occupational therapy. Effective use of the ICF therefore requires reflection since as the content practitioners are expected to integrate into their reasoning increases in complexity, the need for reflection to guide action also increases (Cohn et al., 2010).

Rehabilitation science acknowledges that theory is still a necessary complement to these thinking tools, valuable for how it “facilitates clinical reasoning and reflective practice” (Siebert et al., 2005, p. 1498). This is complementary to the conclusion from my dissertation that *artful practice* is necessary and may be an approach that helps to integrate reasoning and reflective practice. With a focus on the enabling-disabling continuum, and the addition of the ICF as a framework for supporting client movement along the continuum toward enablement, rehabilitation science therefore demands practitioners engage in reflective thinking.

Along with the development of the ICF, rehabilitation science shifted to a biopsychosocial perspective on allied health work (Jull, 2017). The biopsychosocial lens incorporates biological understandings of disease along with psychological and social dimensions, emphasizing integration of biomedical and social approaches to disability. Some have argued, though, that the biopsychosocial approach does not do enough to support a holistic understanding of disability, contending that rehabilitation science must therefore better integrate knowledge generated by disability studies (Kielhofner, 2005; Roush & Sharby, 2011). Disability studies may help address potential limitations in the ICF by supporting deeper reflection within rehabilitation science on what constitutes disability. My dissertation findings also suggest the significance of reflective practice for supporting interrogation of practitioner biases and beliefs, suggesting the potential need to integrate disability studies into one’s reflective practice.

There is an apparent paradox between disability studies and rehabilitation science. Rehabilitation professionals often appear to be addressing individual impairments (Roush & Sharby, 2011) and the ICF positions “impairment” specifically as deviance along a spectrum (Mosleh, 2019), two things that are contrary to the philosophy of disability studies. Integrating disability studies and rehabilitation science is one way to encourage researchers and practitioners to grapple with – and reflect on – questions related to practice that this paradox may bring to light (Mosleh, 2019). Addressing critiques around the role of rehabilitation professionals in the disability community requires rehabilitation science professionals to critically reflect on the models that inform their work (Sharp & Herrman, 2021). Further, disability studies is increasingly integrating critical theory itself under the label “critical disability studies” (Meekosha & Shuttleworth, 2009). By aligning with and using language from these complementary disciplines, rehabilitation science positions itself as a field contributing towards societal change through critical approaches to disability, necessitating professional critical reflection.

Becoming a Scholar: Philosophical Underpinnings

As I reflect on the culmination of this dissertation, it is clear that the journey has been one of profound personal growth, particularly in relation to the philosophical dimensions of my degree program. While my pragmatic perspective served me well in my role as an occupational therapist, the academic context demanded a refined understanding of philosophy. Through the process of this research, my identity and philosophy of scholarship evolved as I navigated the idea of “truth,” embraced collaborative academic exploration, and confronted the nuances of my own reflective practice.

While I have had many opportunities to consider philosophy over the course of my education, it was not until working towards this degree that I had the chance to collaboratively consider philosophy as it relates to my professional, and specifically research, life. Completing a large portion of the work for this degree during a global pandemic provided the silver lining of creating an opportunity to engage with my peers in this program around philosophy at a deeper, more vulnerable level. While I initially approached my research with a postpositivist inclination, aspiring to contribute to an absolute “truth,” communal reflections on research paradigms unveiled the symbiotic relationship between my personal pragmatist convictions and my research orientation. This has forever changed my view of research and the value of my work as a scholar. Although it may be counterintuitive, appreciating that my research does not reveal *the* truth, but merely *a* truth (or even just *part of a* truth), has been an important part of my journey to becoming a scholar.

Common knowledge suggests that academia is competitive and antagonistic; I have had the fortunate alternative experience of being guided through this program by a group of mentors that model collaboration, respect, and joy in their work with one another. Experiencing this joy firsthand has led me to revel in the wealth of opportunities for collaboration I have been given by my advisor, Dr. Shelly J. Lane, and to seek out research collaborations with colleagues myself. Building on my understanding that truth is made in community, the chance to experience that community *joyfully* is something I plan to take with me into my career as a scholar.

Finally, my in-depth exploration of reflective practice – alongside complementary professional thinking skills – in occupational therapy has forced me to grapple with my own engagement in reflective practice. While my early mentorship experiences underscored the value of reflection, I was subsequently disheartened when I realized these were relatively unique

mentoring experiences in the profession. My research has subsequently led me to take more ownership of my reflective practice throughout my life, to embrace reflective practice as a threshold concept that allows me to embody what it means to me to be an occupational therapist and scholar. I was therefore encouraged by my research findings to seek out a like-minded professional community of nature-based occupational therapists. This community has further enriched my collaborative reflective practice on meaningful work with clients. My research sometimes felt quite removed from practice for its focus on language and theory. Throughout this dissertation process I was wary of making the mistake described by author George Saunders (2021): “Language [is] a tool for making representations of the world, which, unfortunately, we then go on to mistake for the world itself” (p. 286). Fortunately, I find the impact of this research when I consider it as a first step towards supporting the incredible therapists I consider colleagues who are doing deep work with children and families.

REFERENCES

- Abbott, A. D. (1988). Professional work. In *The system of professions: An essay on the division of expert labor* (pp. 35–58). University of Chicago Press.
- Accreditation Council for Occupational Therapy Education (ACOTE®). (2018). *Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretive guide* (pp. 1–56). <https://doi.org/10.5014/ajot.2018.72S217>
- Allen, D. D., & Toth-Cohen, S. (2019). Use of case studies to promote critical thinking in occupational therapy students. *Journal of Occupational Therapy Education*, 3(3). <https://doi.org/10.26681/jote.2019.030309>
- American Occupational Therapy Association. (2018). Occupational therapy education research agenda—Revised. *The American Journal of Occupational Therapy*, 72(2), 1–5. <https://doi.org/10.5014/ajot.2018.72S218>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Supplement_2), 7412410010p1-7412410010p87. <https://doi.org/10.5014/ajot.2020.74S2001>
- American Occupational Therapy Association. (2022, August 19). *Practice improvement*. <https://www.aota.org/practice/practice-essentials/practice-improvement>
- Amini, D. A., Kannenberg, K., Bodison, S., Chang, P. F., Colaianni, D., Goodrich, B., Mahaffey, L., Painter, M., Urban, M., Handley-More, D., Cooluris, K., McElroy, A., Lieberman, D., & American Occupational Therapy Association. (2014). Occupational therapy practice

- framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, 68(2), S1–S51. <https://doi.org/10.5014/ajot.56.6.609>
- Anand, T. S., Anand, S. V., Welch, M., Marsick, V. J., & Langer, A. (2020). Overview of transformative learning I: Theory and its evolution. *Reflective Practice*, 21(6), 732–743. <https://doi.org/10.1080/14623943.2020.1821942>
- Atler, K., & Gavin, W. J. (2010). Service-learning-based instruction enhances students' perceptions of their abilities to engage in evidence-based practice. *Occupational Therapy in Health Care*, 24(1), 23–38. <https://doi.org/10.3109/07380570903410860>
- Atler, K., & Stephens, J. (2020). Pilot use of the Adapted Fresno Test for evaluating evidence-based practice knowledge in occupational therapy students. *American Journal of Occupational Therapy*, 74(4), 1–9. <https://doi.org/10.5014/ajot.2020.037861>
- Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- Baranek, G. T., Frank, G., & Aldrich, R. M. (2020). Meliorism and knowledge mobilization: Strategies for occupational science research and practice. *Journal of Occupational Science*, 28(2), 274–286. <https://doi.org/10.1080/14427591.2020.1824802>
- Benfield, A. M., & Jeffery, H. (2022). Exploring evidence based practice implementation by occupational therapists: Implications for fieldwork. *Journal of Occupational Therapy Education (JOTE)*, 6(4). <https://doi.org/10.26681/jote.2022.060410>
- Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>

- Benfield, A. M., & Johnston, M. V. (2023). Letter to the editor: Re: Burke, Bundy, & Lane (2023) article “If reasoning, reflection, and evidence-based practice are essential to practice, we must define them.” *The Open Journal of Occupational Therapy*, 11(3), 1–2. <https://doi.org/10.15453/2168-6408.2180>
- Bennett, S., Allen, S., Caldwell, E., Whitehead, M., Turpin, M., Fleming, J., & Cox, R. (2016). Organisational support for evidence-based practice: Occupational therapists perceptions. *Australian Occupational Therapy Journal*, 63(1), 9–18. <https://doi.org/10.1111/1440-1630.12260>
- Bennett, S., & Bennett, J. W. (2000). The process of evidence-based practice in occupational therapy: Informing clinical decisions. *Australian Occupational Therapy Journal*, 47(4), 171–180. <https://doi.org/10.1046/j.1440-1630.2000.00237.x>
- Bennett, S., Tooth, L., McKenna, K., Rodger, S., Strong, J., Ziviani, J., Mickan, S., & Gibson, L. (2003). Perceptions of evidence-based practice: A survey of Australian occupational therapists. *Australian Occupational Therapy Journal*, 50(1), 13–22. <https://doi.org/10.1046/j.1440-1630.2003.00341.x>
- Brangan, J., Quinn, S., & Spirtos, M. (2015). Impact of an evidence-based practice course on occupational therapist’s confidence levels and goals. *Occupational Therapy In Health Care*, 29(1), 27–38. <https://doi.org/10.3109/07380577.2014.968943>
- Breines, E. (1987). Pragmatism as a foundation for occupational therapy curricula. *The American Journal of Occupational Therapy*, 41(8), 522–525. <https://doi.org/10.5014/ajot.41.8.522>
- Brown, T., Yu, M. lin, Hewitt, A., Cousland, R., & Etherington, J. (2021). Professionalism, resilience and reflective thinking: How do these influence occupational therapy student

- fieldwork outcomes? *Occupational Therapy in Health Care*, 0(0), 1–26.
<https://doi.org/10.1080/07380577.2021.1978606>
- Bundy, A. C., & Hacker, C. (2020). The art of therapy. In A. C. Bundy & S. J. Lane (Eds.), *Sensory Integration: Theory and Practice* (3rd ed., pp. 286–299). F. A. Davis.
- Burke, H. K., Bundy, A. C., & Lane, S. J. (2023). If reasoning, reflection, and evidence-based practice are essential to practice, we must define them. *The Open Journal of Occupational Therapy*, 11(1), 1–6. <https://doi.org/10.15453/2168-6408.2044>
- Coates, G. L. F., & Crist, P. A. (2004). Brief or new: Professional development of fieldwork students: Occupational adaptation, clinical reasoning, and client-centeredness. *Occupational Therapy In Health Care*, 18(1–2), 39–47.
https://doi.org/10.1080/J003v18n01_05
- Cousin, G. (2010). Neither teacher-centred nor student-centred: Threshold concepts and research partnerships. *Journal of Learning Development in Higher Education*, 2, 1–9.
<https://doi.org/10.47408/jldhe.v0i2.64>
- Dirette, D. (2016). Personalized medicine and evidence-based practice: Merging the art and science of OT. *The Open Journal of Occupational Therapy*, 4(2).
<https://doi.org/10.15453/2168-6408.1269>
- Dougherty, D. A., Toth-Cohen, S. E., & Tomlin, G. S. (2016). Beyond research literature: Occupational therapists’ perspectives on and uses of “evidence” in everyday practice. *Canadian Journal of Occupational Therapy*, 83(5), 288–296.
<https://doi.org/10.1177/0008417416660990>

- Epstein, R. M., & Hundert, E. M. (2002). Defining and assessing professional competence. *Journal of the American Medical Association*, 287(2), 226–235.
<https://doi.org/10.1080/01944364808979077>
- Garcia, J., Copley, J., Turpin, M., Bennett, S., McBryde, C., & McCosker, J. L. (2021). Evidence-based practice and clinical reasoning in occupational therapy: A cross-sectional survey in Chile. *Australian Occupational Therapy Journal*, 68(2), 169–179.
<https://doi.org/10.1111/1440-1630.12713>
- Gewurtz, R. E., Coman, L., Dhillon, S., Jung, B., & Solomon, P. (2016). Problem-based learning and theories of teaching and learning in health professional education. *Journal of Perspectives in Applied Academic Practice*, 4(1), 59–70.
<https://doi.org/10.14297/jpaap.v4i1.194>
- Glasdam, S., Oute, J., & Stjernswärd, S. (2022). Critical perspectives on implementation of evidence-based practice in occupational therapy – Exemplified by Lifestyle Redesign® in a Danish context. *British Journal of Occupational Therapy*, 85(3), 208–218.
<https://doi.org/10.1177/03080226211011401>
- Grajo, L. C., Laverdure, P., Weaver, L. L., & Kingsley, K. (2020). Becoming critical consumers of evidence in occupational therapy for children and youth. *The American Journal of Occupational Therapy*, 74(2), 7402170020p1-7402170020p7.
<https://doi.org/10.5014/ajot.2020.742001>
- Hallé, M.-C., Bussi res, A., Asseraf-Pasin, L., Storr, C., Mak, S., Root, K., Owens, H., Amari, F., & Thomas, A. (2023). Stakeholders’ priorities in the development of evidence-based practice competencies in rehabilitation students: A nominal group technique study.

- Disability and Rehabilitation*, 0(0), 1–10.
<https://doi.org/10.1080/09638288.2023.2239138>
- Hallé, M.-C., Bussi res, A., Asseraf-Pasin, L., Storr, C., Mak, S., Root, K., & Thomas, A. (2021). Building evidence-based practice competencies among rehabilitation students: A qualitative exploration of faculty and preceptors' perspectives. *Advances in Health Sciences Education*, 26(4), 1311–1338. <https://doi.org/10.1007/s10459-021-10051-0>
- Harris, N., & Bacon, C. E. W. (2019). Developing cognitive skills through active learning: A systematic review of health care professions. *Athletic Training Education Journal*, 14(2), 135–148. <https://doi.org/10.4085/1402135>
- Henderson, W., Coppard, B., & Qi, Y. (2017). Identifying instructional methods for development of clinical reasoning in entry-level occupational therapy education: A mixed methods design. *American Journal of Occupational Therapy*, 72(4_Supplement_1), 7211505146p1. <https://doi.org/10.5014/ajot.2018.72s1-po7010>
- Hildebrand, D. (2013). Dewey's pragmatism: Instrumentalism and meliorism. In A. Malachowski (Ed.), *The Cambridge Companion to Pragmatism* (pp. 55–80). Cambridge University Press. <https://doi.org/10.1017/CCO9781139022132>
- Hitch, D., Nicola-Richmond, K., Richards, K., & Stefaniak, R. (2021). Student perspectives on factors that influence the implementation of evidence-based practice in occupational therapy. *JBIEvidence Implementation*, 19(4), 409.
<https://doi.org/10.1097/XEB.0000000000000285>
- Hooper, B., & Wood, W. (2002). Pragmatism and structuralism in occupational therapy: The long conversation. *American Journal of Occupational Therapy*, 56(1), 40–50.
<https://doi.org/10.5014/ajot.56.1.40>

- Iqbal, M. Z., Rochette, A., Mayo, N. E., Valois, M.-F., Bussi res, A. E., Ahmed, S., Debigar , R., Letts, L. J., MacDermid, J. C., Ogourtsova, T., Polatajko, H. J., Rappolt, S., Salbach, N. M., & Thomas, A. (2023). Exploring if and how evidence-based practice of occupational and physical therapists evolves over time: A longitudinal mixed methods national study. *PLOS ONE*, *18*(3), e0283860.
<https://doi.org/10.1371/journal.pone.0283860>
- Jeffery, H., Robertson, L., & Reay, K. L. (2021). Sources of evidence for professional decision-making in novice occupational therapy practitioners: Clinicians' perspectives. *British Journal of Occupational Therapy*, *84*(6), 346–354.
<https://doi.org/10.1177/0308022620941390>
- Johnson, S. G., Bruset, E. B., Hjelle, K. M., Mongs, M., & Sveen, U. (2020). An exploration of evidence-based practice work files for occupational therapy students during clinical placements: A descriptive cross-sectional study. *BMC Medical Education*, *20*(1), 255.
<https://doi.org/10.1186/s12909-020-02178-2>
- Kielhofner, G. (2009). *Conceptual Foundations of Occupational Therapy*. F. A. Davis.
- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, *68*(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A., & Pitman, A. (Eds.). (2012). *Phronesis as professional knowledge: Practical wisdom in the professions*. Sense Publishers.
- Kinsella, E. A., & Whiteford, G. E. (2009). Knowledge generation and utilisation in occupational therapy: Towards epistemic reflexivity. *Australian Occupational Therapy Journal*, *56*, 249–258. <https://doi.org/10.1111/j.1440-1630.2007.00726.x>

- Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, 74(4_Supplement_1), 7411505100p1.
<https://doi.org/10.5014/ajot.2020.74s1-po3025>
- Landy, R., Cameron, C., Au, A., Cameron, D., O'Brien, K. K., Robrigado, K., Baxter, L., Cockburn, L., O'Hearn, S., Oliver, B., & Nixon, S. (2016). Educational strategies to enhance reflexivity among clinicians and health professional students: A scoping study. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, Vol 17, No 3 (2016). <https://doi.org/10.17169/FQS-17.3.2573>
- Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy? A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130.
<https://doi.org/10.1177/0008417421994377>
- Lusardi, M. M., Levangie, P. K., & Fein, B. D. (2002). A problem-based learning approach to facilitate evidence-based practice in entry-level health professional education. *Journal of Prosthetics and Orthotics*, 14(2), 40–50.
- Margison, F. R., Barkham, M., Evans, C., McGrath, G., Clark, J. M., Audin, K., & Connell, J. (2000). Measurement and psychotherapy: Evidence-based practice and practice-based evidence. *British Journal of Psychiatry*, 177(AUG.), 123–130.
<https://doi.org/10.1192/bjp.177.2.123>
- Márquez-Álvarez, L.-J., Calvo-Arenillas, J.-I., Jiménez-Arberas, E., Talavera-Valverde, M.-Á., Souto-Gómez, A.-I., & Moruno-Miralles, P. (2021). A Q-method approach to perceptions of professional reasoning in occupational therapy undergraduates. *BMC Medical Education*, 21(1), 264. <https://doi.org/10.1186/s12909-021-02710-y>

- Marr, D. (2017). Fostering full implementation of evidence-based practice. *American Journal of Occupational Therapy*, 71(1), 7101100050. <https://doi.org/10.5014/ajot.2017.019661>
- Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, 20(8), 1045–1053. <https://doi.org/10.1177/1077800413513733>
- Murphy, L. (2017). The impact of an online video library and case-based learning in the development of student clinical reasoning. *American Journal of Occupational Therapy*, 71(4_Supplement_1), 7111505130p1. <https://doi.org/10.5014/ajot.2017.71s1-po4155>
- Myers, C. T., & Lotz, J. (2017). Practitioner training for use of evidence-based practice in occupational therapy. *Occupational Therapy in Health Care*, 31(3), 214–237. <https://doi.org/10.1080/07380577.2017.1333183>
- Neistadt, M. E. (1996). Teaching strategies for the development of clinical reasoning. *The American Journal of Occupational Therapy*, 50(8), 676–684. <https://doi.org/10.5014/ajot.50.8.676>
- Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104. <https://doi.org/10.1111/1440-1630.12252>
- Nielsen, S., Klug, M., & Fox, L. (2020). Impact of nontraditional level I fieldwork on critical thinking. *The American Journal of Occupational Therapy*, 74(3), 7403345010p1-7403345010p7. <https://doi.org/10.5014/ajot.2020.036350>
- Oldenburg, H. Y., Snyder, K. L., Heinle, D. K., & Hollman, J. H. (2020). A comparison of clinical reasoning among rehabilitation students during experiential learning. *Journal of Allied Health*, 49(4), 252–257.

- O'Mahony, S. E., Joosten, A. V., & O'Brien, J. (2023). An exploratory study: Undergraduates' perspectives on how threshold concepts influence professional identity. *Canadian Journal of Occupational Therapy*, 00084174231154747.
<https://doi.org/10.1177/00084174231154747>
- Parham, D. (1987). Toward professionalism: The reflective therapist. *The American Journal of Occupational Therapy*, 41(9), 555–561. <https://doi.org/10.5014/ajot.41.9.555>
- Parsonson, B. (2012). The case for practice-based evidence to support evidence-based practice. *Journal of Primary Health Care*, 4(2), 98–99. <https://doi.org/10.1071/hc12098>
- Paterson, M., Higgs, J., & Wilcox, S. (2005). The artistry of judgement: A model for occupational therapy practice. *British Journal of Occupational Therapy*, 68(9), 409–417.
<https://doi.org/10.1177/030802260506800905>
- Plastow, N. A., & Bester, J. (2020). Embedding graduate attributes during occupational therapy curriculum development: A scoping review and qualitative research synthesis. *Australian Occupational Therapy Journal*, 67(5), 498–511. <https://doi.org/10.1111/1440-1630.12689>
- Sackett, D. L., Rosenberg, W. M., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, 312, 71–72. <https://doi.org/10.1115/1.2899246>
- Saunders, G. (2021). *A swim in a pond in the rain: In which four Russians give a master class on writing, reading, and life*. Random House.
- Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 58(3), 333–336.
<https://doi.org/10.5014/ajot.58.3.333>

- Schaber, P. (2014). Keynote address: Searching for and identifying signature pedagogies in occupational therapy education. *American Journal of Occupational Therapy*, 68(October), S40–S44. <https://doi.org/10.5014/ajot.2014.685S08>
- Sladyk, K., & Sheckley, B. (2001). Clinical reasoning and reflective practice: Implications of fieldwork activities. *Occupational Therapy In Health Care*, 13(1), 11–22. https://doi.org/10.1080/J003v13n01_02
- Souto-Gómez, A.-I., Talavera-Valverde, M.-Á., Márquez-Álvarez, L.-J., & García-de-la-Torre, M.-P. (2023). Analysis of occupational therapy students’ pedagogical practices for the forging of professional identity and development of professional intelligence: A scoping review. *Journal of Intelligence*, 11(3), Article 3. <https://doi.org/10.3390/jintelligence11030048>
- Thomas, A., & Law, M. (2013). Research utilization and evidence-based practice in occupational therapy: A scoping study. *American Journal of Occupational Therapy*, 67(4). <https://doi.org/10.5014/ajot.2013.006395>
- Tomlin, G. S., & Dougherty, D. (2014). Decision-making and sources of evidence in occupational therapy and other health professions: Evidence-informed practice. *International Journal of Health Professions*, 1(1), 13–19. <https://doi.org/10.2478/ijhp-2014-0001>
- Tsubira, G., Garrison, T., Chakraborty, S., & Cerny, S. (2022). Service-learning and case-based learning’s impact on student’s clinical reasoning: A repeated measures design study. *Journal of Occupational Therapy Education (JOTE)*, 6(2). <https://doi.org/10.26681/jote.2022.060210>

- Unsworth, C. A., & Baker, A. (2016). A systematic review of professional reasoning literature in occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16.
<https://doi.org/10.1177/0308022615599994>
- Velde, B. P., Wittman, P. P., & Vos, P. (2006). Development of critical thinking in occupational therapy students. *Occupational Therapy International*, 13(1), 49–60.
<https://doi.org/10.1002/oti.20>
- Walder, K., Bissett, M., Molineux, M., & Whiteford, G. (2022). Understanding professional identity in occupational therapy: A scoping review. *Scandinavian Journal of Occupational Therapy*, 29(3), 175–197. <https://doi.org/10.1080/11038128.2021.1974548>
- Wong, K. Y., Whitcombe, S. W., & Boniface, G. (2016). Teaching and learning the esoteric: An insight into how reflection may be internalised with reference to the occupational therapy profession. *Reflective Practice*, 17(4), 472–482.
<https://doi.org/10.1080/14623943.2016.1175341>
- Yerxa, E. J., Clark, F., Frank, G., Jackson, J., Parham, D., Pierce, D., Stein, C., & Zemke, R. (1990). An introduction to occupational science, a foundation for occupational therapy in the 21st century. *Occupational Therapy in Health Care*, 6(4), 1–17.
https://doi.org/10.1080/J003v06n04_04
- Zafran, H. (2019). A narrative phenomenological approach to transformative learning: Lessons from occupational therapy reasoning in educational practice. *The American Journal of Occupational Therapy*, 74(1), 7401347010p1-7401347010p6.
<https://doi.org/10.5014/ajot.2020.033100>

APPENDIX A: IF REASONING, REFLECTION, AND EVIDENCE-BASED PRACTICE ARE ESSENTIAL TO PRACTICE, WE MUST DEFINE THEM

Occupational therapy involves “the therapeutic use of everyday life occupations with persons, groups, or populations (i.e., the client) for the purpose of enhancing or enabling participation” (American Occupational Therapy Association (AOTA), 2020, p. 1). Occupational therapy is therefore a true *profession*, meaning it is tasked with “human problems amenable to expert service” (Abbott, 1988, p. 35). Maintaining the status of “profession” requires a clear delineation of the skills required to practice occupational therapy. Three skills commonly cited as essential to occupational therapy practice are: reasoning, reflection, and evidence-based practice. However, these skills are rarely and inconsistently defined, raising questions as to how therapists communicate these skills and ultimately how they understand and engage in these skills in practice.

Professional Expertise in Occupational Therapy

Professional expertise within human services can be described as involving “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice” (Epstein & Hundert, 2002, p. 226). Occupational therapy literature, educational requirements, and practice acts further articulate the skills therapists need to maintain to advance the profession, and all include reasoning (clinical and/or professional), reflection, and evidence-based practice. For example, in summarizing literature across health professions, Benfield and Johnston (2020) described professional expertise within occupational therapy as involving both clinical/professional reasoning and evidence-based practice, along with a third domain, measurement of outcomes. They suggested that each of these three domains involves some level of reflection by the occupational therapist to achieve the best outcomes for

clients, thus including the three skills noted above. Lecours and colleagues (2021) conducted a concept analysis of occupational therapy literature on professionalism and found that in occupational therapy, professionalism includes reasoning as a key behavior and reflexivity as a key personal attribute. For these authors, reasoning is not specified as clinical or professional, but does include both critical thinking and clinical judgment. Reflexivity was considered to include introspection, analytical skills, and awareness of one's own limitations. The authors alternatively described evidence-based practice as complementary to professionalism. This discrepancy reveals that different key behaviors, skills, and/or attributes will be highlighted based on which idea of professional expertise or professionalism is examined. However, reasoning, reflection, and evidence-based practice are consistently mentioned across models of occupational therapy professionalism. Further, the *Occupational Therapy Practice Framework: Domain and Process* (OTPF-4) considers professional reasoning, self-reflection, and evidence-informed practice as significant skills supporting the defining features of occupational therapy as a profession (AOTA, 2020).

Academic standards for occupational therapy students in the United States require that graduates be able to demonstrate clinical reasoning and use evidence in practice (Accreditation Council for Occupational Therapy Education (ACOTE®), 2018). Although not explicit in the standards, reflective practice is an implied requirement, as therapists are expected to remain lifelong learners (Cohn et al., 2010). Lifelong learners must consider areas for professional growth and examine their current competence; these behaviors are thought to comprise reflective practice. Occupational therapy programs may individually interpret academic standards but must design their programs to meet these expectations.

Along with being required by academic standards, clinical reasoning, reflection, and evidence-based practice are each considered a threshold concept for students (Nicola-Richmond et al., 2016). Concepts can be defined as categories of phenomena with at least one common characteristic (Mosey, 1996); *threshold* concepts are those considered fundamental to mastery of a discipline or profession. Other capabilities sometimes identified as threshold concepts within occupational therapy include: understanding and applying the models and theories of occupational therapy; discipline-specific skills and knowledge; practicing in context; a client-centered approach; occupation; the occupational therapist role; and a holistic approach (Nicola-Richmond et al., 2016). Interestingly, each of these skills specifically relates to the practice of occupational therapy and understanding key concepts. Clinical reasoning, reflective practice, and evidence-based practice are the three threshold concepts that require metacognitive skills beyond understanding, making them potentially the most difficult threshold concepts to master. Occupational therapy students must learn the complex skills of clinical reasoning, reflection, and evidence-based practice and then implement these skills as practicing professionals to uphold the characteristics that distinguish occupational therapy as a profession.

Statement of the Problem

Considering how important reasoning, reflection, and evidence-based practice appear to be to the profession of occupational therapy, it is problematic that conceptualizations of these three skills are inconsistent and occasionally conflicting (see Table A.1; Bannigan & Moores, 2009; Henderson et al., 2017; Krueger et al., 2020). As skills, reasoning, reflection, and evidence-based practice can be further delineated as “constructs,” that is, concepts made up of phenomena that are more abstract and are therefore not readily observable and potentially difficult to define (Mosey, 1996). Further, the terms reasoning, reflection, and evidence-based

practice are often used in relation to one another, but the relationships amongst them are more likely to be assumed than explicit. This raises questions about how well these skills are taught, communicated, measured, and implemented within occupational therapy.

Table A.1

Sample of Ideas About Professional Skills in Occupational Therapy Literature

Construct	Conceptualization
Clinical Reasoning	• Bailey and Cohn (2012): “the process therapists use to frame problems, make sense of where they can go with particular clients, and decide what to do in the midst of practice” (p. 32) • Knis-Matthews, Mulry, and Richard (2017): “the cognitive mechanism that therapists use to create effective client-centered practices that are comprehensive and include an understanding of the client (their social/historical/cultural context), the practice context and the client/therapist interaction” (p. 360)
Reflection	• Bannigan and Moores (2009): “reflective practice can be viewed as a more deliberate, structured process involving the processing of information to assist with learning from complex situations” (p. 343) • Andrews (2000): “reflection is about learning and developing from experience, resulting in a changed perspective” (p. 396)
Evidence-Based Practice	• Bennett et al. (2003): “Although the [evidence-based practice] model highlights the value of research as a source of information that is potentially less biased than other sources for informing practice, it also clearly acknowledges the importance of integrating this research with clinical expertise and clients’ perspectives” (p. 19) • Thomas and Law (2013): “The terms evidence-based practice (EBP), research utilization (RU), and knowledge translation (KT) emphasize the creation, exchange, and use of knowledge from research findings and from other sources, including colleagues, clinical experience, books, and clients, to influence change in practice and inform clinical decision making” (p. e55)

Unclear Standards for Skills Related to Professional Expertise

The OTPF-4 describes how therapists use professional and clinical reasoning to accomplish a variety of important tasks in the occupational therapy process (AOTA, 2020). In the OTPF-4’s glossary of terms, professional reasoning is defined using a quote from Schell (2019) as the “process that practitioners use to plan, direct, perform, and reflect on client care” (p. 482). The term “clinical reasoning” also is used, although its definition is just a reference to

the definition for professional reasoning. Self-reflection is considered a key skill for therapists, too, but it is not defined at all in the OTPF-4. The OTPF-4 considers the occupational therapy process to be dynamic, as therapists engage in ongoing reflection “to accommodate new developments and insights” (AOTA, 2020, p. 18). Further, in describing the evaluation process in occupational therapy, AOTA indicated the need for “reflective clinical reasoning.” In this one document, reflection is *both* a component of, or step in, the clinical reasoning process *and* a modifier for a kind of clinical reasoning. This is unsurprising, as reasoning and reflection are especially muddled within occupational therapy literature. Some of the earliest work on reasoning in the field, the Clinical Reasoning Study (Gillette & Mattingly, 1987), was heavily influenced by Schön (1983) and his idea of reflection-in-action. Further, this study of therapist reasoning ultimately used the process of reflection to elicit the reasoning of therapists through interviews, making the line between reflection and reasoning difficult to parse in their results. Not only are these terms poorly defined themselves, then, they also are poorly defined in relation to one another.

The OTPF-4 also identifies evidence-informed, which is also referred to in this document as “evidence based,” practice as a critical skill for occupational therapy but does not define this skill. Instead, it frequently mentions that therapists must integrate the “best available evidence” into their work. Although each conceptualization may be meaningful or useful for occupational therapy, the profession having multiple conceptualizations of these constructs, without being explicit about the differences, contributes to a lack of clarity. Mosey (1996) outlined the essential elements of an adequate definition. For a concept to be communicated/defined clearly, it first requires a label; in this case, those labels are clinical or professional reasoning, reflective practice, and evidence-based practice. Second, concepts must be placed in a hierarchical

category. For instance, reasoning, reflection, and evidence-based practice might all fall into the category “core metacognitive skills” or “threshold concepts” in occupational therapy. Finally, the concept must have specific characteristics that set it apart from other concepts (Mosey, 1996). Characteristics here might include essential capacities that contribute to the skill or measurable elements of the skill. Within occupational therapy, though, reasoning, reflection, and evidence-based practice are not consistently labeled, not consistently categorized in relation to one another, and not consistently differentiated from one another with specific features. The failure to adequately define these skills is additionally detrimental to the consistency of research on these skills, as a variety of skills may be referenced when discussing reasoning, reflection, and evidence-based practice. Lack of clarity in terminology may lead to inconsistency in research, and thus to imprecision in our ultimate understanding of how these skills influence therapeutic outcomes for clients.

Unclear Approaches for Teaching Professional Expertise

Occupational therapy’s lack of clear conceptualizations of reasoning, reflection, and evidence-based practice also challenges our understanding of how educators teach and communicate about these skills to students (Bannigan & Moores, 2009; Henderson et al., 2017; Krueger et al., 2020). Importantly, inconsistencies in how educators define reasoning, reflection, and evidence-based practice will limit the impact of any educational approaches used to teach them, especially in relation to one another. In fact, poor engagement in professional behaviors by practicing therapists has been blamed on lack of integration of professional skills within occupational therapy education (Krueger et al., 2020). Although there is literature on educational practices related to each of these skills individually, it is limited, and there is little known about how they are taught together within programs or courses (Unsworth & Baker, 2016). Further,

when this literature is not explicit in defining the skills being studied for research participants, it may not accurately reflect how educators teach the skill of interest, since a common understanding of reasoning, reflection, or evidence-based practice cannot be assumed. Because the terms reasoning, reflection, and evidence-based practice are used so frequently, and so often their definitions *are* assumed, students may be unclear on how they will be evaluated on these skills and ultimately what they will be expected to do in practice. If these skills are essential to maintaining the professionalism of occupational therapy, occupational therapy as a profession must articulate what these skills are for educating students.

Solutions

Acknowledging these problems defining and conceptualizing reasoning, reflection, and evidence-based practice in the context of education and practice in occupational therapy, there are important considerations for educators and therapists. How we communicate about these skills is integral to how they are understood by students and the interprofessional community.

Considerations for Occupational Therapy Educators

Appreciating that conceptualizations of clinical reasoning, reflection, and evidence-based practice are unclear within occupational therapy raises questions as to how educators are presenting these skills to students. Occupational therapy educators must be intentional with their use of language regarding professional skills. Terminology in syllabi regarding student expectations should be clear and consistent, and refer to specific, explicit definitions whenever possible. Although many institutions provide educators a format for syllabi construction with expectations as to essential elements such as class time and course objectives, the inclusion of definitions for terms related to taught skills may not be required or even suggested. Where possible, educators should include definitions for key skills/constructs that include the label,

hierarchical categorization, and specific differentiating features (Mosey, 1996). When it is not possible to include specific definitions for these complex skills, it is important that the challenges in defining the skill are explicit for students. Aligning student evaluation, both formative and summative, with these expectations and explicit definitions will further clarify what skills are being taught and how students are expected to demonstrate those skills in the classroom and on fieldwork.

Clarity and cohesion of terminology and expectations within academia will support continued engagement in these professional skills when students enter the workforce as occupational therapists. Although academic standards are intentionally broad to allow for flexibility within individual programs, these key professional skills must be communicated clearly to students.

Considerations for Occupational Therapists

Unclear definitions of key professional skills can also impact quality of therapeutic services and overall communication amongst stakeholders in the workplace. First, to develop one's own practice and professional goals it would be helpful to determine personal understanding of these constructs. Since definitions often differ in educational materials and literature, therapists may need to form their own definitions of these skills. For example, by assigning reflective practice the characteristics of *both* active adaptation during treatment *and* deliberate consideration of the treatment process outside of the session, a therapist may establish goals to learn more about how to facilitate deliberate reflection-on-action through a model of reflective thinking. By considering how these skills are or are not present in one's practice, it is possible to target continued skill development in one's practice area.

Second, it is important to appreciate that these personal understandings of professional skills may not translate to others. Therapists should be sure to understand how these professional skills are conceptualized by their state organizations, funders, supervisors, and fieldwork students to be sure that they are acting in accordance with specific professional expectations and communicating clearly with colleagues. Interprofessional communication on teams can be stunted when others do not understand the language of occupational therapy; therapists should thus not expect that team members have the same understanding of professional skills. Articulation of what we mean by these skills in a given context will advance interprofessional work, and support student learning when interacting with therapists.

Occupational therapy as a profession has identified that reasoning, reflection, and evidence-based practice are all essential to service-delivery; therapists should be sure they understand what these skills mean to them and those they work with to know that they are communicating clearly with colleagues, clients, and students. Clarifying terminology will support clarity of communication within departments, across teams, and with supervising organizations.

Conclusion

Advancing occupational therapists' professional abilities, including their ability to reason, reflect, and engage in evidence-based practice, is critical to advancing the profession as a whole. Lack of clarity around the intended meaning of reasoning, reflection, and evidence-based practice limits research into both their development in occupational therapy students and their use or implementation by occupational therapists. Research is needed to understand how these skills are defined and ultimately what that means for how they are taught to occupational therapy students and how occupational therapists engage with these skills in practice. Therefore, it is

imperative that the profession undertake the process of clarifying how these skills are conceptualized, taught, and implemented to promote clear language in literature, education, and practice, including in our professional practice framework, with the hope of positively impacting therapy services. The ultimate goal of occupational therapy is to support the occupational engagement of clients. It is essential that the profession clarify expectations for therapists to ensure high-quality service delivery to best achieve this goal.

References

- Abbott, A. D. (1988). Professional work. In *The system of professions: An essay on the division of expert labor* (pp. 35–58). University of Chicago Press.
- Accreditation Council for Occupational Therapy Education (ACOTE®). (2018). *Accreditation Council for Occupational Therapy Education (ACOTE®) standards and interpretive guide* (pp. 1–56). <https://doi.org/10.5014/ajot.2018.72S217>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Supplement_2), 7412410010p1-7412410010p87. <https://doi.org/10.5014/ajot.2020.74S2001>
- Andrews, J. (2000). The value of reflective practice: A student case study. *British Journal of Occupational Therapy*, 63(8), 396–398. <https://doi.org/10.1177/030802260006300807>
- Bailey, D. M., & Cohn, E. S. (2012). Understanding others: A course to learn interactive clinical reasoning. *Occupational Therapy in Health Care*, 0577, 31–46. https://doi.org/10.1080/j003v15n01_05
- Bannigan, K., & Moores, A. (2009). A model of professional thinking: Integrating reflective practice and evidence based practice. *Canadian Journal of Occupational Therapy*, 76(5), 342–350. <https://doi.org/10.1177/000841740907600505>
- Benfield, A. M., & Johnston, M. V. (2020). Initial development of a measure of evidence-informed professional thinking. *Australian Occupational Therapy Journal*, 67(4), 309–319. <https://doi.org/10.1111/1440-1630.12655>
- Bennett, S., Tooth, L., McKenna, K., Rodger, S., Strong, J., Ziviani, J., Mickan, S., & Gibson, L. (2003). Perceptions of evidence-based practice: A survey of Australian occupational

- therapists. *Australian Occupational Therapy Journal*, 50(1), 13–22.
<https://doi.org/10.1046/j.1440-1630.2003.00341.x>
- Cohn, E. S., Schell, B. A. B., & Crepaeu, E. B. (2010). Occupational therapy as a reflective practice. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry* (pp. 131–157). Springer US.
https://doi.org/10.1007/978-0-387-85744-2_7
- Epstein, R. M., & Hundert, E. M. (2002). Defining and assessing professional competence. *Journal of the American Medical Association*, 287(2), 226–235.
<https://doi.org/10.1080/01944364808979077>
- Gillette, N., & Mattingly, C. (1987). Clinical reasoning in occupational therapy. *The American Journal of Clinical Nutrition*, 41(6), 399–400. <https://doi.org/10.4324/9781003150732-18>
- Henderson, W., Coppard, B., & Qi, Y. (2017). Identifying instructional methods for development of clinical reasoning in entry-level occupational therapy education: A mixed methods design. *American Journal of Occupational Therapy*, 72(4_Supplement_1), 7211505146p1. <https://doi.org/10.5014/ajot.2018.72s1-po7010>
- Knis-Matthews, L., Mulry, C. M., & Richard, L. (2017). Matthews model of clinical reasoning: A systematic approach to conceptualize evaluation and intervention. *Occupational Therapy in Mental Health*, 33(4), 360–373.
<https://doi.org/10.1080/0164212X.2017.1303658>
- Krueger, R. B., Sweetman, M. M., Martin, M., & Cappaert, T. A. (2020). Self-reflection as a support to evidence-based practice: A grounded theory exploration. *American Journal of Occupational Therapy*, 74(4_Supplement_1), 7411505100p1.
<https://doi.org/10.5014/ajot.2020.74s1-po3025>

Lecours, A., Baril, N., & Drolet, M. J. (2021). What is professionalism in occupational therapy?

A concept analysis. *Canadian Journal of Occupational Therapy*, 88(2), 117–130.

<https://doi.org/10.1177/0008417421994377>

Mosey, A. C. (1996). Theoretical information. In *Applied scientific inquiry in the health*

professions: An epistemological orientation (2nd ed., pp. 143–170). The American Occupational Therapy Association.

Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to

occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104.

<https://doi.org/10.1111/1440-1630.12252>

Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.),

Willard and Spackman's Occupational Therapy (pp. 482–497). Wolters Kluwer.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Thomas, A., & Law, M. (2013). Research utilization and evidence-based practice in occupational therapy: A scoping study. *American Journal of Occupational Therapy*, 67(4).

<https://doi.org/10.5014/ajot.2013.006395>

Unsworth, C., & Baker, A. (2016). A systematic review of professional reasoning literature in

occupational therapy. *British Journal of Occupational Therapy*, 79(1), 5–16.

<https://doi.org/10.1177/0308022615599994>

APPENDIX B: CITATIONS FOR WORKS REFERENCED BY AUTHORS OF ARTICLES
INCLUDED IN THE REVIEW IN CHAPTER 2³

Alsop, A., & Ryan, S. (1996). *Making the most of fieldwork education: A practical approach*.
Springer.

Atkins, S., & Ersser, S. J. (2000). Education for advanced nursing practice: An evolving
framework. *International Journal of Nursing Studies*, 37(6), 523–533.
[https://doi.org/10.1016/S0020-7489\(00\)00030-4](https://doi.org/10.1016/S0020-7489(00)00030-4)

Barrows, H. S., & Feltovich, P. J. (1987). The clinical reasoning process. *Medical Education*,
21(2), 86–91. <https://doi.org/10.1111/j.1365-2923.1987.tb00671.x>

Boniface, G. (2002). Understanding reflective practice in occupational therapy. *British Journal
of Therapy and Rehabilitation*, 9(8), 294–298.
<https://doi.org/10.1017/CBO9781107415324.004>

Boud, D. (2001). Using journal writing to enhance reflective practice. *New Directions for Adult
and Continuing Education*, 2001(90), 9–18. <https://doi.org/10.1002/ace.16>

Boud, D., Keogh, R., & Walker, D. (Eds.). (1985). *Reflection: Turning experience into learning*.
Kogan Page.

Bringle, R., & Hatcher, J. (2005). Service learning as scholarship: Why theory-based research is
critical to service learning. *Acta Academica*, 2005(sup-3), 24–44.
<https://doi.org/10.10520/EJC15197>

Brookfield. (2000). The concept of critically reflective practice. In *Handbook of Adult and
Continuing Education* (pp. 33–49). Jossey-Bass.

³This appendix will be submitted with the manuscript in Chapter 2 as supplementary data.

- Chapparo, C., & Ranka, J. (2000). Clinical reasoning in occupational therapy. In J. Higgs & M. Jones (Eds.), *Clinical reasoning in the health professions* (2nd ed., pp. 265–277). Butterworth & Heinemann.
- Chapparo, C., & Ranka, J. (2008). Clinical reasoning in occupational therapy. In J. Higgs, M. Jones, S. Loftus, & N. Christensen (Eds.), *Clinical reasoning in the health professions* (3rd ed., pp. 265–278). Butterworth & Heinemann.
- Christiansen, C., & Baum, C. M. (1997). The occupational therapy context. Philosophy, principles & practice. In C. Christiansen & C. M. Baum (Eds.), *Occupational therapy. Enabling function and well being* (pp. 2–609). Slack.
- Cronin, A., & Graebe, G. (2018). *Clinical reasoning in occupational therapy*. AOTA Press.
- Dewey, J. (1933). *How we think*. D. C. Heath.
- Dewey, J. (1938). *Experience and education*. Touchstone.
- Dowie, J., & Elstein, A. S. (Eds.). (1988). *Professional judgment: A reader in clinical decision making*. Cambridge University Press.
- Duffy, A. (2007). A concept analysis of reflective practice: Determining its value to nurses. *British Journal of Nursing*, 16(22), 1400–1407.
<https://doi.org/10.12968/bjon.2007.16.22.27771>
- Dutton, R. (1995). *Clinical Reasoning in Physical Disabilities*. Williams & Wilkins.
- Eakin, J., Robertson, A., Poland, B., Coburn, D., & Edwards, R. (1996). Towards a critical social science perspective on health promotion research. *Health Promotion International*, 11(2), 157–165.

- Epstein, R. M., & Hundert, E. M. (2002). Defining and assessing professional competence. *Journal of the American Medical Association*, 287(2), 226–235.
<https://doi.org/10.1080/01944364808979077>
- Facione, P. A. (1998). *Critical thinking: What it is and why it counts*. University of California Press. http://www.calpress.com/pdf_files/what&why.pdf
- Fish, D., & Coles, C. (1998). *Developing professional judgement in health care: Learning through the critical appreciation of practice*. Butterworth-Heinemann.
- Fleming, M. H. (1991a). Clinical reasoning in medicine compared with clinical reasoning in occupational therapy. *The American Journal of Occupational Therapy*, 45(11), 988–996.
<https://doi.org/10.5014/ajot.45.11.988>
- Fleming, M. H. (1991b). The therapist with the three-track mind. *The American Journal of Occupational Therapy*, 45(11), 1007–1014. <https://doi.org/10.5014/ajot.45.11.1007>
- *Fleming, M. H. (unpublished). Difference between assumptions about thinking and observations of the clinical reasoning Strategies of occupational therapists. *American Journal of Occupational Therapy*.
- Furnari, M. (2014). Medical students' reflections in online discussions—Does teacher facilitation matter? In B. Hegarty, J. McDonald, & S.-K. Loke (Eds.), *Rhetoric and Reality: Critical perspectives on educational technology. Proceedings ascilite Dunedin 2014* (pp. 574–578).
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), 7–23. <https://doi.org/10.1080/08923640109527071>

- Gerlach, A., Teachman, G., Laliberte Rudman, D., Aldrich, R., & Huot, S. (2017). Expanding beyond individualism: Engaging critical perspectives on occupation. *Scandinavian Journal of Occupational Therapy*, 25(1).
<https://doi.org/10.1080/11038128.2017.1327616>
- Gibson, B. E., Nixon, S. A., & Nicholls, D. A. (2010). Critical reflections on the physiotherapy profession in Canada. *Physiotherapy Canada*, 62(2), 98–100.
<https://doi.org/10.3138/physio.62.2.98>
- Hagedorn, R. (1997). *Foundations for practice in occupational therapy* (2nd ed). Churchill Livingstone.
- Haverkamp, J. J., & Vogt, M. (2015). Beyond academic evidence: Innovative uses of technology within e-portfolios in a doctor of nursing practice program. *Journal of Professional Nursing*, 31(4), 284–289. <https://doi.org/10.1016/j.profnurs.2015.03.007>
- Higgs, J. (1990). Fostering the acquisition of clinical reasoning skills. *New Zealand Journal of Physiotherapy*, 18, 13–17.
- Higgs, J. (1992). Developing clinical reasoning competencies. *Physiotherapy*, 78(8), 575–581.
[https://doi.org/10.1016/S0031-9406\(10\)61202-3](https://doi.org/10.1016/S0031-9406(10)61202-3)
- Higgs, J. (2003). Do you reason like a (health) professional? In G. Brown, S. A. Esdaile, & S. E. Ryan (Eds.), *Becoming an Advanced Healthcare Practitioner* (pp. 145–160). Butterworth-Heinemann.
- Higgs, J., Jensen, G. M., Loftus, S., & Christensen, N. (Eds.). (2018). *Clinical reasoning in the health professions* (Fourth edition). Elsevier.
- Higgs, J., & Jones, M. (Eds.). (2000). *Clinical reasoning in the health professions* (2nd ed.). Butterworth & Heinemann.

- Higgs, J., & Jones, M. (2008). Clinical decision making and multiple problem spaces. In J. Higgs, M. Jones, S. Loftus, & N. Christensen (Eds.), *Clinical reasoning in the health professions* (3rd ed., pp. 3–17). Butterworth & Heinemann.
- Higgs, J., Jones, M., Loftus, S., & Christensen, N. (Eds.). (2008). *Clinical reasoning in the health professions* (3rd ed.). Butterworth & Heinemann.
- Ikiugu, M. (2007). Clinical reasoning: Goal setting and treatment planning. In M. Ikiugu (Ed.), *Psychosocial conceptual practice models in occupational therapy: Building adaptive capability* (pp. 106–118). Mosby.
- Insight Assessment. (2014). *Health science reasoning test manual*. California Academic Press.
- Jarvis, P. (1992). Reflective practice and nursing. *Nurse Education Today*, 12(3), 174–181.
[https://doi.org/10.1016/0260-6917\(92\)90059-W](https://doi.org/10.1016/0260-6917(92)90059-W)
- Jarvis, P. (1999). *The practitioner-researcher. Developing theory from practice*. Jossey-Bass.
- Jones, M., & Higgs, J. (2000). *Will evidenced-based practice take the reasoning out of practice?* [Doctoral dissertation]. Butterworth Heinemann.
- Kember, D., Leung, D. Y. P., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Tse, H., Webb, C., Wong, F. K. Y., Wong, M., & Yeung, E. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment and Evaluation in Higher Education*, 25(4), 381–395. <https://doi.org/10.1080/713611442>
- Kemmis, S. (2005). Knowing practice: Searching for saliences. *Pedagogy, Culture & Society*, 13(3), 391–426. <https://doi.org/10.1080/14681360500200235>
- Kim, H. S. (1999). Critical reflective inquiry for knowledge development in nursing practice. *Journal of Advanced Nursing*, 29(5), 1205–1212. <https://doi.org/10.1046/j.1365-2648.1999.01005.x>

- Kim, H. S., Lauzon Clabo, L. M., Burbank, P., Leveillee, M., & Martins, D. (2010). Application of critical reflective inquiry in nursing education. In N. Lyons (Ed.), *Handbook of reflective inquiry: Mapping a way of knowing for professional reflective inquiry* (pp. 159–172). Springer.
- Kinsella, E. A. (2000). *Professional development and reflective practice: Strategies for learning through professional experience*. CAOT Publications ACE.
- Kinsella, E. A. (2001). Reflections on reflective practice. *Canadian Journal of Occupational Therapy*, 68(3), 195–198. <https://doi.org/10.1177/000841740106800308>
- Kinsella, E. A., Caty, M.-È., Ng, S. L., & Jenkins, K. (2012). Reflective practice for allied health: Theory and applications. In L. English (Ed.), *Adult education and health* (pp. 210–228). University of Toronto Press.
- Levett-Jones, T., Hoffman, K., Dempsey, J., Jeong, S. Y.-S., Noble, D., Norton, C. A., Roche, J., & Hickey, N. (2010). The ‘five rights’ of clinical reasoning: An educational model to enhance nursing students’ ability to identify and manage clinically ‘at risk’ patients. *Nurse Education Today*, 30(6), 515–520. <https://doi.org/10.1016/j.nedt.2009.10.020>
- Lipp, A. (2007). Developing the reflexive dimension of reflection: A framework for debate. *International Journal of Multiple Research Approaches*, 1(1), 18–26. <https://doi.org/10.5172/mra.455.1.1.18>
- Lowe, M., Rappolt, S., Jaglal, S., & Macdonald, G. (2007). The role of reflection in implementing learning from continuing education into practice. *Journal of Continuing Education in the Health Professions*, 27(3), 143–148. <https://doi.org/10.1002/chp.117>
- Mann, K., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., MacLeod, A., Jill, A. E., Ae, G., MacLeod, A., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in

- health professions education: A systematic review. *Advances in Health Sciences Education, 14*(4), 595–621. <https://doi.org/10.1007/s10459-007-9090-2>
- Marrow, C. E., Macauley, D. M., & Crumbie, A. (1997). Promoting reflective practice through structured clinical supervision. *Journal of Nursing Management, 5*(2), 77–82. <https://doi.org/10.1046/j.1365-2834.1997.00248.x>
- Mattingly, C. (1991a). The narrative nature of clinical reasoning. *The American Journal of Occupational Therapy, 45*(11), 998–1005. <https://doi.org/10.5014/ajot.45.11.998>
- Mattingly, C. (1991b). What is clinical reasoning? *The American Journal of Occupational Therapy, 45*(11), 979–986. <https://doi.org/10.5014/ajot.45.11.979>
- Mattingly, C., & Fleming, M. H. (1994). *Clinical reasoning: Forms of inquiry in a therapeutic practice*. F. A. Davis.
- McWilliam, C. L. (2007). Continuing education at the cutting edge: Promoting transformative knowledge translation. *Journal of Continuing Education in the Health Professions, 27*(2), 72. <https://doi.org/10.1002/chp.102>
- Merriam-Webster. (n.d.). *Reflection*. Retrieved July 29, 2019, from <https://www.merriam-webster.com/dictionary/reflection>
- Moon, J. (2001). *PDP working paper 4. Reflection in higher education learning*. <http://www.york.ac.uk/admin/hr/training/gtu/students/resources/pgwt/reflectivepractice.pdf>
- Moon, J. A. (2004). *A handbook of reflective and experiential learning: Theory and practice*. Routledge.
- Neistadt, M. E. (1998). Teaching clinical reasoning as a thinking frame. *American Journal of Occupational Therapy, 52*(3), 221–229.

- Neistadt, M. E., Wight, J., & Mulligan, S. E. (1998). Clinical reasoning case studies as teaching tools. *American Journal of Occupational Therapy*, 52(2), 125–132.
- Nendaz, M., Charlin, B., Leblanc, V., & Bordage, G. (2005). Le raisonnement clinique: Données issues de la recherche et implications pour l'enseignement. *Pédagogie Médicale*, 6(4), Article 4. <https://doi.org/10.1051/pmed:2005028>
- Nendaz, M., & Perrier, A. (2012). Diagnostic errors and flaws in clinical reasoning: Mechanisms and prevention in practice. *Swiss Medical Weekly*, 142(4344), Article 4344. <https://doi.org/10.4414/smw.2012.13706>
- Ng, S. L., Kinsella, E. A., Friesen, F., & Hodges, B. (2015). Reclaiming a theoretical orientation to reflection in medical education research: A critical narrative review. *Medical Education*, 49(5), 461–475. <https://doi.org/10.1111/medu.12680>
- Nicola-Richmond, K. M., Pépin, G., & Larkin, H. (2016). Transformation from student to occupational therapist: Using the Delphi technique to identify the threshold concepts of occupational therapy. *Australian Occupational Therapy Journal*, 63(2), 95–104. <https://doi.org/10.1111/1440-1630.12252>
- Norris, S. P., & Ennis, R. H. (1989). *Evaluating critical thinking. The practitioners' guide to teaching thinking series*. Critical Thinking Press and Software.
- Osterman, K. F., & Kottkamp, R. B. (1993). *Reflective Practice for Educators: Improving Schooling through Professional Development*. Corwin Press, Inc.
- Paget, M. A. (1988). *The unity of mistakes: A phenomenological study of medical work*. Temple University Press.
- Parham, D. (1987). Toward professionalism: The reflective therapist. *The American Journal of Occupational Therapy*, 41(9), 555–561. <https://doi.org/10.5014/ajot.41.9.555>

- Paul, R. (1990). *Critical thinking*. Center for Critical Thinking and Moral Critique.
- Paul, R., & Elder, L. (2016). *Critical thinking: Concepts and tools*. Foundation for Critical Thinking.
https://www.academia.edu/10006132/Critical_Thinking_Concepts_and_Tools_by_Richard_Paul_and_Linda_Elder
- Pellegrino, E. D., & Thomasma, D. C. (1981). *A philosophical basis of medical practice: Toward a philosophy and ethic of the healing professions*. Oxford University Press.
<https://repository.library.georgetown.edu/handle/10822/710543>
- Perkins, D. N. (1987). Thinking frames: An integrative perspective on teaching cognitive skills. In J. B. Baron & R. J. Sternberg (Eds.), *Teaching thinking skills: Theory and practice* (pp. 41–61). Freeman.
- Rogers, J. C. (1982). Teaching clinical reasoning for practice in geriatrics. *Physical & Occupational Therapy In Geriatrics*, 1(3), 29–37.
https://doi.org/10.1080/J148V01N03_02
- Rogers, J. C. (1983). Eleanor Clarke Slagle Lectureship—1983; Clinical reasoning: The ethics, science, and art. *The American Journal of Occupational Therapy*, 37(9), 601–616.
<https://doi.org/10.5014/ajot.37.9.601>
- Royeen, C. B., Mu, K., Barrett, K., & Luebben, A. J. (2001). Pilot investigation: Evaluation of clinical reflection and reasoning before and after workshop intervention. In P. A. Crist (Ed.), *Innovations in occupational therapy education* (pp. 107–114). American Occupational Therapy Association.
- Saylor, C. R. (1990). Reflection and professional education: Art, science, and competency. *Nurse Educator*, 15(2), 8–11. <https://doi.org/10.1097/00006223-199003000-00006>

- Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 58(3), 333–336.
<https://doi.org/10.5014/ajot.58.3.333>
- Schell, B. A. B. (2003). Clinical reasoning: The basis of practice. In E. B. Crepeau, E. S. Cohn, & B. A. B. Schell (Eds.), *Willard and Spackman's Occupational Therapy* (10th edition). Lippincott Williams & Wilkins.
- Schell, B. A. B. (2009). Professional reasoning in practice. In E. B. Crepeau, E. S. Cohn, & B. A. B. Schell (Eds.), *Willard and Spackman's Occupational Therapy* (11th ed., pp. 314–327). Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Schell, B. A. B. (2014). Professional reasoning in practice. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard and Spackman's Occupational Therapy* (12th ed., pp. 384–424). Lippincott Williams & Wilkins.
- Schell, B. A. B. (2019). Professional reasoning in practice. In B. A. B. Schell & G. Gillen (Eds.), *Willard and Spackman's Occupational Therapy* (13th ed.). Wolters Kluwer.
- Schell, B. A. B., & Cervero, R. M. (1993). Clinical reasoning in occupational therapy: An integrative review. *The American Journal of Occupational Therapy*, 47(7), 605–610.
<https://doi.org/10.5014/ajot.47.7.605>
- Schell, B. A. B., Gillen, G., & Scaffa, M. E. (2014). Glossary. In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard and Spackman's Occupational Therapy* (12th ed., p. 1231). Lippincott Williams & Wilkins.
- Schell, B. A. B., & Schell, J. S. (2008). *Clinical and professional reasoning in occupational therapy*. Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

- Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–23. <https://doi.org/10.17763/haer.57.1.j463w79r56455411>
- Smith, M., Higgs, J., & Ellis, E. (2008). Characteristics and processes of physiotherapy clinical decision making: A study of acute care cardiorespiratory physiotherapy. *Physiotherapy Research International*, 13(4), 209–222. <https://doi.org/10.1002/pri.419>
- Spalding, N. J. (1998). Reflection in professional development: A personal experience. *British Journal of Therapy and Rehabilitation*, 5(7), 379–382.
<https://doi.org/10.12968/bjtr.1998.5.7.14065>
- Sternberg, R. J. (2002). Raising the achievement of all students: Teaching for successful intelligence. *Educational Psychology Review*, 14(4), 383–393.
<https://doi.org/10.1023/A:1020601027773>
- Torcivia, E. M., & Gupta, J. (2008). Designing learning experiences that lead to critical thinking and enhanced clinical reasoning. *OT Practice*, 13(15), CE1–CE8.
- Tripp, D. (2003). *Action inquiry, action research e-reports*, 017. <http://www.fhs.usyd.edu.au/arow/arer/017.htm>
- Tufts University-Boston School of Occupational Therapy. (1990). *Master's degree programs in occupational therapy*. Tufts University.
- Unsworth, C. A. (1999). Clinical reasoning in occupational therapy. In C. A. Unsworth (Ed.), *Cognitive and perceptual dysfunction: A clinical reasoning approach to evaluation and intervention* (pp. 43–73). F. A. Davis. <https://www.fadavis.com/product/cognitive-perceptual-dysfunction-clinical-reasoning-unsworth>

Unsworth, C. A. (2001). The clinical reasoning of novice and expert occupational therapists.

Scandinavian Journal of Occupational Therapy, 8(4), 163–173.

<https://doi.org/10.1080/110381201317166522>

van Manen, M. (1991). *The tact of teaching: The meaning of pedagogical thoughtfulness* (pp. xii, 240). State University of New York Press.

Velde, B. P., Wittman, P. P., & Vos, P. (2006). Development of critical thinking in occupational therapy students. *Occupational Therapy International*, 13(1), 49–60.

<https://doi.org/10.1002/oti.20>

* This article was listed as “in press” in the original text that was published in 1991, but a published version could not be found.

APPENDIX C: IRB APPROVAL LETTER

PROTOCOLS

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**COLORADO STATE
UNIVERSITY**

The protocol listed below has been approved by the CSU IRB SBER Fort Collins on Monday, May 9th 2022.

PI: Lane,Shelly

Submission Type and ID: Amendment 3212

Title: Reasoning, Reflection, and Evidence-Based Practice in Occupational Therapy Education: A Delphi Study

Approval Date: Monday, May 9th 2022

Continuing Review Date: no date provided

Expiration Date: Saturday, May 3rd 2025

The CSU IRB (FWA0000647) has completed its review of protocol 3212 Reasoning, Reflection, and Evidence-Based Practice in Occupational Therapy Education: A Delphi Study. In accordance with federal and state requirements, and policies established by the CSU IRB, the committee has approved this protocol under Expedited review.

Any additional comments regarding this approval are included below. If you have additional questions about this please contact RICRO IRB Staff.

Please note:

- This protocol will need to undergo Continuing Review and approval prior to no date provided.
- Any additional changes to this approved protocol must be obtained prior to implementation of those changes, by submitting an amendment request to the CSU IRB for review/approval.

Good luck in your research endeavors!

Amendment [v6] has been reviewed and granted approval by expedited review (§46.110(b)(2)) of minor changes on May 9, 2022. This protocol was previously assessed as qualifying for expedited review, category 7. This amendment includes updated procedures to add personnel (Dr. Pat Sample). The IRB has determined that the risk level remains no more than minimal and the safeguards for participants are appropriate. The study was assessed as being in accordance with 45 CFR 46.111 of the 2018 Requirements. This study is unfunded. No changes to consent are made.

Attachments

Recruitment Materials	Recruitment Email v3.docx	Targeted Recruitment Email v3
Recruitment Materials	Recruitment Text for Message Boards v2.docx	General Recruitment Text for Message Boards - v2
Recruitment Materials	IG Recruitment Post.png	Social Media Recruitment Post
Recruitment Materials	Participant Information Sheet.docx	Participant Information Sheet
Screening Tool or Procedure	Participant Screening Form.docx	Participant Screening Form
Consent	Consent Form v2.docx	Consent Form
Methodology Section	Burke Proposal Methods for IRB.docx	Dissertation Proposal - Methods Chapter for Study 2