Analysis of the Orthopedic Content in an Occupational Therapy Curriculum From a Clinical Reasoning Perspective

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Key Words: education • physical disabilities, occupational

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This article was accepted for publication October 6, 1995.

Objectives. Recent studies have suggested that occupational therapists working with adults with physical disabilities do not use narrative reasoning in practice as much as they use procedural reasoning. This focus on procedural reasoning may be partially shaped by the occupational therapy educational process. The purpose of this analysis was to see whether one accredited occupational therapy curriculum was promoting narrative reasoning relative to its information on adult orthopedics.

Method. An accredited occupational therapy undergraduate and certificate curriculum was analyzed from both student and faculty perspectives to see what types of clinical reasoning were most emphasized relative to treatment of adults with orthopedic injuries. The student analysis, done by a senior as part of an independent study, looked at the clinical reasoning content of journal articles, an occupational therapy textbook, and occupational therapy lectures relative to adult orthopedic injuries. The faculty analysis, part of a curriculum revision process and independent of the student analysis, looked at the clinical reasoning content of all courses in the curriculum.

Results. The student and faculty analyses concurred that although narrative reasoning is taught in this curriculum, narrative reasoning concepts are not well integrated into the adult physical dysfunction course that deals with adult orthopedic injuries.

Conclusion. Occupational therapy educators may not be integrating narrative reasoning into more procedurally oriented physical dysfunction courses as fully as possible and may, therefore, be fostering procedurally oriented practice in physical dysfunction settings. Curricula evaluations, like the one described in this article, can be a mechanism for examining the types of clinical reasoning emphasized in a given curriculum for a given diagnostic group.

Several recent studies have suggested that many experienced occupational therapists working with adults with physical disabilities favor procedural over narrative reasoning during evaluation and treatment (Clark, Corcoran, & Gitlin, 1995; Neistadt, 1995; Northen, Rust, Nelson, & Watts, 1995). This procedural reasoning bias is of concern because narrative reasoning is essential to holistic, quality care that is relevant to clients' lives (Clark, 1993; Peloquin, 1990, 1994). Procedural reasoning is a logical examination of clients' deficits aimed at identifying their occupational therapy problems. Narrative reasoning, the attempt to understand clients' activity priorities and life stories, is necessary to understand which identified occupational therapy problems are of greatest concern to clients. The procedural reasoning focus of many therapists may derive in part from
influences in the workplace; it may also be partially shaped by the occupational therapy educational process.

The occupational therapy educational process is one influence on the types of clinical reasoning therapists may later choose to accent in practice. Before Level II fieldwork, students' clinical reasoning skills for any given diagnosis are shaped primarily by their exposure to Level I fieldwork, professional journals, textbooks, and coursework related to that diagnosis. Occupational therapy faculty members cannot dictate the exact nature of Level I fieldwork experiences—those experiences will be determined by practical factors such as the diagnostic mix of a facility's census at any given point in time. However, occupational therapy faculty members can and do shape the didactic background students receive in preparation for or in conjunction with Level I experiences. Is that didactic preparation emphasizing procedural more than narrative reasoning relative to adult physical dysfunction diagnoses? The study described in this article asked that question about one diagnostic category—adult orthopedic problems—in one occupational therapy curriculum.

Clinical Reasoning

Clinical reasoning is the thought process that guides occupational therapy evaluation and treatment. Several different types of clinical reasoning have been identified in the occupational therapy literature: narrative reasoning, interactive reasoning, procedural reasoning, pragmatic reasoning, and conditional reasoning. Narrative reasoning deals with the client's occupational story, as reflected in his or her activity preferences, and focuses on the process of change needed to reach an imagined future (Clark, 1993; Mattingly, 1991).

Interactive reasoning deals with the client's illness experience and focuses on the client as a person (Crepeau, 1991; Fleming, 1991). Interactive reasoning has also been called the community aspect of practice (Hassellkus & Dickie, 1994) because it deals with the therapeutic relationship the therapist forms with a client and his or her caregivers.

Procedural reasoning involves specifying occupational therapy problems and treatment strategies through systematic gathering and interpreting of client data. This thought process has also been called scientific reasoning (Rogers, 1983; VanLeit, 1995) and the craft dimension of practice (Hassellkus & Dickie, 1994) and focuses on the client's disease or disability (Fleming, 1991; Mattingly & Fleming, 1994). The part of procedural reasoning that deals with evaluation and identification of occupational therapy problems is called diagnostic reasoning (Rogers & Holm, 1991).

Pragmatic reasoning considers the treatment environment and therapists' experience and focuses on the treatment possibilities within a given treatment setting. Therapists use this thought process to consider practical factors such as clients' insurance coverage and social supports in their decisions about treatment recommendations (Creighton, Dijkers, Bennett, & Brown, 1995; Schell & Cervero, 1993).

Conditional reasoning involves an ongoing revision of treatment to meet the client's needs and focuses on the client's current and possible future social contexts (Fleming, 1991). Conditional reasoning has also been termed the change dimension of practice (Hassellkus & Dickie, 1994) and can be viewed as an integration of interactive, procedural, and pragmatic reasoning within the context of the client's narrative.

Ideally, an occupational therapist would use all these types of reasoning in choosing treatment activities to suggest to any given client. Narrative reasoning would be used to delineate the client's occupational story. The occupational story, or narrative, is the context for understanding the exact nature of occupational disruptions and the meaning of those disruptions for any given person. The ultimate aim of occupational therapy treatment is for the therapist and client to collaboratively reformulate the client's occupational story, via the other types of reasoning, to project a future that includes continued activity, that is, continued occupation, with adaptations for disability.

Occupational therapy treatment that is not grounded in narrative reasoning may miss activities that are of primary importance to the client. For example, in their research on client participation in treatment planning, Nelson and Payton (1991) used a structured interview guideline called the Patient Participation System to interview clients who had already been evaluated by occupational and physical therapists. They found that these interviews, which formally focused on clients' priorities, yielded treatment goals that the evaluating therapists had not considered. In one case, as a result of an interview using the Patient Participation System, a woman in her 30s with chronic back pain established a treatment goal of wrestling with her two children at home without discomfort. Nelson and Payton reported that "the attending therapist was surprised that the patient expressed such a goal for herself" (p. 754).

One consequence of missing treatment goals that are important to the client is client noncompliance with treatment. In their ethnographic study of client socialization to the culture of a rehabilitation hospital, Spencer, Young, Rintala, and Bates (1995) studied Russell, a 30-year-old man who was admitted to the hospital with a diagnosis of spinal cord injury. Russell had previously been a competitive wrestler and was determined to remain active despite his disability. He expressed his wish to continue wrestling with his children and was surprised when his occupational therapist suggested that he should focus on other activities. Russell said, "I want to wrestle, and if it takes another 30 years to do it, I'll do it. But if I have to give it up, I'll give it up, but I don't want to be forced to give it up." (p. 247).
year-old white man who had sustained a T-12 incomplete spinal cord injury due to a fall from a scaffold while working at his job setting up lighting for a concert (p. 54). The researchers found that Russell was resistant to and uncooperative with his therapy program whenever staff members did not acknowledge his activity priorities. For example, although Russell clearly valued his worker role and repeatedly expressed concern about what type of work he would be able to do after his injury, “rehabilitation staff members continued to give him the message that thinking about work was premature” (p. 60). Russell and his therapists, then, were not in the same occupational story (i.e., they were not valuing the same activities). Mattingly and Fleming (1994) also found that when occupational therapists' treatments do not reflect the activity priorities of the client's occupational narrative, the treatment process can be ineffective in facilitating client change.

Other researchers have found that family caregivers are not receptive to occupational therapy treatment that is discordant with their activity priorities and values. For instance, in her ethnographic study of family caregivers, Hasselkus (1989) found that occupational therapists almost never asked family caregivers about their goals for clients receiving home health services. That is, the occupational therapist did not try to understand the occupational narrative of the family unit. As Hasselkus reported, “Meanings are not exchanged between the professional and the family caregiver, and the professional's initial advice is soon modified or simply ignored, unless it fits the caregiver's meaning” (p. 653).

For occupational therapists to be effective practitioners, then, they need to elicit clients' occupational narratives and collaboratively set treatment goals on the basis of those narratives. This skill is important even to entry-level practitioners, who usually function at the novice stage of clinical reasoning (Benner, 1984). The development of clinical reasoning follows a continuum through the following stages: novice, advanced beginner, competent, proficient, and expert (Benner, 1984; Dreyfus & Dreyfus, 1986; Dutton, 1995; Slater & Cohn, 1991). A novice is "characterized by the rigid application of rules and principles learned in school" (Dutton, 1995, p. 8), regardless of the circumstances of a particular case. An advanced beginner can modify rules and principles for specific situations (i.e., “situational thinking” [Dutton, 1995, p. 8]) but still has difficulty prioritizing evaluation information. The competent therapist is able to adjust procedures to specific situations and perceive the relative importance of different pieces of information about a client but may still have difficulty altering initial treatment plans. The proficient therapist has the flexibility to alter treatment plans as needed in the treatment process and has a clearer sense than therapists in earlier stages of the client's total situation, including the physical and social aspects of the potential discharge situation. Expert therapists are able to organize their approach to treatment more from client cues than from preconceived plans of therapeutic action. Experts can recognize client problems and potentials quickly on the basis of their recognition of patterns from previous clinical experiences.

Competent, proficient, and expert therapists would be more skilled than novices and advanced beginners in using narrative reasoning to negotiate treatment programs that address occupational therapy problems with the activities clients value. However, even novices and advanced beginners should be able to use narrative reasoning to try to understand clients' priorities, even if they have difficulty integrating those priorities into treatment. If asking clients about their priorities is not one of the “rules and principles” novices look to apply, they will not understand and learn from negative feedback from clients like Russell and will have no basis for further development of narrative reasoning in their practice.

Are occupational therapy curricula preparing students to use narrative reasoning as a context for the evaluation and treatment of adults with orthopedic problems? The following sections focus that question on the undergraduate curriculum of the Occupational Therapy Department at the University of New Hampshire (UNH). This accredited curriculum receives high ratings in annual program evaluation surveys of alumni and fieldwork educators. Though the undergraduate curriculum was not specifically designed around clinical reasoning concepts, all faculty members are well versed in those concepts and try to integrate them into their teaching. To evaluate the extent of that intended integration, this occupational therapy curriculum was analyzed from both student and faculty perspectives to see what types of clinical reasoning were most emphasized relative to treatment of adults with orthopedic injuries. The student analysis was done by a senior as part of an independent study on orthopedic injuries. The faculty analysis was done as part of a curriculum revision process.

Student Analysis
The student analysis looked at the types of clinical reasoning represented in professional journal articles, an occupational therapy textbook, and UNH occupational therapy courses—the readings and course work—related to adults with orthopedic injuries from the second author's, a senior occupational therapy student, perspective. The pro-
profession journal articles were selected from computerized literature searches on orthopedics and rehabilitation. The textbook chosen was the one used for the occupational therapy treatment course about adults with physical dysfunction. These readings and related course work were chosen for analysis because they comprise the total didactic adult orthopedic background available to an occupational therapy student at UNH.

For this article, the second author reviewed all these sources, looking for themes that corresponded to the different types of clinical reasoning. During her analysis, she discussed her perceived themes and the content associated with them with the first author to check the accuracy of her content-to-theme matches. The second author also discussed her completed analysis with half of her senior classmates during a class session on clinical reasoning; her classmates concurred with the student analysis presented in the next sections.

Readings

Medical, nursing, and therapy journals. This review included (a) medical orthopedic journals—Archives of Orthopaedic and Trauma Surgery and Orthopedics; (b) nursing journals—Canadian Orthopedic Nurses Association and Orthopaedic Nursing; and (c) physical and occupational therapy journals—Physical Therapy, American Journal of Occupational Therapy, and Occupational Therapy Journal of Research. These sources contained predominantly procedural information about lower-extremity orthopedic injuries, including client profiles, factors that influence recovery, and treatment. Relative to client profiles, Barangan (1990) reported that clients with hip fractures are typically elderly women with osteoporosis, decreased estrogen levels, low levels of physical activity, low dietary calcium, inadequate levels of vitamin D and its metabolites, high levels of dietary protein, and habits like caffeine consumption and cigarette smoking.

Several authors discussed factors that influence recovery from lower-extremity orthopedic problems. These factors include pain (Gogia, Christensen, & Schmidt, 1994; Hoekstra et al., 1989), prosthetic dislocation, deep wound infection (Wong & Wong, 1990), secondary diagnoses such as organic dementia or cerebrovascular disease (Barangan, 1990), psychosocial factors such as depression, lack of social support, institutionalization, and reduced health status (Egan, Warren, Hessel, & Gilewich, 1992).

Relative to treatment, articles in the medical and physical therapy journals focused on the role of physical therapy in the treatment process. These articles suggested exercise as a primary treatment procedure for adults with orthopedic injuries (e.g., Gogia et al., 1994). Studies in the occupational therapy journal articles focused on the procedure of activities of daily living (ADL) training. For example, Egan et al. (1992) stated that occupational therapists working with adult clients with orthopedic problems maximize ADL independence through education, training, and adaptive equipment. Erickson and Perkins (1994) suggested that treatment goals should be to progress clients with hip problems to a minimum level of assistance with ADL, bed mobility, and transfers and to progress clients with knee replacements to a level of standby assistance with these activities. In sum, the occupational therapy journal articles suggested that clients with lower-extremity orthopedic problems are best served by focusing treatment on self-care and functional mobility.

The nursing and physical therapy journals did not focus exclusively on procedural reasoning. Some authors also talked about the interactive and narrative aspects of treatment. Barangan (1990) reported that treatment goals are determined by a team that includes the family—a collaborative interactive reasoning approach to goal setting. Craik (1994) noted that clients have a better chance of returning home if they (a) live with someone, (b) have social contacts outside the home, (c) did their own shopping before the fracture, (d) have a functional status that includes good arm strength, (e) have a perception of disability that is consistent with more autonomy, (f) are independent, or (g) have a sense of connection with the world around them. Craik then touches on themes associated with narrative reasoning—the clients’ activity history—and interactive reasoning (i.e., the client’s illness experience).

Textbook—Occupational Therapy for Physical Dysfunction (Trombly, 1995). The client profiles and factors that influence treatment that appeared in the reviewed journals are identical to those presented in the occupational therapy text for the adult physical dysfunction course. As in the journals, the orthopedic problems addressed in this textbook include hip fractures and hip and knee arthroplasties. A procedural reasoning theme is strong in discussions of treatment as well. For example, treatment protocols emphasize prevention and the correction of deformity and disability; clients with orthopedic conditions are encouraged to resume functional activities as tolerated to prevent contractures or other complications associated with immobilization (Bear-Lehman, 1995). However, narrative reasoning issues are also addressed. For example, Bear-Lehman (1995) wrote that the occupational therapist helps the client select meaningful activities for treatment and needs to be aware throughout...
treatment of how the client assumes or resumes societal and family roles. From an interactive reasoning perspective, she said that observing and listening are key factors from beginning to end in treatment.

**Occupational Therapy Course Work**

Within the UNH occupational therapy curriculum, as a whole, there is more of a balance between narrative, interactive, and procedural reasoning than there is in the orthopedic and rehabilitation journals. However, the emphasis in psychosocial and theory classes is on interactive and narrative reasoning, whereas in the physical rehabilitation and science courses, the emphasis is on procedural reasoning (i.e., diagnosis and treatment). In the occupational therapy treatment course for adult physical dysfunction, for example, treatment plans for orthopedic case studies emphasize diagnostically related occupational therapy problems and precautions, and the majority of student assignment points are allocated to these procedural reasoning aspects of treatment planning (see Figure 1).

The UNH occupational therapy curriculum begins with a theory base from which students develop treatment approaches. For example, the Model of Human Occupation is one theory presented—one that suggests using activity to promote and maintain health (Crepeau, 1993). As a class, students write their own narratives to help them approach treatment holistically, aiming to complement the course work in rehabilitation. As students become exposed to more advanced courses, such as Rehabilitation Principles for Occupational Therapists, they begin to develop a procedural approach to practice, focusing on techniques for maintaining and improving range of motion, strength, endurance, and coordination (Smith, 1994).

The occupational therapy curriculum and textbook used in the adult physical dysfunction course, then, address both narrative and procedural reasoning. However, the emphasis in the adult physical dysfunction course is on procedural reasoning, with narrative reasoning concepts from other courses in the curriculum being largely ignored. The medical, nursing, physical therapy, and occupational therapy journals reviewed also emphasize procedural reasoning, suggesting ADL and functional mobility training and exercise as the primary treatments for adults with orthopedic problems.

Having to rely on procedurally focused journals for one’s continuing education may influence therapists to use a procedural reasoning approach in treatment and pass over the client’s occupational story. The better approach would be to augment procedural reasoning approaches with a holistic, narrative reasoning approach that considers clients’ life and activity priorities. This analysis suggests that the physical rehabilitation courses at UNH do not fully prepare occupational therapy students for this role.

**Faculty Analysis**

Faculty analysis of the UNH curriculum done independently from the student’s concurred with the student analysis. As part of a curriculum review process, members of the occupational therapy faculty were given a list of the 17 occupational therapy courses in the curriculum and asked to indicate which types of reasoning they thought were emphasized in each course. All faculty members listed narrative reasoning as an emphasis in the theory and psychosocial courses as well in child and adult development courses, the Neurodevelopmental Evaluation and Treatment course, and the Systems of Therapeutic Intervention in Physical Disabilities course.

In contrast, the Rehabilitation Principles for Occupational Therapists course, which deals with occupational therapy treatment for adults with orthopedic injuries, was rated by all the faculty members as emphasizing procedural and pragmatic reasoning. Narrative reasoning was not listed as an emphasis for this course. As a result of this clinical reasoning analysis of the curriculum, the faculty member responsible for teaching the Rehabilitation Principles for Occupational Therapists course has...
began to make changes in how case studies are presented in the laboratory discussions. Now, instead of simply considering the physical limitations of the hypothetical cases, students are asked to construct a story about the person as a context for treatment decisions. Other changes are under consideration to more fully integrate narrative reasoning into this adult physical dysfunction course to better prepare students for engaging in holistic practice with adults with physical disabilities.

Conclusion
This clinical reasoning analysis of the adult orthopedic content in one occupational therapy curriculum, from both student and faculty perspectives, suggests that occupational therapy educators may not be integrating narrative reasoning into more procedurally oriented courses as fully as possible. Students clearly need to be competent in procedural reasoning so that they will be able to identify diagnostically related occupational therapy problems and precautions and propose treatments that are safe and appropriate. However, students also need to see how narrative reasoning can be interwoven in day-to-day practice so that their future treatment can be meaningful to clients. Curricula evaluations, like the one described in this article, can be a mechanism for examining the types of clinical reasoning emphasized in a given curriculum for a given diagnostic group. ▲

Acknowledgments
We thank Ruth Smith, M.Ed., OTR/L, and all the faculty members of the Occupational Therapy Department, University of New Hampshire, for their openness to and assistance with this project and article.

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