Clinical Reasoning in Medicine Compared With Clinical Reasoning in Occupational Therapy

Maureen Hayes Fleming

Key Words: clinical competence • problem solving

This article highlights some observations made in the American Occupational Therapy Association/American Occupational Therapy Foundation Clinical Reasoning Study, an ethnographic study of 14 occupational therapists working in a large teaching hospital. Concepts and premises that frequently appear in the clinical reasoning in medicine literature are discussed and compared to observations and interpretations made of the practice and reasoning strategies of the occupational therapists who were participants in the Clinical Reasoning Study. It is postulated that similarities in the reasoning strategies of the members of the two professions are a result of use of the scientific model that calls for hypothetical reasoning. Differences, it is proposed, are accounted for by the difference in the particular focus, goals, and tasks of the two professions and the nature of the practice in those arenas. Five hypotheses are proposed as questions for further research in clinical reasoning in occupational therapy.

The purpose of the Clinical Reasoning Study, sponsored by the American Occupational Therapy Association and the American Occupational Therapy Foundation, was to identify the clinical reasoning processes of occupational therapists (Gillette & Mattingly, 1987). Most of the literature on clinical reasoning reports studies of problem solving and decision making by physicians and medical students. The literature on clinical reasoning by physicians contains many findings, interpretations, assumptions, and recommendations that differ from reasoning among occupational therapists. These differences seem to be great enough to warrant discussion.

The first reason for such a discussion is that if one assumes that occupational therapists use reasoning strategies that are the same as those of physicians, then one would miss some salient aspects of therapists’ reasoning. Therefore, the prevention of inappropriate assumptions at the outset of an understanding of the clinical reasoning processes of occupational therapists is a central purpose of this article. Second, an understanding of the reasoning processes gives additional insight into the nature and purpose of the practice. Third, some characteristics of clinical reasoning in occupational therapy are highlighted, many of which are explored in greater depth in other articles in this issue. Fourth, this article raises questions and offers hypotheses regarding potential relationships between the nature of the practice and the reasoning strategies employed by occupational therapists.

Purpose and Method

The aim of the Clinical Reasoning Study was to examine the reasoning strategies of occupational therapists in their day-to-day practice, and ethnographic methodology was used (see the Method section in the Mattingly and Gillette [1991] article in this issue). Therefore, the results of this study are descriptive. These results are interpretations of our observations and interactions with the therapists and of extensive analysis of the videotaped and transcribed treatment sessions and individual and group interviews with therapists. Thus, the results of the research are both descriptive and interpretive, as is the goal of phenomenological research (Karlsson, 1988). We sought to understand the reasoning of therapists who were participants in the Clinical Reasoning Study, based on their own perceptions of their experience of thinking as clinicians. Our interpretations are primarily an attempt to provide a language for understanding the day-to-day experience of thinking in practice.

Terminology

The terminology used in the literature in the general area of clinical reasoning is inconsistent, and some terms overlap or have different meanings. In this article, some terms
are used to refer to specific, distinctive concepts. For some of these terms, whole bodies of literature argue the nature of the phenomena and its lexical denotation. I do not address these arguments here; instead, I offer definitions for the terms that I have used.

Reasoning. This refers to the many ways in which a person may think about and interpret an idea or phenomenon. This may range from a simple perception to a complex abstract construction and includes many forms of inquiry and interpretation. In this article, the term reasoning is used as an umbrella term to cover all aspects of thinking.

Judgment. This refers to the process by which a person appraises a situation and determines the best course of action to take. Clinical judgment is a somewhat old-fashioned but useful term to refer to a still unspecified but likely complex phenomenon thought to characterize the reasoning of experienced thinkers and workers of many types. It is often associated with the art of practice.

Problem solving. This refers to the mental process by which one sequentially identifies a problem, interprets aspects of the situation, and selects a method to alleviate the problem.

Decision making. This refers to the process by which one makes a choice among two or more alternatives. In the present article, this term refers to formal, professional decision making and is associated with the science of practice.

Expert systems. This refers to computerized systems that use artificial intelligence methods to model problem solving and decision making in medicine.

Reasoning strategies. This refers to methods or approaches to reasoning or the selection of a structure or organization for one's reasoning process. Examples are the deductive method, the intuitive method, and the heuristic method.

Features of reasoning. This refers to particular aspects of a reasoning process, such as cue identification and pattern matching.

Goals and Traditions of Research in Clinical Reasoning

In the early work on physicians' reasoning, the primary goal was to improve the clinical judgment of practicing clinicians. Meehl (1954) enjoined psychiatrists and psychologists to use statistics to improve their ability to predict the behavior of their patients. Feinstein (1967) encouraged a systematic analysis of clinical judgment to improve physicians' judgments and to make them more scientific. Improvement of the effectiveness of clinical practice, both for the profession and the individual practitioner, remains the overall goal of research in clinical reasoning in medicine. In the early clinical reasoning research, it was often assumed that this research would result in the identification of the particular or best reasoning strategy or style for physicians. It seems that as the work on medical decision making and problem solving expands, identification of the only or the best or even the typical strategy becomes less likely. Many researchers have commented on the complexity and possibly elusive character of medical reasoning (Hammrick & Garfunkel, 1991).

Research in clinical reasoning has expanded rapidly in the past 10 years. Several different types of research are currently being conducted. Three somewhat different traditions in clinical reasoning research are defined below. One should be aware that I am creating a bit of an artificial separation here, and many of the research projects reported may have used more than one of these types of research styles and goals employed in the same or related studies (Hershey & Baron, 1987).

Medical problem solving seeks to describe the cognitive processes that physicians employ in identifying and solving patient's medical problems. Perhaps the most widely known work in this area is that of Elstein, Schulman, and Sprafka (1978). Recent research in medical problem solving seems to focus on the goal of highlighting particular features of reasoning. Some of this research correlates particular features with specific skills, such as diagnostic accuracy. Medical decision making focuses on the application and development of sophisticated statistical methods to guide or model medical decisions. Lusted (1968, 1983) is generally considered the seminal theorist in this endeavor. Most of his work focuses on making decisions about choice of treatment for particular diseases or conditions in high-risk situations (Kassirer, Kuipers, & Gory, 1982). Expert systems, or the use of artificial intelligence, are used to model or evaluate physicians' identification of a clinical condition and treatment selection. Most of this work focuses on diagnostic skill (Kleinmuntz, 1963, 1984). I reviewed some literature in this area and found that its potential applicability to occupational therapy does not appear to be great. I therefore do not discuss the results of this research in the present article.

The goals of this Clinical Reasoning Study were to try to understand and describe reasoning processes and to identify general strategies and particular features of reasoning that therapists use to guide their practice. Some of the reasoning processes and features identified are discussed below.

Statistical Analysis Versus Clinical Prediction

Much of the current work on clinical reasoning in medicine relies on, and even seeks to develop, statistical methods for the determination of the diagnosis, prognosis, and treatment of diseases and medical conditions (Mancuso & Rose, 1987; Patten, 1978). Statistical measures are used in at least three ways. One use of statistics is the application of statistical analysis to the study of physi-
...cians' problem-solving strategies (Kassirer, 1976). The two purposes of the statistical analysis are to study medical problem solving in itself (Johnson, Duran, Hassebrook, Moller, & Prietula, 1981) and to develop models for expert decision making (Doubilet & McNeil, 1985; Fox, 1984). A third purpose, which is typical of medical decision-making research, is to develop a body of knowledge regarding probabilities of disease entities occurring in members of a given population, the likelihood of an individual acquiring a particular disease given several physiological and demographic characteristics, or the probability of success of a particular treatment given various considerations (Pauker, 1976) and the prognosis given the various individual characteristics and the treatment options (Cutter, 1979). These probability assessments can then be used by physicians as a referent by which to make decisions regarding diagnosis, prognosis, and treatment. Authors also use statistics to enjoin physicians to make more and better use of statistics as a basis for their reasoning in daily practice (Haynes, Sackett, & Tugwell, 1983; Meehl, 1954). Proponents of the use of statistical reasoning claim that this will reduce uncertainty in medical decision making and problem solving (Raiffa, 1970).

In the Clinical Reasoning Study, we saw no formal use of statistics in everyday practice. However, therapists did often predict the likely outcome of treatment. These predictions were made in linguistic, not statistical, terms. This is a form of reasoning that Meehl (1954) referred to as clinical prediction, which he saw as inferior to statistical prediction. The clinical prediction is a type of assessment based on the therapists' clinical experience with similar patients in combination with formal knowledge acquired in their academic education. The following statements from therapists are typical of their clinical predictions.

You don't usually see this much spasticity in the lower extremities with kids with this type of cerebral palsy. So, I'm not sure if he will ever ambulate independently. He will be a mobile child though. I can't say right now if that will mean crutches or a wheelchair. But he will be mobile.

A really strong and motivated [person with paraplegia] could probably get [rehabilitated] in 6 weeks.

She will probably be discharged to a nursing home because even though she can do a lot of activities independently, her judgment is so poor that it is really unsafe for her to live alone.

Therapists, especially experienced ones, used these informal predictions and estimates often. They had considerable trust in these clinical judgments. They appeared to be satisfied with the clinical method, relying on their knowledge and experience to identify clinical conditions and assess current functional performance and predict outcome. The occupational therapists seemed to have little interest in using statistics in their day-to-day practice. For this and other reasons, it seems safe to say that there are few similarities between the occupational therapy and medical decision-making literature. However, occupational therapists did demonstrate reasoning strategies and features similar to those in the medical problem-solving literature.

Reasoning Strategies

Hypothetical Reasoning

Newell and Simon (1972) proposed that physicians and other experts, such as chess players, employ three strategies to solve problems: recognition, hypothesis testing, and heuristic search. Many researchers since then have observed these strategies in physicians and medical students (Elstein & Bordage, 1979). Research in medical problem solving, medical decision making, and expert systems is based on this work by Newell and Simon and subsequent theorists and investigators. Most current research tends to focus on the hypothesis-testing method.

Newell and Simon (1972) also identified a sequence of events in thinking that take place with the use of the hypothesis-testing strategy. They proposed that the person first seeks cues; then searches for the appropriate problem space (e.g., body system or disease process); then generates hypotheses regarding the potential relation of the cues given the proposed problem space; then tests the hypothesis against other information, cues, or hypotheses. This sequence is still thought to be a common one and continues to influence research in medical decision making and problem solving. Feinstein (1973a, 1973b, 1974) developed and proposed a more careful search of problem space and suggested that physicians should think first about more broadly defined spaces and then systematically narrow the search through ever-smaller subsystems. Elstein et al. (1978) also observed instances of recognition, hypothesis testing, and heuristic search. Their work will be discussed in the section on features of reasoning.

An analysis of the videotapes and transcripts that constitute the raw data of the Clinical Reasoning Study revealed that the therapists who participated in this study used the three problem-solving strategies proposed by Newell and Simon (1972). These therapists often used hypothesis testing, sometimes called propositional reasoning, but the ways in which they used this method may be different from the usual ways that hypothesis testing is used by physicians. For example, physicians make a diagnosis of the disease or clinical condition, so the initial mystery is already solved when the patient comes to occupational therapy. The occupational therapists' task is to know generally how that disease or disability will affect the person's functional performance and to evaluate specific details of that performance. Therefore, when the diagnosis was a fairly common one, the experienced therapists easily recalled what the problems might be and
what the evaluation and treatment sessions should be like. Hypothesis generation and testing commonly came into play in five types of instances: (a) when there was no diagnosis (either because the physician had not made one, it was unknown, or the therapist had not been told what it was), (b) when the therapist was unfamiliar with the diagnosis, (c) when the therapist wanted to know more details of the problem or the person, (d) when the therapy was not going as smoothly as expected, and (e) when the therapist noticed something atypical about the patient.

There is some indication that therapists' use of these strategies is influenced by their experience and how they frame the problem. Regarding experience, there was a tendency for new therapists to generate fewer hypotheses and to rely more heavily on the recognition method. Conversely, the more experienced therapists tended to generate more hypotheses and use the heuristic search method. The experienced therapists recognized the patient's clinical conditions readily and used hypothesis testing, heuristic search, or both to discover the details of that particular patient's limitations, given the generalities for patients with that condition. The novice clinicians used heuristic search when they did not recognize what the condition was and were searching for a category or problem space. Regarding framing of the problem, newer therapists tended to see the whole problem as the medical condition and think that all of the patient's behavior was related to the disease. Experienced therapists had a more dynamic view and wondered about the interplay of such factors as the medical condition and the person's original personality and other events in his or her life. The novice therapists seemed to frame the problem as follows: This is a condition that I am supposed to treat. Conversely, the experienced therapists seemed to frame the problem as follows: This is a person who has to face a lot of problems, and I have to figure out the best way for me to help this patient figure out what he or she wants to work on and how.

Occupational therapists used hypothesis generation and testing in many instances. Sometimes this was used in the diagnostic sense, as in the case of experienced therapists trying to identify the cause of a person's functional problems when the diagnosis was unknown. More frequently, hypothesis testing was used to figure out why an aspect of therapy was not working. Hypothesis testing was also used to generate ideas about which activities within a given treatment category would be most effective. In general, it appeared that therapists used the hypothetical strategy more when thinking about treatment than when thinking about diagnosis. Therefore, occupational therapists, like physicians, use the hypothetical method, but its place in the reasoning sequence may differ, that is, the use of the method itself may be prompted by different events in occupational therapy than in medicine.

Linear Progression Versus Discontinuous Search

It is generally assumed that persons using the hypothetical approach think in an orderly, linear progression (Hoffman, 1960). The person focuses on the problem and proceeds in a focused manner to gather data, generate and test hypotheses, and decide on the most likely possibility (Fulop, 1985). Physicians are expected to follow a sequential line of inquiry that includes gathering such data as medical history, current ailment, clinical observations, and laboratory test results. After gathering these data, they generate hypotheses about the possible cause of the ailment and logically test those hypotheses to determine which hypothesized cause of the ailment is most likely. This results in a diagnosis (Ballà, Elstein, & Gates, 1983). One line of research in medical decision making produced branching programs, or decision trees, which improve the physician's decision-making power. These trees inform the physician of the percentage value of two or more possible diagnoses given various conditions or the percentage survival rates of patients with a particular clinical condition undergoing various treatments. So, for example, the physician can choose between pharmacological or surgical intervention for a patient based on the percentage survival rates of groups of persons with the same condition who were given one of those two treatments. Although the greatest advantage of these trees is the statistical data that they provide, they also serve to keep the physician focused on the decision-making task and to assist in excluding irrelevant data.

Therapists in the Clinical Reasoning Study did not appear to use a linear form of logic all of the time. They often seemed to begin a particular line of inquiry in a hypothetical mode and then shift out of a propositional style of reasoning to ask questions or answer patients' questions in a more social, rather than focused or professional, style. Similarly, Rogers and Masagatani (1982) found that during an evaluation procedure, occupational therapists often moved out of a strictly problem-solving mode to address the immediate concerns of the patient. Later, they resumed their logical thinking pattern in a search for definition or resolution of the clinical problem. The same pattern was often seen among therapists in the Clinical Reasoning Study during evaluation sessions and even more frequently during treatment sessions. Typically, therapists would be engaged in a line of hypothetical reasoning concerning the details of the patient's physical or performance problem. Then they would interrupt that stream of thought when the patient said or did something that caused the therapist to temporarily abandon the focus on the physical problem. A moment or so later, they would return to the evaluation procedure. Examples of this shift were (a) a patient asking a question about something, commenting on what was happening, or noting a similarity of a particular activity to one that he or she enjoyed and (b) therapists complementing patients on
their hair, dress, or room decorations or asking about their weekend activities. Therapists often responded to a patient with informal comments or requests for the person to extend the conversation. At such times, the therapist did not seem to be engaging in conversation to gather data, but rather, to engage in conversation as an equal, not as a professional to a patient.

Initially, this shift seemed to be a shift from therapy to socializing and back to therapy. Soon we realized that therapists considered both working on the person's body and interacting with the person as a person to be part of therapy. Therefore, the shift was not into and out of therapy, but rather, from one aspect of therapy to another. (For an example of such a shift, see the Appendix.)

The therapist was concerned about the patient and his progress in therapy. The patient had stayed in his apartment for the weekend in order to test out his ability to function there. The therapist was also concerned about the patient's ability to adjust to the situation and how much of an emotional impact the visit would have on him. She and other therapists often commented that when patients first go back to "the real world," the full impact of their disability and its permanence hits them, and the emotional impact is often great. Therefore, rather than demonstrating a disrupted train of thought, the therapist was simply shifting from one line of inquiry to the other. She and other therapists often seemed that when patients first go back to "the real world," the full impact of their disability and its permanence hits them, and the emotional impact is often great. Therefore, rather than demonstrating a disrupted train of thought, the therapist was simply shifting from one line of inquiry to the other.

Sequential Versus Continuous Reasoning

Clinical decision-making research usually focuses on the formulation of a hypothesis of the diagnosis, prediction of prognosis, and assessment of the probable outcome of available treatments (Lusted, 1983). Each is considered important decision points (Cutter, 1979), and often they are considered to be separate intellectual operations. Further, each of these thinking tasks is thought of as separate from the taking of any action, such as conducting treatment.

These therapists' clinical reasoning did not take the form of fairly clear-cut decision points or events. It was not time-delineated with decisions following in an orderly sequence, nor were diagnosis, prognosis, and treatment selection considered only once. There were few one-time decision-making points or events. Thinking about problems and possible solutions seemed to be more of a continuous stream of small decisions or temporary hypotheses.

In addition, thinking was not considered to be a function necessarily separate from action. Thinking was often tested in action. The results of the action or the patient's reaction often prompted the therapist to think differently or act differently in the immediate situation. This interchange of thought and action and the quick revision of hypotheses and action plans occurred so rapidly that we often commented that all of these processes were conducted simultaneously. Experienced therapists seemed to be constantly revising their plans, not because they did not get it right the first time, but rather, to fine-tune their plans in accordance with the patient's needs, wishes, body, abilities, and limitations. Therapists who were confident about their skills trusted themselves to know generally what the goals and treatment for the patient should be and could therefore both attend to the smaller details and be more responsive to the particular patient. For example, unlike novices, the experienced therapists did not make up treatment plans ahead of time, which would involve spending hours figuring out goals and recalling theories and therapeutic principles and techniques. Instead, they usually knew what they wanted as an overall goal and had a list of possible treatment strategies but did not select a particular treatment activity until the treatment session began, at which time interaction with the patient might lead them to try various techniques until the right one was found. Therapists typically say, "Try this for me," "Let's see if this works," "What do you think?" or "What do you want to try?" Therapists frequently said that diagnosis is not separate from treatment. They used phrases like "You are always evaluating" or "Treatment and evaluation go hand in hand" to express what seemed to them to be a continuous process of evaluation— and not necessarily diagnosis— of the patient. This included the patient's abilities, physical and emotional status, preferences, degree of change, and progress. What therapists seemed to be referring to when they said that evaluation and treatment go together was a process of almost continuous hypothesis generation, evaluation, and revision. Therapists were attentive to many cues in several categories of problems that might affect functional performance. They recognized cues as patterns or potential parts of patterns. These, in turn, prompted hypotheses about the patient's physical or emotional condition. These hypotheses were then evaluated against further observation or subjected to further inquiry. After this evaluation, the dominant hypothesis may be substantiated, negated, revised, or modified.

The therapists often used the general strategy of diagnosis, prognosis, and treatment selection, but not in
the linear progression that physicians use to make major decisions about diagnosis and treatment. Instead, they seemed to use the sequence rapidly and in many instances to ferret out the smaller details of the person's functioning and determine actions that the therapist or the patient might take to improve that function. Perhaps because part of the essence of the practice is action, thinking may be influenced by action. Certainly, the way they practiced and described their practice made their reasoning strategies look more like what Buchler (1955) called active judgment. Perhaps in practice occupational therapists use a form of clinical judgment that is enhanced by having taken similar actions in the past and applying those strategies to the new situation.

Features of Problem Solving

Elstein et al. (1978) identified four features important to medical problem solving: cue identification, multiple hypothesis generation, cue interpretation, and hypothesis evaluation. These researchers found that the most successful diagnosticians among the physicians in their studies acquired a greater number of cues and interpreted them more accurately than did the least successful diagnosticians. A study conducted by Allal (as cited by Elstein et al., 1978) identified that

The physician's information processing activity...is not a unidimensional list of problem formulations. Rather it is a structured set of formulations that may be described in terms of four features: hierarchical organization, competing formulations, multiple subspaces and functional relationships. (p. 176)

Allal noted that, of these, the only feature that was 100% consistent across physicians and across cases was competing formulations. Of the other three features, multiple subspaces was the next most common feature; functional relationships, the least common.

The researchers in the Elstein group (Elstein et al., 1978) explored other features of medical problem solving and concluded that clinical judgment is complex and multifaceted, stating, "We may speculate that different problems require different medical paradigms and that no single theoretical model is sufficient for so complex an activity as clinical medicine" (p. 288). Recent studies also indicate that medical problem solving is multifaceted, and researchers continue to identify features of the process. Pattern recognition seems to play an important part in the reasoning of medical students and physicians (Coughlin & Patel, 1987).

Pattern discrimination, the ability to correctly discriminate between two or more similar patterns, is another important feature in medical decision making. Papa, Shores, and Meyer (1990) found that pattern discrimination abilities bore a high relationship to diagnostic accuracy in medical students and practicing physicians.

Some researchers (Bordage & Zacks, 1984; Grant & Marsden, 1987) argued that the manner in which knowledge is structured or organized in one's mind significantly influences the physician's ability to make decisions. They implied that facility in pattern discrimination is a function of this structure. Coughlin and Patel (1987) also identified inference making as a critical skill and found that experienced physicians use inference making less frequently than do medical students. They hypothesized that this is because they readily recognize more conditions than do the medical students.

Occupational therapists demonstrated use of the four characteristics identified by Elstein et al. (1978). Most displayed many of the characteristics identified by Allal (as cited by Elstein et al., 1978). One novice therapist did not seem to generate competing formulations. She dropped out of the study and the profession early in the year that we began to study novices, so little analysis has been given to this phenomenon. One experienced therapist seemed to generate only one or very few hypotheses or formulations of the problem and often seemed reluctant or slow to give up on an assumption, even in the face of cues from the patient that the therapy was not proceeding smoothly. All the other experienced therapists tended to generate several hypotheses, which they often arranged as competing formulations. One other experienced therapist whom we studied most intensively, searched multiple subspaces and sought functional relationships. Two had a clear hierarchical structure to their knowledge.

Pattern recognition was a common occurrence in experienced therapists and a much desired goal among novices. Pattern discrimination seemed to be the central focus of the experienced therapists' early evaluations of patients' performance and again later as they determined what sort of progress the person was or was not making. They also employed the pattern discrimination and heuristic search when inquiring about aspects of the patient's behavior, which seemed to be different from what is usually expected in that diagnosis.

There seem to be many similarities between the features of reasoning that Elstein et al. (1978) and others identified in physicians and medical students and those observed in occupational therapists.

Focus of the Clinical Reasoning Study

Origin Versus Future Function

Most studies of clinical reasoning in medicine focus on diagnosis. Diagnosis is often seen as the most critical aspect of decision making and practice. Critical to the diagnostic reasoning process is history taking. The person's birth, development, habits, environment, and other factors that might contribute to the acquisition of a disease or condition are important considerations in medical diagnosis. The history of the disease itself is a central concern and helps the therapist in diagnosis and prognosis. Diagnosis and history taking were not a central focus...
for the occupational therapists in the Clinical Reasoning Study. Diagnosis occupied very little of the therapists’ reasoning time. Patients came to therapy with a medical diagnosis, and the therapist’s task was to know how that diagnostic condition would influence present and future function. The therapist was primarily concerned with what a person could do now and might be able to do in the future. The therapists considered etiology important but not most important. They conducted careful evaluations and made fine-grained observations of current functional performance. They made accurate predictions of possible gains in functional levels and were concerned about what those gains would mean to the patient’s eventual performance level and what that would mean to his or her future. Most therapists considered the patient’s history when imagining a person’s possible future, and then considered whether aspects of his or her past might influence the potential for actualizing that future. For example, if a person had a history of substance abuse, the therapist often thought that the person’s ability to live in an independent living situation would depend on the physical gains that the therapist expected the person to make and the support that the therapist hoped the patient would get from his family to join Alcoholics Anonymous. The prognosis was considered a relatively likely outcome, but not a fact or fate. Possibilities for the future and progress toward it were the therapists’ main concerns. In other words, the primary focus of the therapists’ thinking was not on the current disability and its treatment, but rather, on the functional possibilities in the future.

Possibly, if the therapist’s primary task is to help the person function in the future, then the visualization of future possibilities is an important aspect of occupational therapists’ clinical reasoning. Because the occupational therapist does not make a definitive diagnosis as a part of his or her task, history is not as critical a piece of the puzzle as it is for the physician. Conversely, the ability to imagine new ways that this person could function in the future may be essential to occupational therapy practice. If so, a very different kind of reasoning is indicated.

**Generalization Versus Individualization**

A primary aim of scientific medicine is identification of how the processes of the human body interact with each other and other elements and organisms to result in illness and disability. As such, scientific medical research, like all of science, seeks to identify that which is generally true. Science tests theories until general law statements can be made (Bunge, 1967). Medicine, like all applied scientific practices, employs these laws to solve classes of problems.

The therapists in the Clinical Reasoning Study had an appreciation for science and medicine, and the experienced therapists were quite familiar with the manifestations, course, and usual outcome of a wide range of diseases and disabilities. They worked with people with disabilities and knew the limitations that these disabilities caused. However, they were more often interested in the particulars of the person and the slight variations in the manifestation of the disability or the resulting limitations than they were in the general condition. They were always saying that one must individualize treatment for each patient.

**Individualization** refers to the tailoring of treatment to the particular skills, needs, and interests of each patient. The notion that a treatment is specific to a particular patient contradicts the common assumption that all people with a given disease or disability can be treated with the same remedy. These therapists seemed to take both the scientific approach and the individual approach, trying to meld them together. They had many procedures, treatment modalities, and strategies that were frequently used with most persons who had the same sort of injury. What they seemed to enjoy most, however, was not the precise application of the correct procedure, but rather, the search for the best way for this person. This meant that they wanted to find activities that would motivate the patient to try something new but that would also allow this patient some well-earned success.

The integration of concern for the patient with concern for problem resolution seemed to be a common but not always harmonious way of thinking about and conducting therapy. This interest in the individual would naturally lead therapists away from the medical decision-making approach, in which the norm and statistical probabilities are central and individual variations are peripheral. It seems that if effective occupational therapy includes or is primarily focused on the understanding of particulars about the patient and the condition, then a reasoning strategy that is sensitive to particulars rather than to general characteristics and laws must be brought into play.

**Discussion**

Occupational therapists, physicians, and other health care professionals work with people who have medical problems and conditions. Because scientific medicine requires the use of the hypothetical or propositional form of reasoning, it makes sense that all practitioners employ that form of reasoning when applying medical knowledge to address health problems. When occupational therapists were reasoning about the person’s physical disability, the reasoning strategies they employed were most like the reasoning strategies of physicians, as reported in the medical clinical reasoning literature. However, when therapists thought about other aspects of the person and his or her situation, they used other forms of reasoning.

Although occupational therapists work with persons with physical disabilities, the nature and goals of the practice differ from the goals of physicians. It therefore makes
sense that therapists' knowledge, interests, and reasoning strategies would also differ. Concerns for individualizing treatment, facilitating independent functional performance, and creating a future new life for the person lead the occupational therapist to emphasize some aspects of the person and his or her situation more than the medical condition. Mostofsky and Piedmont (1985) posited that physicians address three aspects: the disease, the person, and the predicament. The physician's primary task is to address the disease first. In other words, the physician attends to the disease so as to alleviate or reduce the person's predicament. Conversely, the occupational therapist's role is to address the predicament and reduce its effect on the person's future life, given the consequences of his or her disease or disability. Both professions, therefore, are concerned with all three aspects, but in a different sequence and with different aims and expertise.

It appears that the nature and goals of occupational therapy practice and the philosophy of the profession have influenced the development and use of particular reasoning strategies. The influence of the scientific model and medical knowledge have contributed to the ability to use other reasoning strategies, particularly hypothetical, or propositional, reasoning. Therapists seem to shift their focus to various aspects of the person, disease, or predicament that demands their attention. It appeared to the various members of the Clinical Reasoning Study research team that therapists employed different reasoning strategies in order to focus their inquiry in each of these areas.

Conclusion

Two of the primary goals of qualitative research are to observe and interpret a phenomenon and to raise hypotheses for future study. Five hypotheses are offered here:

1. Occupational therapists use several types of reasoning strategies in the course of their clinical practice.
2. The nature and goals of the practice influence the development and use of various reasoning strategies.
3. In the practice situation, a particular aspect of the whole problem will prompt therapists to select a reasoning strategy that is well suited to guide inquiry into that aspect of the problem.
4. When thinking about the patient's medical problem, therapists often use hypothetical reasoning.
5. When thinking about the patient's psychological, social, or interpersonal aspects, therapists often use strategies other than the hypothetical method.

Further qualitative research is necessary to elucidate the nature and structure of these reasoning strategies and the situations that prompt their use. Quantitative research is necessary to determine the degree to which therapists employ the hypothetical and other reasoning strategies.

Appendix

Interaction Between an Occupational Therapist and a Patient as a Part of Therapy

Therapist: What are you doing this weekend?
Patient: Probably staying in my air-conditioned house.
Therapist: Are you going to stay in Charlestown?
Patient: Yeah.
Therapist: So you're not going to use the bathroom?
Patient: Obviously not. I can't get in it.
Therapist: But you wouldn't have been able to anyway, right?
Patient: No.
Therapist: It would be nice just to be in a place though. The doors are not wide enough to get in? What did you say you can't get into?
Patient: The hallway's too narrow. I can't make the turn.
Therapist: Is it like a right turn like that?
Patient: Yeah.
Therapist: You might be surprised though what you can be able to just up and turn your chair.
Patient: If I took the legs off I could probably turn it in backwards.
Therapist: You'd be surprised.
Patient: [inaudible.]
Therapist: No, but sometimes you can. Sometimes you're surprised at maneuverability. Can I see that right hand one more time? Okay. Put your fingers down. Come down. Come all the way up. You know, it's funny. Where your thumb comes in that's a hard place. Can you try to... any motion to do that? Yeah, you do. You have a little of that. If you can... I think part of what happens is because the muscle that you have in your thumb [inaudible this way, naturally if you had no active motion in your thumb, your thumb would come out a little bit more possibly. But because this is where it's strong, it wants to go in like that.
Patient: Well, I can get down here, but...
Therapist: Yeah, except what happens when you come up?
Patient: The pressure on this falls off. There's pressure up here but not down there.
Therapist: Yeah, so that's where it's hard to pick things up.

References

Coming in December:

AOTA Archival Issue
- Official statements and position papers
- Essentials and guidelines for accredited educational programs for occupational therapists and occupational therapy assistants
- Listing of educational programs in occupational therapy
- Minutes from the 1991 Representative Assembly and Annual Business Meeting

Turn to AJOT for the latest information on occupational therapy treatment modalities, aids and equipment, legal and social issues, education, and research.