The Process of Evidence-Based Clinical Decision Making in Occupational Therapy

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There is a need for occupational therapy to conceive of evidence-based practice in a way that reflects the contextualized nature of occupational engagement. In occupational therapy, we should resist following the lead of experts in evidence-based medicine, such as Sackett and his colleagues (Rosenberg & Donald, 1995; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996; Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000), who advocate that clinical decision-making must be based on systematic appraisal of the best research evidence. Instead, we argue here that evidence-based clinical decision-making in occupational therapy should encompass the diverse variety of evidence brought to the clinical context by both the client and therapist.

The following definitions of evidence-based practice are excellent examples of those espoused by medicine. Rosenberg and Donald (1995, p. 1122) define evidence-based practice as “the process of systematically finding, appraising, and using contemporaneous research findings for clinical decision.” Similarly, Sackett et al. (1996, p. 71) describe evidence-based practice as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.” Both of these definitions reflect a core belief that evidence-based practice entails systematic appraisal of the best research evidence. More recently, Sackett et al. (2000, p. 1) refer to evidence-based medicine as “the integration of best research evidence with clinical expertise and patient values.” Although this definition acknowledges the expertise of the clinician and the values of the patient, it still clings to research as the only source of evidence. We propose that the values, beliefs, knowledge, and experiences of the clinician and client be recognized, in addition to research, as valuable sources of evidence in the clinical decision-making process.

Although the core belief about evidence-based medicine is beginning to acknowledge the expertise of the clinician and the values of the patient, it does not adequately reflect the highly contextualized and dynamic nature of occupational therapy. The practice of occupational therapy is an individualized activity shaped by a unique client-therapist relationship; it is not a static outcome that can be achieved by following a rigid procedure. Furthermore, as noted by Tickle-Degnen and Bedell (2003), the use of a single, invariant hierarchy of research evidence serves to depreciate the information provided by research methods other than randomized clinical trials. There are many kinds of research, and each variety can provide important insights into the nature of occupational performance.

Occupational therapy is highly contextualized, and evidence-based practice should reflect the different kinds of evidence that clients as well as therapists bring to the therapeutic process. When describing evidence-based practice in occupational therapy, it is important to emphasize that rehabilitation is a dynamic process. Unlike medical interventions, which can be described as standardized procedures, occupational therapy interventions are often more aptly described as dynamic processes. Indeed, the Occupational Therapy Practice Framework: Domain and Process (American Occupational Therapy Association [AOTA], 2002) clearly identifies occupational therapy as a dynamic process. To further delineate the distinction between medical practice and occupational therapy practice, consider the role of the patient or client. Medical procedures are frequently pharmacological or surgical in nature, with the patient playing a passive or receptive role. In contrast, the rehabilitation client plays a participatory role in the dynamic therapy process. Therefore, we argue that effective evidence-based practice in occupational therapy should acknowledge the diverse kinds of evidence brought to the clinical context by both the client and therapist.

Methods of Evidence

In his classic paper on the sources of evidence that serve to substantiate belief, Peirce (1877) presents four general methods of appraising belief that he identifies as the method of tenacity, the method of authority, the a priori method, and the method of science. In the clinical context, each of these methods introduces a different kind of evidence into the therapeutic process.

The method of tenacity refers to the unwavering acceptance of an idea because it is what one already believes; it is the continuing adherence to a belief on the basis of its longstanding acceptance. As Peirce (1877) comments, such “a steady and immovable faith yields great peace of mind” (p. 7). But this method of sustaining a belief requires considerable resolution and
the ability to dismiss contrary opinion and evidence. As Peirce notes, "the social impulse is against it.... Unless we make ourselves hermits, we shall necessarily influence each other's opinions" (p. 8).

The method of authority refers to the uncritical acceptance of an idea because it is advocated by a respected individual, group, or institution. In large part, the method of authority perpetuates common beliefs in a culture. As Peirce (1877) notes, "It is mere accident of their having been taught as they have, and of their having been surrounded with the manners and associations they have, that has caused them to believe as they do and not far differently" (p. 10).

The a priori method refers to the acceptance of an idea because it is consistent with reason; that is, it is an idea that "we find ourselves inclined to believe" (Peirce, 1877, p. 10) because it seems to make sense. Although the a priori method "is far more intellectual and respectable from the point of view of reason than either of the others" (p. 10), it remains the case that what one person is inclined to believe as reasonable is not necessarily the same as what another person is inclined to believe. As Peirce notes, it "is always more or less a matter of fashion" (p. 11) to determine whether a conclusion is agreeable to reason.

The fourth method described by Peirce (1877) is science. Peirce viewed science as a method of overcoming the "accidental and capricious element" (p. 11) in the other methods. However, in contemporary accounts, science is no longer attributed such a degree of objectivity. For instance, in his influential historical analysis of science, Kuhn (1970) argues that "an apparently arbitrary element, compounded of personal and historical accident, is always a formative ingredient of the beliefs espoused by a given scientific community at a given time" (p. 4). Furthermore, Kuhn notes that "few philosophers of science still seek absolute criteria for the verification of scientific theories" (p. 145) because "no theory can ever be exposed to all possible relevant tests" (p. 145). Thus, in considering science as a method of appraising belief, it is important to acknowledge the provisional nature of scientific evidence.

The methods of appraising belief described by Peirce (1877) provide a useful classification of the different kinds of evidence that may be introduced into the therapeutic process by the client and therapist. An account of the variety of client beliefs is given in the next section of the paper, followed by an account of the variety of therapist beliefs. These beliefs affect the therapeutic process; they represent the kinds of evidence warranting consideration when appraising the potential therapeutic benefit of an intervention in occupational therapy.

Client Perspective

In terms of client beliefs held on the basis of tenacity, a client with osteoarthritis, for example, may be quite emphatic in expressing her dislike for swimming pools each time a therapist suggests that she consider participating in a therapeutic aquatics program. The tenacity with which the client maintains an unwavering disdain for swimming pools is an important piece of evidence to consider in appraising the potential therapeutic benefit of an aquatics program. A second illustration of the consequence of beliefs held on grounds of tenacity stems from the fact that some beliefs are cornerstones of a client's construction of self. Consider a client for whom being independent is of utmost importance and central to his view of himself. In order to maintain his perception of personal independence, the client may underestimate the number of times he has fallen in his home when asked in an interview or in completing a questionnaire. Although evidence of a self-presentation bias, such as a misreporting of falls, can be difficult for a therapist to discover, it is important to recognize that a client's highly persistent beliefs about himself or herself pervade his or her perspective of therapeutic goals and outcomes.

In terms of beliefs held on the basis of authority, a peer with related experiences can be a compelling source of information affecting therapeutic goals and outcomes. For instance, a peer who uses a walker can represent an authoritative source of evidence about the utility of a particular type of walker, and a peer's negative evaluation of a walker can be a barrier to its use by the client despite the recommendations of the therapist.

Consider as well an example of the a priori method: A client is reluctant to use a walker as recommended by her therapist, preferring to use a cane. She reasons that a cane is better for her to use because it is lighter in weight and seems to offer her as much support as the walker. Although such reasoning is not rigorous, the conclusion is reasonable to the client.

Finally, scientific findings reported in the media, including the Internet, can be taken by clients as a valid basis of belief. Media reports of scientific research are intended to be compelling for the audience, and it is conceivable for a brief account of the treatment of rheumatoid arthritis in yesterday's news to affect a client's beliefs about the treatment of his or her arthritis. In sum, these examples indicate that clients bring to therapy a variety of beliefs that can be important sources of evidence to consider when appraising the eventual therapeutic benefit of an intervention.

Therapist Perspective

Therapists also demonstrate the varieties of belief described by Peirce (1877). In terms of beliefs held on the basis of tenacity, occupational therapists share a set of core beliefs about practice. Kanny (1993) identified seven core values that occupational therapists use to guide clinical decisions. These values include, for instance, an unselfish concern for the welfare of others, an affirmation of the intrinsic uniqueness of each person, and a valuing of self-direction in the pursuit of meaningful goals. Occupational therapists also hold the fundamental belief that the engagement in occupation is a vital component of health and well-being. Obviously, these professional beliefs have a substantial effect on therapeutic goals and outcomes. Insomuch as the core beliefs underlying occupational therapy are different than those of other health professions, it is reasonable for occupational therapists to hold a somewhat different conception of evidence-based practice than other health professionals.

Therapists demonstrate beliefs that are based on authority when practices are modelled in accord with the ideas of clinical specialists or individuals highly regarded for their expertise on particular issues.
Institutional guidelines or mandates may also serve as a source of authority for therapists insomuch as they establish the set of common practices at a particular institution.

In clinical practice, the *a priori* source of evidence refers to the use of clinical experience to inform practice. Clinical experience is an important repository of information gained from working with other clients, and it represents an appropriate place to begin the process of accruing evidence.

Lastly, science encompasses a diverse variety of peer-reviewed research relevant to occupation. We believe that all research has the potential to contribute to a fuller understanding of occupational performance, and no one kind of research can be judged universally to be the best source of evidence.

In many discussions of research methods, randomized clinical trials, systematic reviews of randomized clinical trials, and meta-analyses of randomized clinical trials are ranked as providing the highest quality of evidence (e.g., Egan, Dubouloz, von Zweck, & Vallerand, 1998; Greenhalgh, 1997; Law & Philip, 2002; Lloyd-Smith, 1997; Porter & Matel, 1998; Sackett et al., 2000; Taylor, 1997). However, many research questions are aptly addressed by research methods other than randomized clinical trials (Tickle-Degnen & Bedell, 2003). For example, investigations of the subtle complexity of a client’s personal experiences are facilitated by qualitative methods, and studies informing the appropriate use of standardized assessments are well served by descriptive and correlational methods. To state universally that experimental methods, such as randomized clinical trials, represent the highest quality of evidence disregards the multifaceted nature of clinical practice and deprecates the diverse variety of research in occupational therapy.

In sum, the conception of evidence-based practice as a systematic appraisal of the best evidence does not reflect the diverse kinds of evidence brought to the clinical context by clients and therapists. If occupational therapy is truly a contextualized activity shaped by a unique client–therapist relationship, then the full variety of client and therapist beliefs, as summarized in the evidence matrix presented in Table 1, should be considered in the course of goal setting and in anticipating the eventual therapeutic benefit of an intervention.

The process of evidence-based clinical decision making in occupational therapy is illustrated in Figure 1. The figure shows how the evidence gathered from the client, the therapist, and research inform clinical action and, subsequently, how clinical evidence informs modifications to the course of clinical action. Further, the process clearly demonstrates how the evidence cumulated with respect to each individual client becomes integrated into the therapist’s repertoire of clinical experience with the potential to affect future decision making. To this point, we have considered the elements of constructing an evidence matrix; the integration of evidence using decision strategies and the monitoring of therapeutic progress are examined below.

### Table 1. Evidence Matrix: Varieties of Evidence Classified by Method and Perspective

<table>
<thead>
<tr>
<th>Method*</th>
<th>Client</th>
<th>Therapist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenacity</td>
<td>Personal Beliefs &amp; Convictions</td>
<td>Professional Values</td>
</tr>
<tr>
<td>Authority</td>
<td>Personal Experts</td>
<td>Clinical Experts</td>
</tr>
<tr>
<td>A Priori</td>
<td>Personal Reasoning &amp; Experience</td>
<td>Clinical Reasoning &amp; Experience</td>
</tr>
<tr>
<td>Science</td>
<td>Publicized Science</td>
<td>Research Literature</td>
</tr>
</tbody>
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* from Peirce (1877)

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**Figure 1. The Evidence-Based Occupational Therapy Process.**
Integrating Evidence Using Decision Strategies

We have suggested that in order to make appropriate decisions in clinical practice, it is necessary to integrate multiple pieces of evidence in a way that recognizes the contextualized nature of clinical practice. This necessitates a dynamic approach to integrating evidence. Each client–therapist relationship provides a unique matrix of evidence. Evidence can conflict, and it may be necessary to consider new evidence as therapy progresses. The four strategies described below, referred to as intuition, parsimony, consensual-validation, and cross-validation, have sufficient flexibility to be applied to a diverse variety of evidence.

Decisions made on intuition are those based on what feels right or seems reasonable. Such decisions are frequently difficult to justify because of their subjective nature, despite the fact that they may reflect extensive clinical experience.

Parsimony is a strategy for choosing among alternative interventions. The principle of parsimony is a general heuristic stating that if two propositions are equally tenable the simpler one is preferable. Thus, in deciding between two or more interventions of equal potential benefit, the principle of parsimony holds that the simpler intervention should be employed. In judgments of parsimony, simpler means requiring fewer assumptions. Thus, in deciding between two interventions, it is the one whose imputed benefit is based on fewer assumptions that is preferable.

For example, consider the following two hypothetical interventions aimed at improving the legibility of a child’s handwriting. The first intervention involves activities for hand strengthening and activities for improving hand coordination. The second intervention emphasizes “sky writing” letters in the air in addition to hand strengthening and hand coordination activities. Both interventions assume that strength and coordination are important aspects of handwriting skill, but the second intervention makes the additional assumption that writing letters in the air facilitates the development of handwriting skill. In the situation where these two interventions appear to be equally effective, the principle of parsimony would hold that the first intervention is to be preferred. In other words, one begins with the simpler explanation of handwriting skill and switches to the more assumption-burdened explanation only when warranted by a clear demonstration that it is a more effective intervention.

A third decision strategy is consensual-validation; it reflects a belief that as more persons concur with a particular conclusion, the more likely it is to be valid. In clinical practice, consensual-validation often takes the form of informal consultation with colleagues who serve as a sounding board for clinical reasoning. In the research process, consensual-validation is provided by a formal mechanism of peer review. In general, consensual-validation is preferable to intuition or parsimony as a strategy for decision making. Although consensual-validation should not be construed as providing objectivity, it does result in decisions that have greater acceptability to others.

Arguably, the most justifiable decisions are those based on multiple sources of evidence and multiple decision strategies. Thus, in assimilating a diverse array of evidence, it is important to look for cross-validation in different sources of evidence as well as between the conclusions afforded by intuition, parsimony and consensual-validation. The concept of cross-validation is not novel; it has long been advocated as an approach to substantiating the validity of evidence. For example, Campbell and Fiske (1959) proposed the multitrait–multimethod matrix as an approach to validating evidence in which validity is strengthened by demonstrating convergence of findings across a variety of methodological and measurement approaches. The rationale of cross-validation rests on the premise that convergence of findings across multiple and varied sources of evidence indicates that the findings are not spurious, but rather are impervious to methodological variation. Consequently, decisions based on cross-validation are less likely to be influenced by bias or subjective interpretation.

Monitoring Therapeutic Progress

In the process of setting therapeutic goals, it is important that one or more measures be taken prior to intervention and periodically throughout the course of intervention to provide evidence of change as a function of the intervention. Such evidence can take the form of formal assessments or evaluations, informal clinical observations, and client self-reports, with a combination of these methods considered to be most valid on the premise of cross-validation. Further, one should be vigilant of changes to the evidence matrix over time, especially client and therapist beliefs and expectations pertaining to the progress and outcome of therapy. In these respects, it is important that evidence continue to be gathered throughout the clinical process to facilitate the best possible treatment.

With the eventual attainment of therapeutic goals, the process of evidence-based clinical decision making circles back upon itself. A therapist’s observations, measures, and explanations of the therapeutic progress of one client contribute to the evidence matrix of future clinical practice by becoming part of clinical experience. Furthermore, this information offers a basis for preparing more formal commentaries on clinical practice for contribution to professional journals, and especially when cumulated across clients, the process of evidence-based clinical decision making provides a basis for integrating a program of research within clinical practice. In the longer term, such contributions to the literature of occupational therapy serve to develop clinical experience to a point of clinical expertise, providing an authoritative basis for other therapists to model therapeutic practices.

Conclusion

Occupational therapy has evolved its own professional values and beliefs. In our opinion, the approach of evidence-based medicine, as advocated by experts such as Sackett and his colleagues (Rosenberg & Donald, 1995; Sackett et al., 1996; Sackett et al., 2000), depreciates the core values and beliefs of occupational therapy. In contrast, we believe that the process of evidence-based clinical decision making described in this paper embraces occupational therapy’s professional values and beliefs. There is no doubt that research evidence is essential to the practice of occupational therapy. But in
In our opinion, we should resist accepting the relative infrequency of randomized clinical trials evaluating occupational therapy interventions as a weakness in the scientific grounding of occupational therapy practice. Rather, the relative infrequency of randomized clinical trials may simply reflect the limited relevance and applicability of this design to occupational therapy practices and interventions. We argue that evidence-based occupational therapy should encompass a diverse variety of evidence, and it should value all research paradigms and designs as having the potential to inform clinical practice. Evidence-based occupational therapy should integrate a client’s beliefs with the therapist’s experiences and draw on pertinent expertise and research. As clearly stated in the Occupational Therapy Practice Framework: Domain and Process (2002), “clients bring knowledge about their life experiences and their hopes and dream” (p. 615) to the clinical context. The client’s knowledge and experiences should be explicitly integrated into the process of evidence-based clinical decision making in occupational therapy; otherwise, we neglect “occupational therapy’s unique focus on occupation and daily life activities and the application of an intervention process that facilitates engagement in occupation to support participation in life” (p. 609).

References