Understanding Theory: The First Step in Learning About Research

This article describes a teaching method used to explain to undergraduate students how a theory is organized and how a practice model is derived based on the theory. Kielhofner's temporal adaptation of Neville's application of temporal adaptation in practice are used as examples of a developing theory and practice model. The relevance of theory analysis to research design and methods is stressed.

One aspect of research methods that students and therapists should learn is to analyze a theory in terms of its influences on research. Theories may be written in a style that is easily understood or difficult to understand. When a student or practitioner is confronted with examining a theory in detail, the tools of analysis may be weak or absent. This paper describes a method for teaching undergraduate students how to analyze a theory. The method is taught as part of a basic course in research methods, which is part of the curriculum in the educational program at the University of Oklahoma Health Sciences Center.

The teaching method does not include a discussion of Kuhn's (1) critics or supporters regarding normative science (1-3). No attempt is made to solve the differences between mechanism and organism as world views or metaphysical models (3, 5), nor are paradigm shifts the focus of this theory analysis (6-8). Therefore, the issues of normative science, philosophical differences, and paradigm shifts have not been included in the paper.

The first step is to define two terms. A theory is defined as a set of interrelated assumptions, concepts, and definitions that presents a systematic view of phenomena by specifying relationships among variables, with the purpose of explaining and predicting the phenomena (9). Research is the process of looking for a specific answer to a specific question in an organized, objective, and reliable way (10).

Importance of Theory Analysis to Research

The second step is to understand how analysis of a theory can influence or affect research. There appears to be seven major influences: 1) Analysis of a theory should identify the frame of reference on which the theory is built so that it can be compared with the general philosophical base of the field to determine similarities and differences; 2) Analysis provides a means of organizing and arranging the assumptions, concepts, and definitions so they can be used in the statement of the problem and review of literature; 3) The results of theory analysis may be used as a guide for the development and critique of research studies; 4) The analysis, when applied to research studies, may suggest the need for elaboration and refinement of the theory; 5) Theory analysis may help to identify the unique areas or features of occupational therapy; 6) Theory analysis may provide logical rationale for specialized practice areas; and 7) Analysis of a theory may identify the important points that are useful in explaining occupational therapy to others and may indicate the areas that other professions have in common.

How Theories are Organized

The third step in theory analysis is to become acquainted with how a theory is organized. Figure 1

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shows a schematic view of theory at the most elementary level, which illustrates the composition of assumptions and concepts. These form the mortar and bricks of theory structure. Assumptions are statements that something is true for the purpose of theoretical development (11). There are many types of assumptions that theorists use to organize a theory. Each type of assumption has a slightly different view as to how much truth is being exposed by the theorist. Often the choice of words is arbitrary. Examples of types of assumptions are axion, hypothesis, premise, proposition, postulate, supposition, tenet, theorem, and thesis.

Concepts describe a general idea, thought, notion, or understanding (12). Concepts are the building blocks of theories. They refer to things, events, or relationships between things or events. Thus, concepts usually provide the vocabulary of a theory from which operational definitions can be written. Some theorists prefer to develop specialized concepts, which are called constructs. Constructs are considered to be more complex or abstract than concepts. Two types of constructs can be identified. Empirical constructs are based on observable facts or data, whereas hypothetical constructs supposedly exist to explain something else.

Together, the assumption and concepts are based on a frame of reference or philosophy that contains the beliefs and values of the theorist about such subjects as human nature, the role of occupation in health and adaptation, and the organization of knowledge and skills in life patterns. Examples may be illustrated as polarities, such as active or passive roles, responsible or irresponsible behavior, adaptive or unadaptive responses, and free or determined will.

Often the frame of reference is identified by mentioning previous theorists or theories, rather than stating the specific beliefs or ideas. Sometimes, however, no references are stated, so that the frame of reference must be deduced by examining whatever assumptions and concepts the theorist has mentioned.

To summarize, an organized theory is composed of assumptions and concepts that are interwoven and interrelated; the theory is based on a frame of reference. The purpose of a theory is to explain some phenomenon or phenomena. However, the ultimate value or usefulness of the theory is determined through research studies.

Studying a Theory
The fourth step in theory is to explore the role of research in theory development. Research on a developing theory is accomplished by posing questions or hypotheses. The questions are drawn from assumptions, concepts, or both. The hypotheses must be stated so that research will either tend to support or refute one or more aspects of the theory. Figure 2 shows the relationship between theory development, theory testing, and the ultimate goal of theory organization. Figure 2 also shows that theory organization is not a static process but rather a dynamic interactive process. The arrows illustrate the interaction of the units and stages on one another. The results of research studies may indicate a need to redefine or clarify the concepts and also reevaluate the assumptions. As research studies lead to modifications in theory construction, the theory becomes more organized and principles are developed that interrelate concepts in a systematic relationship. Thus, the theory may change over time as the results of research suggest or force revision. Even the best-established theories undergo revision.

The Relationship of a Theory to Practice
The problem with theory organization is that it does not provide an automatic transition to practice. Practice and application require more than organized assumptions and concepts. Thus, the fifth step
is to understand the relationship between theory and practice. This transition from theory to practice may have become evident to anyone who has tried to apply the assumptions and concepts of Piagetian theory to occupational therapy. There is a lack of identifiable assessment instruments and intervention strategies for dealing with abnormal development or developmental delay. Thus, a practice model must provide assessment instruments and intervention strategies and, more important, a list of expected results in terms of objectives, goals, or outcomes.

Figure 3 shows a practice model or representation of how to apply a theory to a practice situation. The configuration is the same as that used in outlining a theory, but the labels and descriptors differ because the purposes differ. A theory explains a phenomenon or phenomena, whereas a practice model explains how to change a phenomenon or phenomena.

Table 1 shows how to analyze a practice model designed for occupational therapy: it outlines the expected results such as goals or outcomes related to prevention, development, remediation, environment adjustment, or maintenance. Assessment instruments refer to standardized or nonstandardized tests, observation reports, such as checklists or behavioral records, and interview forms. The intervention strategies outline the tools of the practice model and describe how they are used. Intervention strategies include “what we use,” such as the media or modalities; “how we use it,” such as methods, approaches, or techniques; and “which equipment is needed.” Finally, it is useful to specify the entry level skills needed or assumed by the client before intervention is begun.

Analysis of an Existing Theory
After all of these steps of theory analysis are explained, practical examples are given to augment the students’ learning. The analysis of an existing theory can be illustrated by examining Kielhofner’s article on temporal adaptation (13). Kielhofner does not claim that temporal adaptation qualifies as a theory. Rather, he uses the term “conceptual framework,” which could be interpreted as a theory in development. Temporal adaptation was selected as an illustration because its frame of reference concepts and assumptions can be easily understood by most students. Its stage of development may be less complex than theories that have a longer developmental history.

The frame of reference for temporal adaptation can be identified from a reexamination of Meyer’s (14) philosophy of occupational therapy.
Table 1
Analysis of a Practice Theory

<table>
<thead>
<tr>
<th>Expected Results</th>
<th>Assessment Instrument</th>
<th>Intervention Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>(What is the expected outcome?)</td>
<td>(What assessments are used?)</td>
<td>(What &quot;tools&quot; are needed and how are they used?)</td>
</tr>
<tr>
<td>Objectives or Goals in Prevention Development Remediation Environmental adjustment Maintenance</td>
<td>Tests Standardized Nonstandardized Observation reports Interview forms</td>
<td>Media or modalities (what?) Methods approaches or techniques (how?) Equipment needed (which?) Basic skills needed by client</td>
</tr>
</tbody>
</table>

Table 2
Temporal Adaptation*

<table>
<thead>
<tr>
<th>Frame of Reference</th>
<th>Concepts</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit Training, ECSlagle</td>
<td>Value of daily routines and purposeful use of time as factors in health maintenance, health regeneration, and adaptation</td>
<td></td>
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</tbody>
</table>


Analysis of a Practice Model
Analysis of the theory provides interesting information but does not provide direct application. Rather, the practitioner must translate the concepts and assumptions into assessment instruments and intervention strategies. Neville (18) attempted to develop a practice model based, in part, on temporal adaptation. Her article is used to illustrate a practice model for students. An analysis of the practice model is shown in Table 3. Expected results are listed in the left-hand column. The assessments used for self-observation forms, such as the activity history and activity configuration, worked well to facilitate group discussion of leisure time activities. Intervention strategies include group discussion, leisure skills planning, "pie of life" (19), and goal setting for action. No specific equipment is mentioned, and no prerequisite or basic skills are listed.
expected leisure skills. In other words, leisure is influenced by self-maintenance and productivity. Therefore, the three should be considered as a whole pattern or gestalt. Concentrating on the top level without considering the lower levels may be ineffective in changing life patterns.

This exercise is abbreviated. However, it does illustrate the use of theory and practice analysis as a means of identifying the dimensions of a theory and the application to practice. In addition, the analysis may pinpoint aspects where data are incomplete, where further clarification in the theory is needed, or where the practice model could be expanded to provide a more comprehensive program. The temporal adaptation theory and model have not been the subject of research studies as yet; however, analysis of theory and practice models can be useful in developing research proposals.

The Use of Theory in Research Proposals
A key step in developing any research proposal is to state the problem. The problem or hypothesis generally is based on concepts and assumptions that relate to a theory or theories. The problem statement frequently is proposed to determine the value or reality of one or more concepts and assumptions used to describe the concepts. Theory analysis identifies concepts, definitions, and assumptions. From the analysis, concepts can be selected for the research project and a hypothesis can be developed that attempts to support or refute the problem statement.

In addition to helping develop a problem statement, theory analysis can suggest relevant topics or authors for the review of literature. For example, the Kielhofner (13) article refers to Meyer and Slagle (14, 15), but analysis indicates that Reilly and Buhler (16, 17) might be good resources also. Thus, theory analysis provides a resource for developing hypotheses and identifying relevant literature.

Analysis of the practice model may suggest information for the methodology section of a proposal. Assessment instruments and intervention strategies may determine the correct data collection tools and experimental techniques.

The Use of Theory Analysis in Research Study Critique
Finally, theory analysis can help critique research studies. A knowledge of the concepts, assumptions, and frame of reference is useful in determining if the study is internally consistent. In other words, the hypotheses and methodology based on a particular theory and is a practice model derived from that theory. For example, a study that claims to be based on Ayres' theory of sensory integra-

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**Table 3**

**Temporal Adaptation Applied**

<table>
<thead>
<tr>
<th>Expected Results</th>
<th>Assessment</th>
<th>Intervention Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient will be able to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Indicate how time is spent</td>
<td>1. Activity history</td>
<td>1. Use of group discussion</td>
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<tr>
<td>2. Classify activities</td>
<td>2. Complete schedule of a typical weekday and weekend day</td>
<td>2. Leisure skills planning</td>
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<tr>
<td>4. Formulate goals for one's self</td>
<td></td>
<td>4. Goal setting for actions</td>
</tr>
<tr>
<td>5. Organize goals into priorities</td>
<td></td>
<td>Others suggested</td>
</tr>
<tr>
<td>6. Formulate activities, work on activities</td>
<td></td>
<td>1. Time questionnaires</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Story completion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Future autobiography</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Program units on recreation, dance, and crafts</td>
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</tbody>
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tion but uses methodology that includes techniques for integrating only the visual and auditory senses is suspect, unless there is a good rationale for avoiding the vestibular, proprioceptive, and tactile senses. The rationale for suspicion is based on the knowledge that vestibular, proprioceptive, and tactile input are major concepts in the theory of sensory integration. The failure to acknowledge major concepts of a theory in a research project suggests that the researchers do not have a fundamental understanding of the phenomena that the theory describes.

Knowledge of the practice model may suggest other types of errors, such as instrumentation or methodology problems. For example, a study based on Kielhofner's model of temporal adaptation should use data collection instruments that are fairly unstructured, such as an interview or open-ended checklist. Otherwise, the experimenter may lead or bias the subject or show bias that may influence the subject. As a result, the subject would provide the answers that he or she assumes the experimenter wants to hear, rather than his or her true interests and goals.

Summary
I have attempted to provide a basic model of how theories and individual practice models are initially developed and later refined. Also, I have outlined a format for the analysis of existing theories and practice models. This format has been applied in this article to the development of research proposals and the critique of completed research studies.

REFERENCES