Knowledgeability of Theories of Occupational Therapy Practitioners in Israel

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Key Words: education, occupational therapy • models, theoretical • professional practice

A reflective occupational therapist is conceived as one who values theory and uses it as a tool for setting and solving problems in clinical situations. In this study, we investigated the extent of knowledgeability of theories of occupational therapy practitioners in Israel. Data were collected in two stages: (a) through personal interviews with a representative sample of all occupational therapists (n = 98) with the use of a semistructured questionnaire and (b) through telephone interviews of recent graduates of one school (n = 40) with the use of a shortened version of the original questionnaire. The findings from an open-ended question concerning knowledgeability of theories reflected (a) the degree of the theories' scientific development, (b) the differentiation between models conceived as theories and those seen as techniques for treatment, and (c) the changes in professional curricula resulting from scientific and clinical developments in the field. In addition, a more general knowledge level, termed recognition, showed a consistent understanding of the theories and treatment modalities relevant in the practitioners' specialty areas. The results of this study indicate a need for further articulation of theory in clinical practice as well as better educational preparation of the "reflective practitioner." (Schön, 1983).

Literature Review

Occupational therapy's literature consists of various theories, models, and frames of reference, which have been developed as comprehensive frameworks, such as occupational behavior, or have been intended for specific target populations, such as sensory integration. In both forms, differences in practical applicability and research are apparent. Some theories, such as the Model of Human Occupation (Kielhofner, 1985), present an elaborate theoretical base, but their intervention methods are not clearly delineated. Others, such as the biomechanical approach (Trombly & Scott, 1983), have established assessment tools and...
treatment methods but have not developed their theoretical base. Sensory integration theory (Ayres, 1972, 1979) is perhaps the only one that can be regarded as approaching a scientific theory (Parham, 1987).

We use the terms theoretical framework and theory in this paper to connote theory, frame of reference, model, and theoretical approach, because the latter terms have no accepted definitions in the profession, as exemplified by major publications (see, for example, Mosey, 1981, 1986; Reed, 1984). We believe, however, that each of the frameworks listed encompasses, to some degree, the four elements outlined by Mosey (1981, 1986) (knowledge base, delineation of a function-dysfunction continuum, evaluation methods, and intervention methods) as well as some empirical research or clinical evidence to support the relevance of these frameworks in practice. Moreover, all of the frameworks are viewed as known theories presented in occupational therapy textbooks and publications and do not include the practitioners' personal theories in action, as previously discussed. Such personal theories must be studied ethnographically, as exemplified by Schön (1988).

Recent occupational therapy literature shows a tremendous increase in conceptual and research publications, in both books and journals, which reflects the development of the profession's knowledge base within the past 10 years.


After this increase in theoretical frameworks, general review articles and summary texts were written to define and outline the different practice areas as well as the profession at large (Katz, 1988). These texts tried to organize, classify, and present the profession's theoretical base. (See Table 1 for a presentation of the theoretical frameworks by practice area and author.)

We have identified several major theoretical frameworks. Some of these frameworks, such as the developmental theory, are presented in all three specialty areas (mental health, pediatrics, physical disabilities). Other frameworks, such as the analytical and biomechanical theories, are specific to one specialty area. Furthermore, although most frameworks are exclusively occupational therapy theories, a few, such as behavior modification and the humanistic frameworks, come from other disciplines.

We assumed that the theories presented in Table 1 reflect what students learn today in occupational

### Table 1: Classification of Theoretical Frameworks in the Occupational Therapy Literature by Specialty Area

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Theoretical Frameworks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MENTAL HEALTH</strong></td>
<td></td>
</tr>
<tr>
<td>Mosey (1970, 1986)</td>
<td>Acquisitional; analytical; developmental</td>
</tr>
<tr>
<td>Briggs, Duncombe, Howe, &amp; Schwartzberg (1979); Duncombe, Howe, &amp; Schwartzberg (1988)</td>
<td>Analytical; behavioral; cognitive disability; developmental; humanistic; human occupation</td>
</tr>
<tr>
<td>Tiffany (1985)</td>
<td>Analytical; behavioral; developmental; humanistic; occupational behavior; sensory integration</td>
</tr>
<tr>
<td>Levy (1986)</td>
<td>Analytical; behavioral; cognitive disability; developmental; human occupation; sensory integration</td>
</tr>
<tr>
<td>Bruce &amp; Borg (1987)</td>
<td>Behavioral; cognitive–behavioral; developmental; humanistic; psychodynamic</td>
</tr>
<tr>
<td><strong>PEDIATRICS</strong></td>
<td></td>
</tr>
<tr>
<td>Clark &amp; Allen (1985)</td>
<td>Explanation of play, occupational behavior; facilitating growth and development; sensory integration; spatiotemporal adaptation</td>
</tr>
<tr>
<td><strong>PHYSICAL DISABILITIES</strong></td>
<td></td>
</tr>
<tr>
<td>Trombly &amp; Scott (1977, 1983)</td>
<td>Biomechanical; neurodevelopmental; rehabilitative</td>
</tr>
<tr>
<td>Pedretti (1985)</td>
<td>Biomechanical; rehabilitative; sensory integration (occupational performance frame of reference)</td>
</tr>
<tr>
<td><strong>GENERAL REVIEWS OF OCCUPATIONAL THERAPY THEORIES</strong></td>
<td></td>
</tr>
<tr>
<td>Clark (1979)</td>
<td>Adaptive performance; biodevelopmental; facilitating growth and development; human development through occupation; occupational behavior</td>
</tr>
<tr>
<td>Llorens (1984)</td>
<td>Acquisitional; behavioral; developmental; humanistic; neurodevelopmental and neurobehavioural; occupational behavior; occupational performance; psychoanalytic; spatiotemporal adaptation</td>
</tr>
<tr>
<td>Reed (1984)</td>
<td>Reviews and organizes all theoretical approaches into various levels of models; adaptation through occupation</td>
</tr>
</tbody>
</table>

*Note: The theories have been arranged alphabetically.

therapy programs. However, the selection of and extent to which these theories are taught may differ according to the level of the program (i.e., undergraduate or graduate) and the faculty’s orientation. We also assumed in this study, on the basis of our extensive knowledge of both the Israeli and American educational systems, that the same theories are taught with the same sources and are used in practice in both countries.

A survey of the literature has shown a paucity of research concerned with actual knowledge and knowledge application among occupational therapy practitioners. An exception is a study conducted by Van Deusen Fox (1981), which focused on occupational therapists’ theory valuation, familiarity with major theorists, and recollection of concepts derived from the writings of the same theorists. Van Deusen Fox concluded that the recent graduates in her study did not place a high priority on theory development, nor did they know of many occupational therapy theorists. In a more recent study (Van Deusen, 1985), she looked at only the aspects of theory valuation and found that they correlated with academic degree and amount of experience. In a similar study, Barris and Kielhofner (1985) focused on beliefs about theory and reported an increased tendency of graduate level occupational therapists to value theory.

The purpose of the present study was to investigate the role of knowledge of theories in occupational therapy clinical practice. More specifically, we focused on the assessment of (a) the extent of practitioners’ knowledge of occupational therapy theories and (b) the extent of theory application by clinicians in various specialties. In addition, we examined the relationships between changes in educational curricula and practitioners’ knowledgeability according to recency of graduation.

Method

Subjects

To best represent all occupational therapists in the field, a random sample, about 20% of all 500 occupational therapists working in Israel, was selected for the study. The final sample consisted of 98 respondents. (Ten therapists could not be reached because they were on extended leave or had resigned their posts.)

A preliminary analysis of the data showed that the 1984–1985 graduates were represented by only 3 respondents. Therefore, the effects of recent developments in educational programs and curricula as well as changes in the field could not be analyzed. To overcome this problem, a second phase of data collection was undertaken. These data included all employed occupational therapists who had graduated in the years 1984–1986 from the one school that conferred a baccalaureate degree at the time of the study (n = 40). The two study groups will henceforth be referred to as the sample and the young cohort.

The sample consisted mostly of women (98%) and the mean age was 37 years. Sixty-four percent held a diploma in occupational therapy, 30% held a baccalaureate degree, and 6% held a master’s degree. The distribution of work settings showed that 21% worked in ambulatory services, 21% in schools or day care centers, 18% in general hospitals, and 40% in specialized hospitals (i.e., psychiatric, geriatric, or pediatric). Of the subjects working in specialty areas, 20.4% worked in physical disabilities, 46.9% in pediatrics, 19% in mental health, and 14% in geriatrics.

All of the subjects in the young cohort were women, and the mean age was 26 years. Most of these subjects worked in ambulatory services (38%) or in schools or day care centers (32%); 10% worked in general hospitals and 20% worked in specialized hospitals. The distribution of specialty areas showed that: 12% worked in physical disabilities, 60% in pediatrics, 20% in mental health, and 8% in geriatrics.

Instrumentation and Procedure

A semistructured comprehensive questionnaire consisting mostly of closed questions and two open-ended questions was used. The questionnaire had been pilot-tested on 10 experienced occupational therapists to establish reliability and validity. Phase 1 data were collected through personal interviews lasting approximately 1 hour.

Phase 2 data were collected through telephone interviews lasting approximately 30 minutes. The questions were based on a shortened version of the comprehensive questionnaire. To ensure equivalency, all of the closed questions as well as the one open-ended question concerning knowledgeability of theories were identical to the questions asked on the longer questionnaire.

Two levels can be differentiated in the knowledgeability of theories: (a) internalized knowledge, defined as the respondent’s spontaneous verbalization of information on theoretical models in response to an open-ended question and (b) a recognition effect, which reflects the respondent’s ability to identify selectively relevant items of knowledge that may not have been internalized enough to be verbalized spontaneously.
Three sets of variables were examined:

- **Internalized knowledge**—The respondents were asked to list the theoretical models known to them, the extent of their familiarity with each, and the extent of their use of each in practice. They were also asked about basic concepts, assessment modalities, and treatment modalities known to them as related to, or derived from, each model. The latter group of variables served to validate the knowledge variables presented here, thus yielding satisfactory results.

- **Recognition of theoretical models**—From a comprehensive list of theoretical models, the respondents were asked to specify the degree to which they applied each in clinical practice.

- **Recognition of treatment modalities**—From a list of treatment modalities, the respondents were asked to specify the degree to which they applied each in clinical practice.

### Results

The results are presented in three sections, each according to years of professional experience and specialty area: (a) internalized knowledge of theoretical models, (b) recognition of theoretical models and treatment modalities, and (c) overall structure of knowledgeability of theories and application of modalities.

#### Internalized Knowledge of Theoretical Models

In response to the open-ended question concerning knowledgeability, the respondents mentioned nine principal theoretical models. These models can be grouped into three categories: (a) two models—sensory integration and neurodevelopmental—were known to a majority of respondents; (b) three models—behavioral–acquisitional, cognitive, and social–occupational behavior—were known to fewer respondents, with considerable variance among the 4 groups compared; and (c) four models—psychodynamic, developmental, rehabilitative, and biomechanical—were familiar to or were considered a theoretical model by only a few respondents. The number of models mentioned by each respondent ranged from 0 (6 respondents in the sample could not recall even one theoretical model) to 7, with a mean of 2.7 models per respondent in the sample and 3.8 in the young cohort. The extent of the respondents' familiarity with the models is shown in Figure 1.

The distribution of responses regarding the use of the models in practice corresponds with the distribution of the degrees of familiarity. As expected, some of the respondents who said they were familiar with a model did not actually use it in practice. In most cases, however, the degree of use corresponded directly to the degree of familiarity.

By plotting the degree to which the theoretical models are used in specialty areas, we can better understand the differential application of the models in the various practice areas (see Figure 2).

The findings emphasize the relevance of the various theoretical models to the respective specialty areas, as established by clinicians. In the area of physical disabilities, the neurodevelopmental model was applied by the majority of the respondents, whereas the sensory integration, social–occupational behavior, rehabilitative, and biomechanical models were applied to a considerably lesser extent. In the area of pediatrics, the sensory integration model was used most often, followed by the neurodevelopmental model and then the behavioral–acquisitional and developmental models. In the area of mental health, none of the models were applied directly by the majority of the clinicians. However, the social–occupational behavior and behavioral–acquisitional models were applied more often than the others, followed by the cognitive and psychodynamic models and, to a lesser extent, the sensory integration and rehabilitative models. In the area of pediatrics, the neurodevelopmental model was applied most often, followed to a lesser extent by the social–occupational behavior, sensory integration, and rehabilitative models.

#### Recognition of Theoretical Models and Treatment Modalities

The titles of the theoretical approaches, or models, presented to the respondents in a closed question were selected from the relevant course materials given in the professional schools (see Table 2). Most of these models are compatible with the models presented earlier, with two exceptions—the psychogeriatric approach and the occupational behavior model. The respondents did not mention the psychogeriatric approach in the open-ended question, nor is this approach identified explicitly in the literature. Nevertheless, it was included because it is a general approach used in geriatrics and has been taught in occupational therapy schools for the past several years. The occupational behavior model, mistakenly, was not mentioned specifically, although it may have been subsumed by some of the respondents in their answers concerning the social–community approach. We know from the debriefing that this was the case for the young cohort. The inclusion of the occupational behavior model in the social–community approach appears to be conceptually sound, as analyzed by Sharrott (1986), because the occupational behavior...
The study findings suggest that the application of the theoretical models in practice is, for most respondents, done on the basis of selection by needs according to specialty area. As shown in Table 2, only the behavioral model (for both the sample and the young cohort), the cognitive model for the sample, and the social–community model for the young cohort showed no statistically significant differences in the extent to which they are applied in the various specialty areas. This makes sense, because these models are more general and, as such, are related to a variety of problems. In the case of all other theories, there are statistically significant differences in the extent of application in treatment of the theoretical approaches in the four specialty areas.

A comparison of the findings in Table 2 with those in Figure 2 emphasizes the aforementioned recognition effect. Such an effect appears to be present with respect to all models, with the exception of the sensory integration and neurodevelopmental models. That is, the percentage of occupational therapists who reported, in response to the closed question, that they apply these models is consistently higher than the parallel percentages shown in Figure 2. Two extreme examples may underline this effect. First, concerning the psychodynamic approach, 94% of the occupational therapists specializing in mental health in the sample and 100% of those in the young cohort, in
response to the closed question, claimed they apply this approach at least sometimes in treatment. However, only 25% of the occupational therapists (in both groups) in this specialty said they apply this approach in response to the open-ended question. Second, concerning the developmental approach, 100% of the occupational therapists specializing in pediatrics in the sample and 92% in the young cohort, in response to the closed question, claimed they apply this approach. However, only 18% of all occupational therapists in this specialty (in both groups) said they apply this approach in response to the open-ended question.

To analyze the overall structure of knowledge ability of theories and their application, we examined another dimension of clinical practice—the selective use of treatment modalities among specialty areas. The use of modalities is also a dimension of knowledge application, along with theory application, and may therefore contribute to a better understanding of the role of theoretical knowledge in occupational therapy practice.

Table 3 presents the extent to which nine groups of treatment tools are used by specialty areas. The data in Table 3 for the sample and the young cohort were combined, because there were no statistically significant differences between the two groups. Eight of the nine groups of treatment tools were applied to a statistically significant different extent in the four specialty areas, as follows:

- Physical disabilities—Therapists used primarily activities of daily living and exercise equipment.
Table 2
Respondents’ Application of Theoretical Approaches in the Treatment Process by Specialty Area (in %)

<table>
<thead>
<tr>
<th>Theoretical Approach</th>
<th>Sample Specialty Area</th>
<th>Young Cohort Specialty Area</th>
<th>p'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Physical Disabilities (n = 19)</td>
<td>Pediatrics (n = 46)</td>
<td>Mental Health (n = 18)</td>
</tr>
<tr>
<td>Sensory integrative, neurodevelopment</td>
<td>Often 53 89 22 69</td>
<td>.001 60 88 13 67</td>
<td>Sometimes 37 7 28 15</td>
</tr>
<tr>
<td>Behavioral</td>
<td>Often 0 9 17 8</td>
<td>.05 0 0 12 25 33</td>
<td>Sometimes 63 72 72 46</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Often 37 22 5 31</td>
<td>.01 20 4 38 0</td>
<td>Sometimes 42 65 67 54</td>
</tr>
<tr>
<td>Social–Community</td>
<td>Often 26 17 67 31</td>
<td>.01 20 17 43 67</td>
<td>Sometimes 42 48 17 54</td>
</tr>
<tr>
<td>Biomechanical</td>
<td>Often 32 0 0 23</td>
<td>.05 0 0 0 67</td>
<td>Sometimes 10 2 6 8</td>
</tr>
<tr>
<td>Developmental</td>
<td>Often 16 91 22 8</td>
<td>.001 60 88 13 0</td>
<td>Sometimes 21 9 28 15</td>
</tr>
<tr>
<td>Psychodynamic</td>
<td>Often 0 7 44 0</td>
<td>.01 0 0 8 50 0</td>
<td>Sometimes 10 30 50 8</td>
</tr>
<tr>
<td>Psychogeriatric</td>
<td>Often 5 0 0 39</td>
<td>.001 0 0 0 100</td>
<td>Sometimes 42 0 28 23</td>
</tr>
</tbody>
</table>

Note. The respondents were asked, “To what extent do the following theoretical approaches guide your choice of treatment?” ns = not significant.

Based on $x^2$ tests.

- Pediatrics—Therapists used mostly games and exercise equipment, but also activities of daily living and learning modalities.
- Mental health—Therapists used mostly expressive techniques and crafts, followed by activities of daily living and games, and then workshops, work models, and maintenance work, which were applied only to a modest extent, but more than in the other specialty areas.
- Geriatrics—Therapists used mostly activities of daily living and exercise equipment.

Overall Structure of Knowledgeability of Theories and Application of Modalities

To examine the overall structure of the clinical field in terms of the application of theories and tools, we used a Smallest Space Analysis (SSA). This procedure provides spatial plotting of the variables that reflects the correlations among them: The higher the correlation between two variables, the smaller the distance between their representative points in the mapping. According to this principle, the mapping shows the overall structure of the association among the full set of variables considered (Guttman, 1968; Lingoes, 1965; Shepard, 1978).

Three groups of variables were processed through the SSA: (a) the theoretical models applied in treatment (the closed question), (b) the groups of treatment tools applied in practice, and (c) the patients’ functional problems, on which occupational therapists concentrate in their work. The latter group of variables comprises eight problem areas: motor, neurology, sensory integration, development, aging, social functioning, cognition, and mental. We assumed that the degree to which occupational therapists concentrate on any of these problem areas reflects their area of specialization.

Figures 3 and 4 show the plotting of the three groups of variables in two-dimensional mappings by means of an SSA for the sample and the young cohort, respectively. The overall structure in both mappings is similar and forms a circumplex (i.e., a circular structure). Within the circumplex, four zones can be identified clearly as representing the four major areas of specialization (starting from the left upper portion of the mappings and proceeding clockwise): geriat-
Table 3
Respondents' Use of Treatment Tools by Specialty Area (in %)

<table>
<thead>
<tr>
<th>Group of Treatment Tools</th>
<th>Extent of Use</th>
<th>Physical Disabilities (n = 25)</th>
<th>Pediatrics (n = 70)</th>
<th>Mental Health (n = 27)</th>
<th>Geriatrics (n = 16)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>Primary</td>
<td>92</td>
<td>53</td>
<td>41</td>
<td>81</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>4</td>
<td>44</td>
<td>48</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Games</td>
<td>Primary</td>
<td>86</td>
<td>74</td>
<td>37</td>
<td>25</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>52</td>
<td>22</td>
<td>56</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>12</td>
<td>4</td>
<td>7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Learning modalities</td>
<td>Primary</td>
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<td>46</td>
<td>15</td>
<td>25</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>48</td>
<td>50</td>
<td>73</td>
<td>75</td>
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<tr>
<td></td>
<td>Not at all</td>
<td>29</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Exercise equipment</td>
<td>Primary</td>
<td>80</td>
<td>81</td>
<td>22</td>
<td>63</td>
<td>.001</td>
</tr>
<tr>
<td></td>
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<td>10</td>
<td>19</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>4</td>
<td>9</td>
<td>59</td>
<td>6</td>
<td></td>
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<tr>
<td>Crafts</td>
<td>Primary</td>
<td>8</td>
<td>1</td>
<td>52</td>
<td>25</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>84</td>
<td>53</td>
<td>30</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>8</td>
<td>46</td>
<td>18</td>
<td>12</td>
<td></td>
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<tr>
<td>Expressive techniques</td>
<td>Primary</td>
<td>4</td>
<td>6</td>
<td>63</td>
<td>12</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
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<td>76</td>
<td>22</td>
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<tr>
<td></td>
<td>Not at all</td>
<td>44</td>
<td>18</td>
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<td></td>
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<td>11</td>
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<td>Work models</td>
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<td>15</td>
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<td>17</td>
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<td>13</td>
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<tr>
<td></td>
<td>Not at all</td>
<td>80</td>
<td>80</td>
<td>55</td>
<td>87</td>
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<td>Maintenance work</td>
<td>Primary</td>
<td>8</td>
<td>1</td>
<td>11</td>
<td>6</td>
<td>.01</td>
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<tr>
<td></td>
<td>Secondary</td>
<td>8</td>
<td>7</td>
<td>41</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>84</td>
<td>92</td>
<td>48</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

Note. The respondents were asked, "To what extent do you use the following groups of tools in your work?" ns = not significant.

* Based on x² tests.

rics, physical disabilities, pediatrics, and mental health. This structure is actually a product of two orthogonal dimensions: (a) the age dimension, along which pediatrics and geriatrics constitute opposing poles and (b) the functional dimension, which contrasts physical disabilities and mental health.

A comparison of Figures 3 and 4 points to some differences between the sample and the young cohort. The main difference concerns variables related to cognitive problems and their treatment. In the sample, the respondents who worked in the areas of physical disabilities and pediatrics tended to concentrate more on cognitive problems, apply a cognitive theoretical model, and use learning modalities in treatment. In the young cohort, the cognitive model was applied more often in the area of mental health, and a concentration on cognitive problems as well as the use of learning modalities seemed to occur in the mental health and pediatrics areas rather than in the physical disabilities area. This difference seems to result from a differential approach to cognitive disabilities in the two groups. In the sample, only a few respondents mentioned the cognitive theory, and all of them work with brain injuries using mainly perceptual-cognitive retraining derived from neuropsychological approaches. In the young cohort, most of the respondents mentioned Allen’s (1985) cognitive disability theory, which was originally developed and taught within psychiatric occupational therapy.

Another difference between the respondents in the young cohort and the sample concerned the use of activities of daily living in treatment. Whereas activities of daily living were applied by the sample both in geriatrics and in physical disabilities, they were applied by the young cohort mainly to problems of aging (i.e., in geriatrics).

Still, the overall structure (i.e., the spatial distribution of most variables) is similar for both groups of respondents, which indicates the existence of a common professional approach in terms of theory and treatment media application to functional problem areas.
Discussion

The findings of this study suggest that, in general, the theoretical models mentioned by the practitioners in Israel, on the level of internalized knowledge, are congruent with the classification of theoretical frameworks based on the literature (see Table 1). The data derived from occupational therapy clinicians seem to reflect to a great extent the theoretical developments and conceptions outlined in the professional writings. That is not to say, with respect to some models at least, that there appears to be a time lag between their theoretical formulation and their applicability to practice.

We found major differences in the degree of knowledgeability of the different theories. Three factors may explain these differences on the level of internalized knowledge. First, the differences may reflect the degree of the theories' development in conceptual clarity, empirical support, and availability of specific evaluation and treatment methods, as well as clearly defined target populations. The sensory integration and neurodevelopmental approaches are clear examples of theories that have defined target populations for which their methods are appropriate and effective. These findings are commensurate with Van Deusen Fox's (1981) finding that Ayres's theories and concepts related to her sensory integration theory are best known to occupational therapists in the United States.

Second, the results may reflect the degree to which certain theories are viewed as theories rather than as methods and techniques for treatment. For example, the assessment and treatment techniques of the biomechanical or rehabilitative approaches are widely used to treat physical disabilities, but these approaches are not identified as theories and were therefore mentioned by only a few respondents. Llorens (1984) urged the profession to articulate and develop theoretical formulations of these approaches as related to occupational science. This was attempted recently by Pedretti (1985), who presented an occu-
pational performance perspective emphasizing that purposeful activity must be part of each occupational therapy theoretical framework for treatment in physical disabilities.

Third, knowledgeability relates to changes in the profession, which are reflected in the curricula of the occupational therapy schools. Considerable theoretical developments in occupational therapy have occurred during the past decade. These developments greatly affected the professional education process. Examples are the Model of Human Occupation and the cognitive disability theory, which are now being taught. The effect of these developments is also reflected in the present study by the difference between the sample and young cohorts, where the young cohorts mentioned these two models more often than did the sample (see Figure 1). The educational influence can be clearly seen in the placement of cognitive theory in the spatial configuration (see Figures 3 and 4), in which the young cohort perceived the cognitive theory as applied only in mental health, the area in which this theory was taught. It will be interesting to see how clinical experience and new publications shape and expand therapists' understanding of the structure of the profession.

Another change may be seen in the limited number of respondents who were knowledgeable about psychodynamic theory. Psychodynamic theory was the prevalent theory in mental health occupational therapy in the 1960s and early 1970s. This change may be attributed partly to the existence of the art therapy profession, which applies psychodynamic theory, thus leading the occupational therapy profession to neglect further development of this theoretical framework. New occupational therapy literature related to the psychodynamic theory is limited; the schools' curricula reflect this trend as well.

At the recognition level of knowledge, the respondents showed a consistent understanding of their field by matching appropriate theories and treatment modalities to the areas in which they worked. This is reflected in the degree of use as well as in the overall configuration presented in Figures 3 and 4, which was repeated for the sample and the young cohort. The configuration provides not only a division into four areas corresponding to the major specialty areas, but
also a circular continuum of theories and modalities applied to problem areas in which the interfaces can be identified and used to plan educational programs.

These findings are reassuring, but it should be noted that professional maturity must be reflected in internalized knowledge, that is, in the therapist's active repertoire, which he or she is able to articulate whenever needed. This kind of knowledgeability includes both reflection in action and reflection on reflection in action (Schön, 1988). If theories are the tools for thinking and structuring practice (Parham, 1986), perhaps we are still not thinking enough with theories. The respondents' degree of familiarity with theories (see Figure 1) suggests that even for the theories mentioned spontaneously, only 50% of the respondents rated one theory (sensory integration) as very familiar, and 30% or fewer claimed high familiarity with all other theories. This result can be interpreted as low self-confidence. Alternatively, perhaps the current theories do not give practitioners what they need, in which case the practitioners generate their own action theories. This still does not negate the practitioners' familiarity with the known theories; it may, however, reduce the practitioners' use of these theories.

In summary, this study aimed to provide insight into occupational therapists' understanding of the theoretical frameworks in their field. It is important that our practitioners articulate their theoretical knowledge for intervention. The articulation of theory in practice will guide treatment, thus enabling therapists to provide better patient care as well as raising their self-confidence and professional status. Furthermore, the differences observed between the sample and the young cohort in their application of theoretical models in different specialty areas suggest the need for reconsideration, and perhaps restructuring, of occupational therapy curricula. Such changes, as well as knowledge development, should be undertaken as a collaborative effort by university-based researchers and theoreticians and practitioners (Schön, 1988).

Recommendations for Future Research

We offer several recommendations for the continuation of this line of investigation. First, recent graduates should be studied to assess changes in the profession. Second, comparisons among groups from various educational levels should be made to determine whether these levels differ in their knowledge of theories. Third and most important, this study should be replicated in many countries to obtain a sense of the universal understanding of the occupational therapy profession. If, concurrently, ethnographic studies following Schön's (1988) research paradigm were undertaken, we could better understand occupational therapists' knowledgeability of theories.

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References


**Correction** for "Normal Adult Performance on Constructional Praxis Training Tasks" by Maureen E. Neistadt (July 1989, Vol. 43, No. 7):
The top row of patterns in Figure 1 (p. 450) should be labeled Pattern 3, Pattern 2, Pattern 1. The first number in line one of Table 4 (p. 452) should be 4.66, and the first three numbers in the last line should be 10.37, 4.95, and 3.64. The first three numbers in the first line of the bottom section of Table 5 (p. 453) should be 2.07, 0.93, and 0.98. In the Discussion section, the last line in the first paragraph under Speed (p. 453) should refer to Pattern 1 and should contain the numbers 1.02 and 4.08 min.
The author apologizes for these errors.