Scores from the Learning Style Inventory (LSI), Your Style of Learning and Thinking (SOLAT), and Fieldwork Performance Reports (FWPRs) were used to assess the relationship between learning styles and clinic performance of 33 occupational therapy students who graduated from the University of Puget Sound in May 1983. The LSI was administered during the first semester of professional studies. The SOLAT was administered during the second fieldwork experience. There were significant correlations between scores from both learning style instruments and components of the Physical Disabilities Fieldwork Performance Report (PDFWPR) and Mental Health Fieldwork Performance Report (MHFWPR) scores. Results indicate that a logical, sequential cognitive style enhanced PDFWPR scores, but negatively affected some MHFWPR scores. A preference for active experimentation contributed to both PDFWPR and MHFWPR scores. Regression analysis identified the LSI Active-Reflective score as the best predictor of the PDFWPR total. Results suggest further research to assess learning styles as predictors of clinic performance and guides for curriculum design.

Effective clinic performance is the ultimate goal of occupational therapy education. The value of fieldwork experience in achieving that goal has been recognized and affirmed by practitioners and educators throughout the history of the profession (1, 2). Occupational therapy is among the 20 fastest growing occupations, according to recent US Bureau of Labor Statistics, and the bureau predicts continued growth for allied health professions through 1995 (3). Despite dimensions of change that are affecting professional education (1, 4), the role of fieldwork as a vital complement to academic preparation can be projected through the next decade.

Katz and Mosey (5) stated that the number of applicants for graduate and undergraduate programs in occupational therapy is greater than the number of available openings. Programs, therefore, must attempt to accept those students who are most qualified upon entry and most likely to function effectively as practitioners and professional leaders. In addition, Katz and Mosey suggested that research to identify factors contributing to fieldwork performance may help clarify curriculum design. Presseller (1) showed that facilitating the application of theory to practice is the most difficult task in the educational process.

Numerous studies have correlated students' performance in fieldwork settings with scores from a variety of instruments, including the Florida Placement Examination (6, 7), the Minnesota Multiphasic Personality Inventory (7), the Strong Vocational Interest Blank (7, 8), the Allport-Vernon-Lindzey Study of Values (8), the Edwards Personal Preference Schedule (8), and grade point averages (5, 6, 8, 9). Some correlations have been found to be significant at the level of $p \leq .05$ (5-7), but most have had little value in...
predicting performance in a clinical setting. Anderson and Jantzen (6) concluded "... It appears that the predictors and criteria are merely unrelated" (p 77). They noted the importance of predicting success as early as possible, preferably before the student makes a commitment to the professional program. Bailey, Jantzen, and Duntelman (7) indicated that the Strong Vocational Interest Blank may have more predictive value than other measures, but their results were inconclusive.

All of the references cited concluded that there is a need for more research to determine predictors for clinic performance in occupational therapy. Ford (9) noted that clinical experience usually occurs near the end of the educational process and that performance in the clinic may be the student's first indicator of success or failure as a clinician. Accurate predictors would serve not only as preselection criteria but also as guides for student advisement and for planning effective instruction (10-12).

A recent study by Teske and Spellbring (4) pointed out that a pattern of declining college enrollment is forecast for the next 20 years. This pattern will be accompanied by changes in the characteristics of higher education students, including an increase in the number of nontraditional students (e.g., older women, minorities, and high school dropouts). Teske and Spellbring suggested that educational strategies in response to change include the modification of occupational therapy curriculum designs and fieldwork patterns and the promotion of "development in the areas of student learning styles, teaching methodology, and student evaluation" (4, p 672). In view of the changing applicant pool, Holm (2) stressed the need for educational programs to use selection criteria that represent occupational therapy professional practice.

Numerous studies reflected interest in the personality types and affective behaviors of occupational therapy students (2, 13-15). In addition to traditional achievement measures, personality characteristics are commonly considered in admissions procedures (16-18). However, Dietrich (19) contended that many affective constructs are poorly defined and that "the development of allied health personality profiles is still in its infancy" (p 230). She pointed out that personality may change with maturation and experience and that the nontraditional student may present a different profile from the "college-age" applicant on standardized tests developed from a particular framework of psychology. Lafferty (20) also emphasized the varied changes that may occur during the time committed to professional studies. He stated that the curriculum should be designed to reinforce and augment the characteristics for which students were originally selected.

Rezler and French (12) compared personality types and learning styles of undergraduate occupational therapy students with those of students in five other allied health professions. Results indicated the need for longitudinal studies of learning styles to test the hypothesis that students will exhibit higher motivation and achievement levels if they are allowed to learn according to their preferences. Rezler and French also asserted that teaching styles would need to be compatible with learning preferences.

Llorens and Adams (10) surveyed 77 occupational therapy students over a three-year period using the Canfield-Lafferty Learning Styles Inventory, which focuses on affective components of teaching-learning situations. Based on the results, some changes in the presentation of course material were made at the group level in response to learning style preferences. In addition, scores from the Canfield-Lafferty inventory were used in advising some individual students. Although the authors concluded that accurate, highly individualized programming was not possible with data from the instrument, the results of the study were used effectively to increase faculty and student awareness of learning style preferences.

Using a pretest-posttest design, Rogers and Hill (11) studied the learning style preferences of two groups of occupational therapy students. Learning style preference was defined as "the preferred mode of obtaining knowledge" (p 78). They administered the Learning Preferences Inventory developed by Rezler and French (12) before and after a period of basic professional course work. Results were not consistent between samples, but they suggested that an educational program may influence learning style preference through teaching strategies that foster attitudes and reinforce behaviors congruent with a particular mode of learning.

Cunningham and Trickey (21) used Kolb's Learning Style Inventory in a preliminary study to determine the correlation between learning styles and performance in academic and clinical course work. No significant correlation was found between any of the learning styles and fieldwork performance. However, results led to the conclusion that further investigation is warranted.

The purpose of this study is to
examine the relationship between learning styles and clinic performance.

**Methods**

**Subjects**

Subjects were selected from occupational therapy students who graduated from the University of Puget Sound in May 1983. Those individuals included in the study met the following criteria:

1. Both required Fieldwork II experiences were completed by April 1, 1984.
2. Fieldwork Performance Reports were returned by April 15, 1984.
3. Written permission was granted for all scores to be used in this study.

Eighty-nine percent of the graduating class, 29 women and 4 men, met the criteria for the inclusion. Twenty-six of the subjects were undergraduates; the remaining seven were graduate students.

**Instruments**

Two instruments were used to assess learning styles. *Your Style of Learning and Thinking—Form C* (SOLAT) (22) seeks to classify subjects according to style of processing information. The self-administered test is based on extensive analysis of research concerning cerebral hemispheric functions. Each of 40 items presents the subject with three choices that represent a cognitive style characterized by right or left hemisphere domination or by integration. The instrument evaluates an individual’s tendency toward processing information in a logical, sequential, systematic fashion described as typical of the left hemisphere (SOLAT-L); in a more intuitive, synthetic, propositional manner characteristic of the right hemisphere (SOLAT-R); or in a style that uses a logical, an intuitive, or an integrated approach as needed (SOLAT-I).

The second instrument used, Learning Style Inventory (LSI), was designed to assess strengths and weaknesses in learning styles and is based on Kolb’s experiential learning theory (23, 24). Kolb’s theoretical model describes a cycle in which experiences are used to develop concepts, which then guide the selection of new experiences. The learning process as reflected by the model involves two primary dimensions. The first is represented by an axis with Abstract Conceptualization at one end and Concrete Experience at the other. The second is represented with Active Experimentation at one end and Reflective Observation at the other.

A nine-item, self-description questionnaire asks respondents to order by rank four words in a way that best describes their learning styles. One word in each item represents one of the four steps in the experiential learning cycle. By adding the scored items in each column, respondents obtain four scores that indicate their relative preference for each learning mode. Two composite scores are computed from column totals—the Abstract Conceptualization total minus the Concrete Experience total (Abstract-Concrete) and the Active Experimentation total minus the Reflective Observation total (Active-Reflective). A positive Abstract-Concrete score indicates that the subject prefers abstract conceptualization to concrete experience; a negative Abstract-Concrete score indicates the opposite. The magnitude of the score reflects the strength of the preference. The Active-Reflective score is interpreted in the same manner.

Only the composite scores were used in the present study. However, the Abstract-Concrete and Active-Reflective scores can be plotted in quadrants formed by the axes of the two dimensions. Dominant learning styles identified by the quadrants are described in the manual (23).

Clinical performance was assessed using the Level II Fieldwork Performance Report (FWPR). The FWPR is divided into five components: Data Gathering, Treatment Planning, Treatment Implementation, Communication Skills, and Professional Characteristics. The FWPRs were scored according to the AOTA Scorer’s Guide (25), and there were 212 possible points. Scores for each subject were obtained for fieldwork in mental health dysfunction by using the MHFWPR and physical disabilities by using the PDFWPR.

**Procedure**

All subjects completed the LSI in the fall of 1981 during their first semester. Scores for the SOLAT and written permission to use all scores for this study were obtained during the second Fieldwork II experience. FWPR scores were computed when the clinical experiences were completed in mental health dysfunction and physical disabilities settings.

Pearson product-moment correlation coefficients were computed to determine the relationship between FWPR component scores and the learning style variables. To determine whether a combination of variables could predict outcomes on the FWPR, the researcher used a stepwise multiple regression that selected a combination of variables producing the maximum $R^2$ (the
percentage of one variable explained by another variable) improvement on each step. Multiple regressions were also performed on the combination of variables to determine the relative contribution of each learning style variable to the FWPR score variance. A significance level of \( p \leq .05 \) was established.

Results

Table 1 gives information that describes the sample. Table 2 presents the Pearson product-moment correlation coefficients of the various learning style indicators and the FWPRs. A significant correlation was found between the SOLAT-L and PDFWPR Professional Characteristics scores. There were significant positive correlations between the LSI Active-Reflective score and all of the PDFWPR component scores. Significant negative correlations were found between the SOLAT-L and MHFWPR Treatment Planning, Treatment Implementation, and total scores. There was a significant positive correlation between the LSI Active-Reflective score and the MHFWPR Communication Skills score.

A multiple regression revealed that the five learning style indicators accounted for 39.4% of FWPR score variance in physical disabilities. An analysis of variance yielded an \( F \)-ratio (variance between scores divided by variance within scores) significant at the \( p \leq .05 \) level. The learning styles accounted for 17% of the FWPR score variance in mental health dysfunction, but this result was not significant.

The stepwise regression (which selects in descending value order the independent variables that contribute most to changes in the dependent variable) showed that each of the five learning style scores significantly affected variance in the physical disabilities FWPR total. Results are summarized in Table 3. Stepwise regression did not indicate that any of the learning style scores contributed significantly to changes in the mental health dysfunction FWPR total. However, it was noted that the LSI Active-Reflective and SOLAT-L scores, which contributed most to changes in the physical disabilities FWPR total, also contributed most to changes in the mental health dysfunction FWPR total. For mental health dysfunction, the SOLAT-L score entered the regression first, and both scores affected variance in the MHFWPR total at a level of \( p \leq .10 \).

Discussion

The findings suggest that a learning style characterized by logical, systematic processing of infor-

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Data Gathering</th>
<th>Treatment Planning</th>
<th>Treatment Implementation</th>
<th>Communication Skills</th>
<th>Professional Characteristics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLAT-R</td>
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<td>.149</td>
<td>.395</td>
<td>-.063</td>
<td>-.262</td>
<td>-.405</td>
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<td>.178</td>
<td>.284</td>
<td>.307†</td>
<td>-.249</td>
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<tr>
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<td>-.237</td>
<td>-.234</td>
<td>-.183</td>
<td>-.159</td>
<td>-.018</td>
<td>-.164</td>
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<tr>
<td>LSI Abstract-</td>
<td>-.648</td>
<td>-.128</td>
<td>-.076</td>
<td>.004</td>
<td>.070</td>
<td>-.072</td>
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<tr>
<td>Concrete</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSI Active-</td>
<td>.675*</td>
<td>.567*</td>
<td>.535*</td>
<td>.481†</td>
<td>.397†</td>
<td>.558*</td>
</tr>
<tr>
<td>Reflective</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Data Gathering</th>
<th>Treatment Planning</th>
<th>Treatment Implementation</th>
<th>Communication Skills</th>
<th>Professional Characteristics</th>
<th>Total</th>
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<tbody>
<tr>
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<td>-.092</td>
<td>.151</td>
<td>.279</td>
<td>.104</td>
<td>.065</td>
<td>.168</td>
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<td>-.161</td>
<td>-.380†</td>
<td>-.362†</td>
<td>-.219</td>
<td>-.062</td>
<td>-.304†</td>
</tr>
</tbody>
</table>
Table 3

| Learning Style          | R²  | R² change* | F-ratio | p  
<table>
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<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
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<tr>
<td>LSI Active-Reflective</td>
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<td>.3116</td>
<td>14.035</td>
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<tr>
<td>SOLAT-L</td>
<td>.3595</td>
<td>.0479</td>
<td>8.421</td>
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<td>LSI Abstract-Concrete</td>
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<td>.0118</td>
<td>5.709</td>
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</tr>
<tr>
<td>SOLAT-R</td>
<td>.3940</td>
<td>.0225</td>
<td>3.512</td>
</tr>
</tbody>
</table>

* R² change x 100 = percent of variance of PDFWPR total accounted for by each learning style variable.


The findings of this study suggest that further research is necessary to assess possible differences among the criteria used to evaluate students in physical disabilities practice and in mental health dysfunction settings.

The five learning style variables accounted for 39.4% of the variance in the PDFWPR total. Stepwise regression analysis determined that the LSI Active-Reflective score contributed 31.16% of the variance, isolating this learning style variable as the single best predictor in the study. The SOLAT-L score was the next highest contributor at 4.79%. Although the other three learning styles contributed only a small percentage to PDFWPR total variance, the contribution of each was also statistically significant (see Table 3). These findings suggest that the evaluation of students’ learning styles may identify a profile of predictors of clinical performance outcomes in physical disabilities.

Gay (26) stated that correlation coefficients below .50 are inadequate for purposes of group or individual prediction, “although a combination of several variables in this range may yield a reasonably satisfactory prediction” (p 188). Coefficients for significant correlations between learning style and FWPR variables in this study ranged from .304 to .675 (see Table 2). The statistical analysis indicated that LSI and SOLAT scores, considered in combination, may serve as substantial predictors of clinical performance scores (see Table 3).

Intercorrelations between SOLAT and LSI scores were below .150, and none was significant. The low level of intercorrelation indicated that instruments were independent measures of learning style and that therefore each may contribute meaningfully to formulating a professional profile.

Recommendations for Future Research

The findings of this study suggest several directions for further research on learning styles and clinic performance. Further research may determine the influence of learning styles on clinic performance in mental health dysfunction settings and establish the predictive power of the learning style variables. Also, when considered with findings from similar examinations of learning styles and clinic performance in physical disabilities, such research may contribute to the development of stu-
dent selection criteria that more accurately reflect the practice of occupational therapy (2).

Others have suggested research to study the effects of time and curriculum on learning styles (11). In the present study, SOLAT scores may have been affected by the educational process. However, the low correlations between most SOLAT scores and fieldwork performance scores did not indicate a major effect.

Additional recommendations for further research include the exploration of using knowledge of occupational therapy student learning styles in the design and presentation of professional course content (10). Student advisement is another area in which the use of learning styles evaluation results may be examined for value in minimizing potential problems in clinic performance. Wong (27) noted, "Improvement in teaching strategies alone will not guarantee transfer of knowledge to the clinical practice. Since learning is a self-active process, the student must assume an active role in order to promote transfer of learning" (p 166). Understanding learning style strengths and weaknesses may facilitate the educational process for students and educators and guide both toward achieving the goal of effective clinic performance.

Summary

Scores from the LSI and SOLAT were correlated with FWPR component scores for 33 occupational therapy students in physical disabilities and mental health dysfunction fieldwork. Results indicate that a logical, sequential cognitive style enhances clinic performance in physical disabilities, but negatively affected some components of performance in mental health dysfunction settings. A preference for active experimentation correlated significantly with all components of the PDFWPR and with MHFWPR Communication Skills. The LSI Active-Reflective score emerged as the single best predictor in the study. The SOLAT-L and LSI Active-Reflective scores contributed most to variance in both PDFWPR and MHFWPR totals.

ACKNOWLEDGMENTS

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REFERENCES