Prediction of Academic and Clinical Performance of Occupational Therapy Students in an Entry-Level Master’s Program

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Key Words: outcome and process assessment (health care) • patient compliance • school admission criteria

Objective. The relationships between clinical outcomes and predictors used to screen applicants for entrance into a Master in Occupational Therapy (MOT) program were examined.

Method. MOT student records from 1986 to 1992 were used to gather data for three dependent variables and six predictor (independent) variables. The dependent variables used to gauge student success were grade point average in occupational therapy courses (OT-GPA), client attendance at an on-site clinic, and therapy outcomes of clients at that clinic. The predictor variables were undergraduate GPA, scores on the three sections of the Graduate Record Examination, reference forms, and essays.

Results. The models used to predict OT-GPA and therapy outcomes were significant (p < .05), and the incremental validity of several predictors was established. The model used to predict client attendance was not significant.

Conclusion. The findings regarding OT-GPA support the continued use of all the predictors except the reference forms. Although it was possible to develop a model to predict client outcomes, the usefulness of the model is difficult to interpret.

Luca and Brockway (1980) lamented the “lack of systematic studies to evaluate the effectiveness of those selection processes currently in use” (p. 29) to admit students into occupational therapy programs. That statement is still accurate today. A search of the literature revealed only a handful of studies on this topic.

There are two aspects to the problem of developing effective selection processes: the identification and measurement of predictors and the identification and measurement of criteria suitable for gauging student success. The most commonly investigated relationship appears to be between grades, considered both collectively and in single courses, and performance on field placements, and positive correlations have been found between grades and fieldwork supervisors’ ratings. However, the correlations have usually been low and often not significant (Anderson & Jantzen, 1965; Best, 1994; Englehart, 1957; Ford, 1979; Katz & Mosey, 1980; Lind, 1970; Mann & Baniak, 1985).

There is also some evidence that previous academic performance predicts performance in occupational therapy courses. Bridle (1987) found that a group of Canadian occupational therapy students selected on the basis of academic scores performed better in their courses than did students selected either on the basis of an interview...
or at random. Posthuma and Sommerfreund (1985) found positive correlations between previous academic performance and grades in occupational therapy for both a group who entered as high school students and a group who entered as university students.

Predictors such as interviews, letters of reference, essays, and aptitude and personality tests have been used to screen applicants for entrance into occupational therapy programs (Johnson, Arbes, & Thompson, 1974). However, there is little information on their effectiveness. Posthuma and Sommerfreund (1985) found some support for the use of interviews, although Bridle (1987) did not. Sens (as cited in Johnson et al., 1974) found evidence to support the use of the American College Test, and Blaisdell and Gordon (1979) did not find support for the use of the Scholastic Aptitude Test. There is some evidence linking personality variables with the field performance of both student therapists (Lind, 1970) and professional therapists (Peacock & O’Shea, 1984). No studies were found that examined the effectiveness of letters of reference or essays.

In research done previously, the success of occupational therapy students has been defined operationally as performance judged by fieldwork supervisors or course instructors. Because the ultimate goal of educational programs is to graduate students who are successful in treating clients, variables that reflect or are linked in some way to client improvement would seem to be logical alternatives to course grades and supervisor ratings (Barr, 1994). In this spirit, Kirchner, Holm, Ekes, and Williams (1994) examined client attendance, an idea derived from the literature on predicting success as a counselor (Tryon & Tryon, 1986). Kirchner et al. were able to predict client attendance at an on-site clinic on the basis of criteria used to screen applicants to a physical therapy program.

Method

The current study had several related purposes. The first objective was to develop models to predict one traditional measure of the occupational therapy student’s success as well as two novel measures of student performance in a clinical setting. Student success was gauged by grades in occupational therapy courses, which was considered a traditional measure. Success was also evaluated by the percentage of scheduled therapy appointments kept by the adult clients at an on-site clinic and by the percentage of target occupational therapy outcomes achieved by the clients. The second objective was to evaluate the effectiveness of various predictors, including preprofessional grade point average (GPA), scores on the Graduate Record Examination (GRE), reference forms, and an essay, relative to the “cost” involved in obtaining these predictors. This research study and method of data collection met the criteria for expedited review established by the Institutional Review Board at the University of Puget Sound in Tacoma, Washington.

Sample

All students who completed a master’s in occupational therapy (MOT) degree between 1986 and 1992 at the University of Puget Sound were included in the study. There were 75 students, including 8 men and 67 women, who ranged in age from 24 to 49 years ($M = 30.7$ years, $SD = 6.2$).

Design and Procedure

Predictor (independent) variables included in the analyses were (a) undergraduate GPA (U-GPA); (b) scores on the verbal, quantitative, and analytical sections of the GRE; (c) scores on reference forms submitted with the application (reference); and (d) scores on candidate essays submitted with the application (essay). The dependent variables were (a) GPA in occupational therapy courses (OT-GPA); (b) client attendance at the on-site teaching clinic during an academic semester (attendance), and (c) client therapy outcomes as established and assessed by the student occupational therapist (outcomes).

All data were collected directly by retrospective examination of written student and client records. Each student submitted three reference forms: one from an occupational therapist, one from an educator, and one from another professional. The forms included 12 behavioral indicators that were rated on a six-point Likert scale ranging from above average (6) to below average (1). The topics covered dependability, common sense, written and oral communication, ability to learn new concepts, understanding of occupational therapy roles and functions, ability to interrelate information, ability to solve problems, ability to generate alternative solutions to problems, ability to accept supervision, and ability to perform under pressure. A single score based on the mean of the total of the 12 ratings from the three reference forms was used in the prediction models.

Each student essay was read by one member of the occupational therapy faculty, who assigned a single score for each of nine criteria derived from the essay instructions; readers used a six-point Likert scale ranging from superior (5) to not addressed (0). The essay criteria focused on reasons for interest in occupational therapy; self-evaluation of characteristics; knowledge of treatment purposes; description of experiences with occupational therapy; summarization of work and volunteer experience; examples of group leadership; examples of resourcefulness and initiative; grammar, syntax, and spelling; and overall readability. To achieve interrater reliability, new faculty members read several essays in common with an experienced essay read-
ever; variations in ratings were discussed until consensus was reached and ratings matched. The total score from the nine criteria was entered into the prediction model.

During the last term of their educational program, all students participated in an on-site occupational therapy teaching clinic attended by clients from the community. Under faculty supervision, each student assessed and provided intervention for three clients from three diagnostic categories (pediatrics, mental health, physical rehabilitation); however, only the data from clients with physical disabilities were included in the study. During the on-site clinic semester, clients were scheduled once or twice a week for up to 11 weeks, depending on point of admission during the semester, number and complexity of target outcomes, and sessions needed to reach the target outcomes. The number of scheduled sessions ranged from 7 to 21 ($M = 11.5$ sessions).

A student research assistant examined clinic files for attendance and therapy outcome information from the beginning to the end of treatment. Each student was assigned two scores: one based on the percentage of scheduled appointments kept by the client and the other based on the percentage of therapy outcomes achieved by the client. Appointments canceled because of illness were not counted as scheduled appointments.

**Data Analysis**

Data for the three dependent variables were analyzed using hierarchical multiple regression analyses. For six students, data were missing for one or more of the independent variables. In each case, means were substituted for the missing data. Each independent variable, or set of variables, was forced into the prediction model in the same sequence: U-GPA, GRE, essay, and reference (Cohen & Cohen, 1983). This sequence was based on the perceived cost involved in acquiring each predictor. U-GPA was entered first because it was obtained automatically when we verified that the applicant completed an undergraduate degree and certain prerequisite courses. The GRE, on the other hand, requires additional expense and student time, so it was entered second. The scores for the verbal, quantitative, and analytical sections were entered as a set because they must be taken together and because they tend to be highly correlated. Both reference forms and essays require not only student time, but also considerable staff member time to read and score. However, reference forms also require time commitments on the part of the third parties who write them. Therefore, essay was entered third and reference fourth.

**Results**

Descriptive statistics are shown in Table 1, and the intercorrelations among all variables are presented in Table 2.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Scores on Dependent and Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
<td><strong>M</strong></td>
</tr>
<tr>
<td>Dependent</td>
<td></td>
</tr>
<tr>
<td>OT-GPA</td>
<td>3.56</td>
</tr>
<tr>
<td>Client attendance</td>
<td>0.86</td>
</tr>
<tr>
<td>Client outcomes</td>
<td>0.70</td>
</tr>
<tr>
<td>Independent</td>
<td></td>
</tr>
<tr>
<td>Undergraduate GPA</td>
<td>3.30</td>
</tr>
<tr>
<td>GRE-verbal</td>
<td>531.83</td>
</tr>
<tr>
<td>GRE-quantitative</td>
<td>552.83</td>
</tr>
<tr>
<td>GRE-analytical</td>
<td>569.80</td>
</tr>
<tr>
<td>Reference</td>
<td>5.31</td>
</tr>
<tr>
<td>Essay</td>
<td>35.21</td>
</tr>
</tbody>
</table>

*Note. GPA = grade point average; GRE = Graduate Record Examination; OT-GPA = GPA in occupational therapy courses.*

Most of the independent variables were positively correlated with each other, although only four of the correlations were significant. One of the three dependent variables, OT-GPA, was positively correlated with U-GPA, scores on all three of the sections of the GRE, and essay at a significant level. Additionally, the correlation between outcomes and attendance was positive. Surprisingly, the correlations between the predictors and the other two dependent variables, attendance and outcomes, were almost all negative, several at a level that was significant.

Two of the three regression analyses were significant. The model for OT-GPA is shown in Table 3, $F = 3.85$, $df = 6,68$, $p = .00$, and the model for therapy outcomes in Table 4, $F = 3.09$, $df = 6,64$, $p = .01$. The model used to predict client attendance was not significant and is not shown, $F = 3.09$, $df = 6,62$, $p = .33$.

There was evidence for the incremental validity of most of the predictors in the model for OT-GPA. Both undergraduate GPA and GRE contributed significantly. Even essay, which was entered in step 3, made a contribution that was significant. Only reference, which was entered last, was not significant.

In the model for therapy outcomes, all the predictors, except U-GPA, were weighted negatively, a finding consistent with the correlations shown in Table 1. However, in this model, only the essay contributed incremental validity (step 3) at a significant level.

**Discussion**

The findings regarding OT-GPA support the continued use of all the predictors, with the possible exception of reference forms. Although this study is the first to establish the effectiveness of the GRE and an essay to screen applicants for admission into an occupational therapy program, it is consistent with previous research demonstrating the usefulness of preprofessional grades as screening devices (e.g., Bridle, 1987; Posthuma & Sommerfreund, 1985). However, there is no evidence that reference forms
add information to that already available from other, less costly predictors. The lack of variability of this measure may account for this result. Before eliminating reference forms as an admission screening device, it would be desirable to obtain information on the entire sample, including those applicants who were denied admission, in case a correction for restricted range might yield a different result (Huitema & Stein, 1993). Although it may be inappropriate to eliminate reference forms in admissions procedures on the basis of this one study, it should be noted that this finding is consistent with the results obtained by Kirchner et al. (1994), who used a sample of physical therapy students.

It was also possible to develop a model to predict client therapy outcomes, but it is difficult to evaluate how useful this model is. Unfortunately, most of the correlations between therapy outcomes and the predictors were negative, some at a level that was significant. One explanation for this finding may be that the students with more academic ability tended to establish more ambitious goals for their clients. Some of the clients may have had unrealistic expectations that clinic participation would reduce the degree of their sensory and physical impairments as well as improve function. Because students were required to set outcomes collaboratively with their clients, the high expectations held by some members of both groups may have negatively affected client outcomes. This possibility merits further investigation on other samples, particularly with larger groups of clients with a variety of pathologies, impairments, and disabilities.

Summary
The validity of predictors relevant to academic and clinical success in an entry-level MOT program was examined, and three models were tested. The model predicting academic success (OT-GPA) was significant and supported the
continued use of U-GPA, scores on the three sections of the GRE, and essays, but not reference forms. The model predicting client outcomes was also significant, but most predictors were negatively correlated with client outcomes. This unexpected finding may have occurred because students with greater academic ability established more ambitious goals for their clients. The model predicting client attendance was not significant.

References


