USE OF PRE-PROGRAM ACADEMIC ACHIEVEMENT FOR PREDICTION OF PERFORMANCE IN THE B.SC. PROGRAM IN SPEECH PATHOLOGY AND AUDIOLOGY AT THE UNIVERSITY OF ALBERTA

by

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ABSTRACT

Academic performance data on 80 graduates of the B.Sc. program in Speech Pathology and Audiology at the University of Alberta were analyzed to determine how pre-admission academic performance measures correlated with clinical and academic achievement after admission to the program. Clinical skills, as they are currently being measured, showed low correlations with pre-admission academic performance data. Results did, however, show substantial correlations between certain pre- and post-admission academic performance measures. Factor analysis revealed two groups of source variables accounting for a relatively large part of over-all student performance. Regression analysis yielded equations which can be applied to students' pre-admission data to predict overall academic achievement at the time of graduation.

Until 1976, applicants to the B.Sc. program in Speech Pathology and Audiology at the University of Alberta were admitted into a four year quota program on the basis of their high school academic performance and a personal interview with a member of the academic staff. The staff concluded that there was too much variability in grading criteria among high schools and too little consistency among staff in the information acquired from interviews. As a result, there was a shift to admission on the basis of students' academic performance during the first year of university, referred to as the pre-professional year. Courses required for admission to the program included two psychology courses: Basic Psychological Processes and Individual and Social Behavior as well as two introductory departmental courses, Introduction to Normal Human Communication and Survey of Speech Pathology and Audiology. These must be taken while carrying a full course load. The mean of grades from the four required courses is now the principal determinant. The year-one grade point average (GPA) has been used to select among students having the same qualifications based on performance on the four required courses. For applicants who have more than one year of university, their overall GPA has been treated as equivalent to the first year GPA of the typical applicant.

There is very little information in the field of speech and language pathology concerned with predictability of academic and clinical performance. One study by Shriberg *et al.* (1975) indicated that GPA in communicative disorders courses shows moderate correlation with clinical performance measures on the Wisconsin Procedure for Appraisal of Clinical Competence (W-PACC), especially Professional-Technical Skills. The r values ranged from .01 to .38 with the larger, significant correlations occurring between GPA and Professional-Technical Skills. A subsequent report (Shriberg *et al.*, 1977) yielded two additional pieces of information relevant to this study:

1) Undergraduate GPA was highly associated with marks earned in the first semester of major undergraduate course work. The beginning speech and hearing science course, in particular, may be highly predictive (r = .57). The first year language course was

not described as predictive, but had high correlation ($r = .63$) with senior final GPA.
2) There was little relationship between course grades and most clinical measures (except the introductory clinical course and the first clinical practicum grade, $r = .49$).

The authors concluded that the data supported the use of GPA for admissions and continuation criteria in training programs. They went on to urge others to undertake institutional research projects that might eventuate in a body of valid knowledge in these areas.

A review of the literature in allied health professions revealed pertinent findings which contributed to the organization of this study. Similar projects in physical therapy and medicine reported positive correlation between pre-admission academic achievement measures and GPA within a specialized program of study (Gaier, 1952; Gough, 1963; Pickles, 1977; Schofield/Merwin, 1966; Schwartzman *et al.*, 1962; and Tidd/Conine, 1974). The Tidd/Conine study, in particular, yielded a high correlation ($r = .88, p < .001$) between pre-professional performance and academic achievement within a physical therapy program. Some reports suggested decreasing relationships between course marks in pre-professional and professional training as students moved through successive years of the specialized program of study (Gough, 1963; Pickles, 1977; Schofield/Merwin, 1966; Schwartzman *et al.*, 1962).

A few studies in allied professions have attempted to discover what relationships may exist between academic grades and clinical performance ratings (Anderson/Jantze, 1965; Gobetz, 1954; Korman/Stubblefield, 1971; Lind, 1970; Olney, 1977; Pickles, 1977; Tidd/Conine, 1974). The studies by Anderson, Gobetz, and Korman indicated that grades are ineffective predictors of clinical performance. The Korman study did, however, yield a positive significant relationship ($r = .24, p < .05$) between pre-medical GPA and general achievement in clinical medicine. Grades within the program were found to be consistently unrelated to internship performance. The studies by Lind and Tidd/Conine also yielded significant but low correlations between grade point average and clinical performance measures in occupational therapy and physical therapy, respectively. The Pickles' study looked at both pre-admission academics and grades within the program for correlations with clinical performance. Both comparisons yielded mostly small or non-significant r values; where larger, significant r values were obtained, results were inconsistent across classes. The Olney study used multiple regression analysis to predict "clinical clerkship" achievement. The prediction of clinical performance involved five predictor variables and accounted for only 26% of the variance.

The principal intent of this study was to analyze admission criteria for the Speech Pathology and Audiology program at the University of Alberta. An attempt was made to include variables examined in other professions and capitalize on some of the trends and methods of analysis that were used. Based on previous research, the following questions were posed regarding students in the University of Alberta program:

1. Does a substantial correlation exist between pre-admission academic performance and overall GPA at graduation?
2. Does a substantial correlation exist between pre-admission academic performance and overall GPA for departmental courses at the time of graduation?
3. If the above relationships exist, do the correlations become progressively smaller in successive years of the program?
4. Does a substantial correlation exist between grades in departmental introductory courses and overall GPA at graduation?
5. Does a substantial correlation exist between pre-admission academic performance and clinical achievement measures with the program?

6. Does a substantial correlation exist between grades in the introductory clinical course and clinical achievement measures?

PROCEDURE

Subjects

The sources of data used to answer these questions were the records of students graduated from the B.Sc. speech pathology program at the University of Alberta from 1976 to 1979. Pre-admission data for each subject included high school matriculation average expressed as a percentage, grades from the four required courses, and GPA at the end of the pre-professional year. Performance within the program was measured by yearly GPA, overall GPA, overall GPA for departmental courses, yearly clinical evaluation scores, mean overall clinical scores, and grades from the clinical procedures course. The clinical evaluations were W-PACC composite scores.

The sample included 80 students from four classes in speech pathology. This involved 19 students who graduated in 1976, 20 in 1977, 21 in 1978, and 20 in 1979. Seventy-eight were females; two were males. Twelve subjects were excluded from the total of 92 because of incomplete or perplexing records.

Analysis of the Data

Analysis of the data was done with the Statistical Package for the Social Sciences (SPSS).

Correlation coefficients, N of cases, and significance levels are shown in Table 1. The following variable labels were used:

Y3CLIN:	Third year clinical practicum achievement based on composite scores from two W-PACCs (two, 2 hours/week, 12-week practica)
Y4CLIN:	Fourth year clinical practicum achievement based on composite scores from two W-PACCs (two, 4 hours/week, 12-week practica)
INTCLIN:	Internship clinical achievement based on the composite score from one W-PACC (one full-time, six-week internship)
OCLIN:	Overall clinical achievement based on mean of all five W-PACCs
Y1GPA:	Year one grade point average
Y2GPA:	Year two (only) grade point average
Y3GPA:	Year three (only) grade point average
Y4GPA:	Year four (only) grade point average
OGPA:	Overall grade point average at graduation
OGPAS:	Overall grade point average in departmental courses at graduation
PSYCPRO:	Grade in Basic Psychological Processes course (or equivalent)
PSYCSOC:	Grade in Individual and Social Behavior course (or equivalent)
SPANORM:	Grade in Introduction to Normal Human Communication course (or equivalent)
SPASURV:	Grade in Survey of Speech Pathology and Audiology course (or equivalent)
REQD:	Mean of grades in four required courses (PSYCPRO, PSYCSOC, SPANORM, SPASURV, or equivalents)
CLINPRO:	Grade in Clinical Procedures course
MATRIC:	High school academic achievement score used for University admission (expressed as a percentage)

Supplementary analyses were also run. Factor analysis reduced the array of correlation coefficients for the 17 variables, revealing underlying patterns which might represent sets of

TABLE 1
Correlation Coefficients

	Y4CLIN	INTCLIN	OCLIN	Y1GPA	Y2GPA	Y3GPA	Y4GPA	OGPA	OGPAS
Y3CLIN	0.3240 (66) P = 0.004	−0.0342 (56) P = 0.401	0.8510 (68) P = 0.000	0.1293 (68) P = 0.147	0.2510 (68) P = 0.019	0.1640 (68) P = 0.091	0.2982 (68) P = 0.007	0.2485 (68) P = 0.021	0.2945 (68) P = 0.007
Y4CLIN		0.1094 (56) P = 0.211	0.7242 (78) P = 0.000	0.2288 (77) P = 0.023	0.3620 (78) P = 0.001	0.4141 (78) P = 0.000	0.4544 (78) P = 0.000	0.4183 (77) P = 0.000	0.4687 (78) P = 0.000
INTCLIN			0.0349 (56) P = 0.399	0.0013 (56) P = 0.496	0.1474 (56) P = 0.139	0.1185 (56) P = 0.192	0.0747 (56) P = 0.292	0.0953 (56) P = 0.242	0.1346 (56) P = 0.161
OCLIN				0.2471 (79) P = 0.014	0.3802 (80) P = 0.000	0.3062 (80) P = 0.003	0.4234 (80) P = 0.000	0.4007 (79) P = 0.000	0.4314 (80) P = 0.000
Y1GPA					0.7235 (79) P = 0.000	0.5662 (79) P = 0.000	0.4769 (79) P = 0.000	0.8098 (79) P = 0.000	0.6564 (79) P = 0.000
Y2GPA						0.7860 (80) P = 0.000	0.6462 (80) P = 0.000	0.9191 (79) P = 0.000	0.8245 (80) P = 0.000
Y3GPA							0.7277 (80) P = 0.000	0.8959 (79) P = 0.000	0.8693 (80) P = 0.000
Y4GPA								0.8152 (79) P = 0.000	0.8599 (80) P = 0.000
OGPA									0.9281 (79) P = 0.000

(Coefficient / (Cases) / Significance) (a value of 99.0000 is printed if a coefficient cannot be computed)

TABLE 1 (continued)

	PSYCPRO	PSYCSOC	SPANORM	SPASURV	REQD	CLINPRO	MATRIC
Y3CLIN	−0.1946	0.0805	0.1420	−0.0610	−0.0885	0.2831	0.1215
	(63)	(65)	(68)	(67)	(61)	(68)	(66)
	P = 0.063	P = 0.262	P = 0.124	P = 0.312	P = 0.249	P = 0.010	P = 0.166
Y4CLIN	0.0744	−0.0060	−0.0036	0.1110	0.0213	0.3885	0.1961
	(72)	(74)	(78)	(77)	(70)	(78)	(74)
	P = 0.267	P = 0.480	P = 0.488	P = 0.168	P = 0.431	P = 0.000	P = 0.047
INTCLIN	−0.1707	0.1284	−0.0718	0.0494	−0.0189	−0.0047	0.4304
	(52)	(54)	(56)	(55)	(51)	(56)	(54)
	P = 0.113	P = 0.177	P = 0.300	P = 0.360	P = 0.448	P = 0.486	P = 0.001
OCLIN	−0.0339	0.1348	0.1332	0.0862	0.0817	0.3803	0.1528
	(74)	(76)	(80)	(79)	(72)	(80)	(76)
	P = 0.387	P = 0.123	P = 0.119	P = 0.225	P = 0.248	P = 0.000	P = 0.094
Y1GPA	0.5698	0.6828	0.5042	0.5352	0.8086	0.5100	0.4324
	(74)	(76)	(79)	(78)	(72)	(79)	(76)
	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000
Y2GPA	0.4585	0.5879	0.3705	0.4170	0.5804	0.7812	0.5154
	(74)	(76)	(80)	(79)	(72)	(80)	(76)
	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000
Y3GPA	0.2678	0.4771	0.2760	0.4304	0.4658	0.6189	0.5185
	(74)	(76)	(80)	(79)	(72)	(80)	(76)
	P = 0.011	P = 0.000	P = 0.007	P = 0.000	P = 0.000	P = 0.000	P = 0.000
Y4GPA	0.2900	0.4978	0.1195	0.2345	0.3710	0.4976	0.4303
	(74)	(76)	(80)	(79)	(72)	(80)	(76)
	P = 0.006	P = 0.000	P = 0.146	P = 0.019	P = 0.001	P = 0.000	P = 0.000
OGPA	0.4668	0.6569	0.3769	0.4739	0.6604	0.7000	0.5460
	(74)	(76)	(79)	(78)	(72)	(79)	(76)
	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000
OGPAS	0.3343	0.5681	0.2350	0.3480	0.5002	0.6314	0.4923
	(74)	(76)	(80)	(79)	(72)	(80)	(76)
	P = 0.002	P = 0.000	P = 0.018	P = 0.001	P = 0.000	P = 0.000	P = 0.000
PSYCPRO		0.4564	0.2270	0.2613	0.6529	0.1890	0.3350
		(73)	(74)	(73)	(72)	(74)	(71)
		P = 0.000	P = 0.026	P = 0.013	P = 0.000	P = 0.053	P = 0.002

(Coefficient / (Cases) / Significance) (a value of 99.0000 is printed if a coefficient cannot be computed)

TABLE 1 (concluded)

	SPANORM	SPASURV	REQD	CLINPRO	MATRIC
PSYCSOC	0.2258	0.2986	0.6741	0.2975	0.3953
	(76)	(75)	(72)	(76)	(73)
	P = 0.025	P = 0.005	P = 0.000	P = 0.005	P = 0.000
SPANORM		0.5756	0.6908	0.4458	0.1291
		(79)	(72)	(80)	(76)
		P = 0.000	P = 0.000	P = 0.000	P = 0.133
SPASURV			0.7440	0.4091	0.2236
			(72)	(79)	(75)
			P = 0.000	P = 0.000	P = 0.027
REQD				0.4195	0.3997
				(72)	(69)
				P = 0.000	P = 0.000
CLINPRO					0.2777
					(76)
					P = 0.008
MATRIC					

(Coefficient / (Cases) / Significance) (a value of 99.0000 is printed if a coefficient cannot be computed)

source variables accounting for interrelationships observed in the data. Regression analysis selected the best predictor variables for dependent variables of interest and specified the amount of variance that can be accounted for in each.

RESULTS

An inspection of the correlation coefficients in Table 1 provided answers to the questions posed:

1. A substantial correlation existed between pre-admission academic performance and overall GPA at graduation (OGPA).
   A. Y1GPA had a correlation of .81 ($p = .000$) with OGPA.
   B. Mean of grades in the four required courses (REQD) had a correlation of .66 ($p = .000$) with OGPA.
   C. While the individual required courses showed small to substantial relationships, SPASURV was the most promising with a correlation of .47 ($p = .000$) with OGPA.
   D. MATRIC had a moderate correlation of .55 ($p = .000$) with OGPA.
2. A substantial correlation existed between pre-admission academic performance and GPA for departmental courses at the time of graduation.
   A. Y1GPA had a correlation of .66 ($p = .000$) with OGPAS.
   B. REQD had a correlation of .50 ($p = .000$) with OGPAS.
   C. Individual required courses showed low correlations with OGPAS, but again the strongest relationship was between SPASURV and OGPAS ($r = .35$, $p = .001$).
   D. MATRIC had a moderate correlation of .49 ($p = .000$) with OGPAS.
3. Correlations between pre-admission academic performance and academic performance within the program became progressively smaller in successive years of the program. Correlations between Y1GPA and years two, three, and four were .72, .57, and .48, respectively ($p = .000$ for all three). The correlations for REQD and MATRIC with the remaining years of undergraduate study showed similar trends.
4. A substantial correlation existed between one of the two departmental introductory courses and overall GPA at graduation, SPASURV .47 ($p = .000$) and SPANORM .38 ($p = .000$).
5. No substantial relationship existed between pre-admission academic performance and clinical achievement measures within the program.
6. After the Shriberg *et al.* (1975) findings, grades in the clinical procedures course were compared to clinical achievement measures. All correlations were low, with the highest coefficient being .38 ($p = .000$) between CLINPRO and OCLIN.

The questions originally posed in this study were answered. The correlation values alone suggested that use of required courses GPA was little better as a predictor of within-program academic performance than the previous method, using high-school matriculation averages. However, since the real value in a study of this kind lies with its potential for data exploration through factor analysis and its predictive qualities through multiple regression analysis, both of these supplementary analyses were carried out.

Factor Analysis

The orthogonal factors shown in Table 2 accumulate to account for 81.7 percent of the variance in overall student performance, the principal elements being Factors 1 and 2. Factor 1 accounted for 41.9 percent of the variance. Factor 2 accounted for 18.4 percent of the variance. The remaining three factors each accounted for less than ten percent.

The coefficients in Table 2 represent regression weights (horizontal) and correlation coefficients (verticle). The row loadings describe the linear composition of each variable.

TABLE 2

Factor Analysis, Identification of Elements

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Y3CLIN	0.03067	−0.10080	0.84339	−0.17622	0.30220
Y4CLIN	0.32661	−0.03534	0.72711	0.09944	−0.46436
INTCLIN	0.14633	0.12268	0.10917	−0.20976	−0.25968
OCLIN	0.19828	−0.08321	0.96973	−0.06473	−0.04763
Y1GPA	0.52292	0.66736	0.05090	0.33098	0.20740
Y2GPA	0.88962	0.20590	0.13725	0.22406	0.10641
Y3GPA	0.90620	0.17751	0.06020	−0.06854	−0.02966
Y4GPA	0.82492	0.12277	0.08628	−0.04607	−0.15458
OGPA	0.90322	0.37473	0.10555	0.14579	0.07255
OGPAS	0.88441	0.20766	0.16301	0.02268	−0.04407
PSYCPRO	0.16445	0.28323	−0.10672	0.88656	0.00541
PSYCSOC	0.21547	0.71702	−0.28067	0.29724	0.01659
SPANORM	0.18532	0.35365	0.14104	−0.00965	0.81791
SPASURV	0.26217	0.83735	−0.00382	−0.17486	−0.01503
REQD	0.30311	0.80999	−0.08670	0.38588	0.29080
CLINPRO	0.68840	0.10529	0.27425	−0.07585	0.25063
MATRIC	0.55207	0.15781	−0.01617	0.13670	−0.03004

The column loading may be used to identify factors. Using a criterion correlation coefficient of .81, selected post hoc, one can identify the high-loading variables for each factor and, thereby name the factor. Factor 1 is largely "within-program academic performance". Factor 2 is essentially "pre-admission performance". Factor 3 seems to be "clinical performance". High loading in Factors 4 and 5 are associated with individual courses taken before admission to the program. Their separate loading suggests the possible existence of confounding variables such as instructor differences, variable course content, or different methods of grading. Perhaps SPANORM and PSYCPRO would load differently if taught by other instructors.

Graphical representation of the rotated orthogonal factor pairs revealed two interesting plots. Variables 7 through 10 clustered and loaded on Factor 1, while variables 12, 14, and 15 clustered and loaded high on Factor 2. Those loading high on Factor 1 included Y3GPA, Y4GPA, OGPA, and OGPAS. These variables indicate academic performance within the program. Variables loading high on Factor 2 were PSYCSOC, SPASURV and REQD or pre-admission variables. Lines extended from the origin through the middle of each cluster would be less than 90 degrees apart, suggesting a correlation between clusters. These clusters depict strong pre-program and within-program academic performance variables and indicate a relationship between them.

The second plot showed variables 6 through 10 clustering and loading high on Factor 1. Variables 1, 2, and 4 clustered less well and loaded high on Factor 3. A correlation is indicated between students' within-program academic performance and clinical performance, except internship which loaded very low on Factor 3. This may be the result of most internships having been completed in institutions all across North America, where there can be only limited interaction between the department and the supervision personnel. The

TABLE 3

Multiple Regression – Dependent Variable OGPA

Variable(s) Entered on Step Number 1 – Y1GPA

Multiple R	0.80978
R Square	0.65575
Adjusted R Square	0.65061
Standard Error	0.35564

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	1.	16.14189	16.14189	127.62555	0.0
Residual	67.	8.47406	0.12648		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
Y1GPA	0.6490734	0.80978	0.05745	127.626
(Constant)	2.702349			

Variable(s) Entered on Step Number 2 – MATRIC

Multiple R	0.83842
R Square	0.70295
Adjusted R Square	0.69395
Standard Error	0.33285

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	2.	17.30373	8.65186	78.09150	0.0
Residual	66.	7.31223	0.11079		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
Y1GPA	0.5655762	0.70561	0.05964	89.943
MATRIC	0.1987660E-01	0.24094	0.00614	10.487
(Constant)	1.713470			

probable effect being reduced consistency in supervisor expectations and evaluation procedures.

Multiple Regression Analysis

A student's final overall GPA can be predicted with a simple equation applied to data available on most program applicants:

Y1GPA (.5656) + MATRIC (.0199) + 1.7135 = predicted GPA at graduation

Multiple regression analysis applied to the predicted variable, OGPA, revealed its linear dependence (R Squared = .70) on two strong predictor variables shown in Table 3. This means that Y1GPA and MATRIC operated jointly to account for 70 percent of the variance in OGPA at graduation. Step 3 of the regression analysis, which added PSYSOC to the equation, only accounted for an additional 1.5 percent of the variance in OGPA. Remaining

TABLE 4

Multiple Regression – Dependent Variable OGPAS

Variable(s) Entered on Step Number 1 – Y1GPA

Multiple R	0.65640
R Square	0.43086
Adjusted R Square	0.42236
Standard Error	0.46640

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	1.	11.03312	11.03312	50.72112	0.0
Residual	67.	14.57419	0.21753		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
Y1GPA	0.5366187	0.65640	0.07535	50.721
(Constant)	3.567767			

Variable(s) Entered on Step Number 2 – MATRIC

Multiple R	0.69593
R Square	0.48432
Adjusted R Square	0.46870
Standard Error	0.44730

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	2.	12.40222	6.20111	30.99357	0.0
Residual	66.	13.20510	0.20008		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
Y1GPA	0.4459794	0.54553	0.08014	30.969
MATRIC	0.2157678E-01	0.25643	0.00825	6.843
(Constant)	2.494302			

steps were, therefore, not included. Overall goodness of fit of this regression equation was tested, yielding an F value of 78.09 ($p = .000$).

A student's final GPA for departmental courses can be predicted with an equation similar to that used to predict overall GPA at graduation. Using overall grade point average in departmental courses (OGPAS) as the dependent variable, regression analysis yielded a linear dependence (R squared = .48) on the same two predictor variables as those selected when OGPA was the dependent variable.

Table 4 shows that Y1GPA and MATRIC again operated jointly, but accounted for only 48 percent of the variance in the dependent variable this time. The goodness of fit test for the resulting equation yielded an F value of 30.99 ($p = .000$). PSYCSOC was added to the equation on step 3 but again effected such a small increase (.02) in the R squared value that step 3 and all subsequent steps have not been included.

TABLE 5

Multiple Regression – Dependent Variable OCLIN

Variable(s) Entered on Step Number 1 – CLINPRO

Multiple R	0.36029
R Square	0.12981
Adjusted R Square	0.11129
Standard Error	5.37979

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	1.	202.91336	202.91336	7.01100	0.0110
Residual	47.	1360.28058	28.94214		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
CLINPRO	2.023620	0.36029	0.76426	7.011
(Constant)	66.38480			

Variable(s) Entered on Step Number 2 – PSYCSOC

Multiple R	0.47301
R Square	0.22373
Adjusted R Square	0.18998
Standard Error	5.13609

Analysis of Variance	DF	Sum of Squares	Mean Square	F	P
Regression	2.	349.74046	174.87023	6.62904	0.0030
Residual	46.	1213.45348	26.37942		

VARIABLES IN THE EQUATION

Variable	B	Beta	Std Error B	F
CLINPRO	2.135475	0.38020	0.73117	8.530
PSYCSOC	−1.725430	−0.30712	0.73135	5.566
(Constant)	78.60038			

Using overall clinical performance as measured by the W-PACC as the dependent variable (OCLIN), regression analysis yielded two rather weak predictor variables.

The clinical procedures course grades (CLINPRO) and grades from one of the required psychology courses (PSYCSOC) combined to account for 22 percent of the variance in OCLIN shown in Table 5. Overall goodness of fit was tested. An F value of 6.63 ($p = .003$) was obtained at step number two in the analysis.

The two remaining variables having large F values would not be available on any student until completion of the program; therefore, subsequent steps are not included. The best predictor variable, CLINPRO, is not available on any student until the end of the first year of study after admission to the program.

Results of the regression analyses could now be used by the University of Alberta as data-based criteria for admission of students to its speech pathology program. Generalization of these results to other speech and hearing programs should be done with caution, however.

DISCUSSION

Results of this study confirmed certain previous findings and raised some important questions. Researchers in speech and hearing, as well as a variety of allied professions, have found substantial correlations between early academic performance and academic achievement after admission to a specialized program of study. It has been shown that the strength of this relationship usually decreases as the student moves through the training program. Academic achievement of 80 University of Alberta undergraduate students in speech pathology tended to substantiate these findings.

This study showed no substantial relationship between early academic performance and later clinical achievement measurements. The introductory clinical course grade bore some relationship to later clinical measures (W-PACC), as it did in the study by Shriberg *et al.* (1977). These results suggest at least one follow-up study. The larger correlation coefficient obtained between the introductory clinical course and the first clinical practicum grade in the Shriberg study is interesting, especially in view of the same clinical evaluation tool being used in both studies. Since such courses are often taught by the same instructor year after year, one must consider the possibility that results were confounded by instructor differences or by differences in course content or method of evaluation. A study to investigate the existence of such effects would be a valuable complement to the existing body of knowledge.

Some questions also arose from supplementary analyses. Why were clinical performance measures so much less predictable using pre-admission data than academic performance? Was it the nature of the pre-admission data, which is academic only? Perhaps some measures of a psychosocial nature would serve as better predictor variables. Was the clinical evaluation tool itself the problem? Or could there have been inconsistency in the way it was interpreted and used by supervisors? The latter explanation especially deserves further investigation. As mentioned above, internship (INTCLIN) loaded very low on Factor 3. The remaining clinical performance measures (Y3CLIN, Y4CLIN, and OCLIN) loaded fairly high on Factor 3. Y3CLIN and Y4CLIN were performance measures on practicum assignments within the Edmonton area. Most practicum supervisors in the Edmonton area have participated in at least one W-PACC inservice. Perhaps the result of those inservices was more consistent interpretation and use of the evaluation tool by the W-PACC-sophisticated supervisors than among supervisors outside the Edmonton area, many of whom were using the W-PACC for the first time without inservice preparation. The loading of INTCLIN on Factor 3, Table 2, at .11 is substantially lower than any other clinical measure. Training in the supervision process, especially evaluation procedures, may enhance the predictability of clinical performance.

More fundamental questions also demand answers. Should training programs in speech pathology and audiology admit new students solely on the basis of their expected academic performance? Is there not some obligation to admit students to clinical training programs with the belief that they will be good clinicians? How can clinical performance be predicted with the same reliability as academic performance?

The data examined in this study yielded results which largely parallel those in other disciplines. They provided some confirmation and raised some questions concerning predictability of student performance in speech and hearing programs. It is evident that

professional training programs with enrollment limitations should carefully examine their selection criteria so that each program not only accepts the students most likely to do well, but is able to defend its policies related to the selection of one candidate over another.

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