OCC

MEMORANDUM   Highland Lakes Campus

TO: Nadia Boulos
           Reme Solarte
           Marie Weng

FROM: Jim Warner

SUBJECT: Nursing Selection Literature

DATE: March 4, 1993

Enclosed is my report on a review of current literature on the
topic of predicting student success in college nursing programs.

I hope it will be helpful in developing a selection process for
fall, 1994. The articles cited are available in my office.

A special thank you to the Highland Lakes LRC staff and
particularly to Laura Kolehmainen for assistance in obtaining the
articles.

JW/er
Literature

Enclosure: Review of Current Literature

pc: L. Kolehmainen

PREDICTING STUDENT SUCCESS IN NURSING PROGRAMS

This review of the literature on the subject of Predicting Student Success in College Nursing Programs was intended to see if there are compelling reasons to use prenursing GPA as a primary selection criterion for a limited access nursing program. The review was also intended to see if evidence could be found to support a GPA "cut-off" that might be valid and reliable in predicting success and could then be used in the process of selecting applicants.

Lengacher and Keller (1990) described the need to consider success predictors based upon identified variables in the selection process as following: "Attrition within nursing programs is very costly to educational programs, to the health care system, and to the student. If students are not able to complete their nursing program, they are unable to enter the job market and alleviate the shortage. In addition to the cost, the student and family make great sacrifices if the student is not successful in the nursing program. The student uses family financial resources to attain an education that diminishes the resources available to the family. Also, the student can be affected psychologically if she/he fails. The loss of one's self-esteem can be devastating. There can be effects upon peers and faculty. Peers experience personal loss when they see their classmates fail. Faculty experience loss when they believe personal time and energy was of no use in trying to assist the student to achieve. Therefore, if educators were able to predict success based upon identified variables, these considerations could be placed into programs."

Lengacher and Keller studied 146 graduates from a large public community college in Florida. They observed a positive relationship between entrance GPA and exit GPA. They also noted that prenursing GPAs were significantly related to performance on the NCLEX. They concluded that, "Upon admission, individuals (at risk of failure) could be identified and during the summer, prior to the sophomore year in the ADN program. Possible considerations for support would be assistance with test taking, independent learning activities... support group seminars and relaxation programs for testing."

Fowles (1992) reported on 192 upper division baccalaureate nursing students at Mennonite College of Nursing. "Predictors (of success) could be used to identify students at risk for failure so they may be enrolled in early intervention programs..." The study indicated that GPA after the initial quarter of nursing courses, percentile on the "Assesstest", grade in Anatomy and Physiology II and either ACT social science subscale score or ACT composite score were the best predictors of success in the nursing curriculum.

Marquis and Worth's (1992) study of 134 graduates of California's State University, Chico School of Nursing showed no correlation between any nursing measure of outcome (nursing GPA, clinical evaluations during eight clinical rotations, NCLEX scores and graduates'. self-rating of their competency in meeting program

objectives) and the subjects supervisors' ratings. <u>There was a modest correlation between supervisors' rating and the nonnursing GPA.</u>

Marquis and Worth cited Wold and Worth (1990) who found prerequisite science courses correlated with success in nursing school. In Marquis and Worth's review of related literature they note that, "Cognitive domain predictors, such as GPA, frequently do not correlate with clinical performance in nursing schools (Soffer & Soffer, 1972; Schwirian and Gortner, 1979). Many studies, however, have shown a positive correlation between nursing grades and/or overall academic achievement with subsequent success on the NCLEX. (cited by Marquis and Worth:Outtz, 1979; Payne & Duffy, 1986; Quick, Krupa, & Whitley, 1985)."

A bit of nostalgia for those who have spent time studying concepts of cognitive style is provided by a study of 325 diploma program nursing student at St. Johns School of Nursing between 1986 and 1990 (Nortridge, et. al., 1992). A positive correlation was observed between success in the program and the cognitive style elements of T(VL)- a preference for finding meaning from written words, I (a preference for independent problem-solving, and K (a preference for a logical deductive approach in decision making).

Four negatively correlated elements were T(AL), a preference for finding meaning from the spoken word, Q(V) a preference for finding meaning from sight, A (a preference for problem-solving with peers), and M̆ (a preference for categorical reasoning).

Talarczyk (1989) however, observed that, "Cognitive style did not add significantly to the prediction of any of the criterion variables of achievement in senior level medical/surgical nursing (theory and clinical) and psychiatric nursing (theory and clinical). Talarzcyk notes, "As indicated in the literature review, previous academic attainment has been the consistent best predictor of academic achievement in schools of nursing. This has been true since Joula (1966) reported that when using intellective factors to predict collegiate academic performance, a) previous academic attainment on a given continuum correlates higher with later academic attainment than does any freshman level ability test, and b) later achievement on a given continuum is predicted best by earlier achievement on that same continuum. Past attainment continues to be the best predictor of future achievement."

A study of 139, 1980 graduates of college nursing, University of Illinois, for which State Board of Examination (SBE) results were available (Yocom and Scherubel, 1985), "Found preadmission liberal arts GPA (all courses) and cumulative GPA to be important factors in predicting students' eventual success on the SBE. Science GPAs were not as helpful."

"Mean grade differences of <u>B</u> vs <u>C</u> were seen between the two groups (those who passed and those who failed the SBE) for all clinical theory courses, Core Concepts I, Introduction to Public Health Sciences and all of the sophomore year basic sciences except Bacteriology."

Oliver (1985) in a study of 141 BSN students cites Rowland (1978), "Student attrition rates for associate degree (44%), baccalaureate degree (41%), and diploma nursing programs (26%), indicate that one third of all students admitted to nursing schools fail in the successful completion of their programs." Oliver states that the problem (attrition)," is compounded in programs with limited admission capacity since each position granted to an unsuccessful student necessitates denial of a potentially successful applicant. It would appear that nursing admission procedures fail to discriminate effectively between potentially successful and nonsuccessful applicants. With the obvious need to lessen nursing school attrition, the specific problem addressed in this study was to identify the process which allows for the selection of candidates with the highest potential for academic success. The study revealed that high school rank, high school biology and English grades show a significant relationship with academic success (in the nursing program)."

Tan's (1991) study of 1,256 Palmer College of Chiropractic students, 1980 to 1987, shows that, "A direct relationship between entering GPA and subsequent college performance as measured by cumulative GPAs."

While Tan's study showed a positive correlation between GPA in professional school and career success, the "best graduates" (in terms of GPA) did not necessarily rate themselves more successful in their careers after graduation. Tan suggests, "The implication may be that grades in professional school do reflect competence in knowledge, but only up to a certain point. Students who are going to do well in their careers are <u>not</u> those who are excessively obsessed with grades, but those who are willing to take chances and opportunities beyond what are typically required in the curriculum."

Blustein, et. al. (1986) conducted a study of 50 students at a diverse suburban community college. Using the Descriptive Test of Language Skills (College Board, 1978) and The Survey of Study Habits and Attitudes (Brown and Holtzman, 1967) revealed two predictors of GPA in a community college population. The two predictors were 1) expectations from learning and 2) reading comprehension ability.

These two variables were so important in predicting GPA that they tended to "minimize other noncognitive variables." The authors point out that, "If students endorse effective study habits and attitudes and expect to derive benefits from their education, their degree of career indecisiveness and differences in learning styles do not seem to be related to their academic performance...".

Some additional findings of interest emerged from the Blustein study. "Students who performed well, as measured by GPA, reported changing career directions with greater frequency than students who had academic difficulty. New findings suggest that students who have relative academic success seem willing to shift career goals, perhaps to areas that represent greater congruence between academic ability and vocational interest. Second, students who had average or above average grades tended to report a close relationship with an employee (including faculty members, counselors and support staff) on campus. This phenomenon did not occur as often among those student who were in academic difficulty. These student-staff relationships seem to reflect a process, similar to mentoring."

A retrospective study by Kroll (1990) of 81 RN students admitted to the Northwestern Universities Nursing program between 1979 and 1983 cites Allen et. al. (1988), "A student's record of withdrawal from courses was not significant, but students whose previous college records included any combination of D grades, F grades or withdrawal (WD's) had significantly lower GPAs than those without these combinations. These students were also at risk for completing the program out of sequence or failing to complete the program. Kroll found a positive relationship between prenursing GPAs (PGPAs) and nursing GPAs (NGPAs) and attempted to identify different levels of achievement that might distinguish students at risk in the program. NGPA was divided into three categories of performance and analyzed against PGPA. Analysis of variance showed <u>that groups of RNs with different categories of NGPAs did not have significantly different PGPAs</u>. "Therefore for this population, no cutoff point in PGPA's were useful as predictive of success in the college nursing program."

Only the absence of D's in prenursing courses was found to be predictive in Kroll's study. A limitation of the study was the small size of the sample from a single institution.

Wold and Worth (1990) note "prior academic success as represented by various configurations of GPAs continues to be the most widely used admission criterion success predictor in nursing programs."

A problem noted is, "Some students learn to manipulate the system through use of a series of transfer and academic "forgiveness" policies available to them to increase their GPAs."

However, despite this problem World and Worth note that, "The data would support that schools of nursing should identify a configuration of several prerequisite courses including science and an English or other course measuring verbal ability, as a combined prerequisite GPA and require an SAT or ACT verbal score from every applicant."

Yang et. al. (1987) studied the records of 210 graduates of a large midwestern university who received BSN degrees and wrote the NCLEX-RN in 1983, 1984, and 1985. The study demonstrated that success in a BNS program and on the NCLEX-RN examination may

be predicted on the basis of academic performance in high school, college entrance tests (ACT) and prenursing GPAs.

I have included a page from the Yang study which shows the direct relationship between total GPA, nursing GPA, clinical GPA, prenursing GPA, and mean NCLEX-RN scores. As the author notes, "Although all of the mean scores obtained were well above the passing score (1600), the reader is cautioned that these are <u>mean</u> scores. Thus, the conclusion should not be drawn that a GPA of 2.00, for example, guarantees successful achievement on NCLEX-RN."

Summary and Conclusion

From this review of the literature it is clear that it is in the best interest of students, their families, their nursing student peers, the nursing program and the health care field to use factors known to be predictive of student success in the nursing selection and admission process.

While in most studies previous GPA, in prerequisite courses, including English and science courses, correlates with achievement in nursing programs, no particular prenursing GPA has been shown to discriminate effectively between successful and nonsuccessful applicants.

Evidence does exist to show that students with prenursing records that include any combination of D and F grades are at risk of not completing nursing programs.

From the information cited in this review it would be reasonable to suggest that students selected for admission to the nursing program with D and F grades in their prenursing record and/or with less than a C^+ GPA in prerequisite courses should be identified and <u>required</u> to attend special study skills and support workshops in the summer prior to enrolling in their first nursing course.

JW/er
Nursing

Attachment: Page from Yang Study

TABLE 5. Mean NCLEX-RN Scores According to Various Intervals of Prenursing, Clinical Nursing, All Nursing, and Total Cumulative Grade Point Averages

GPA Intervals	PN-GPA		CLN-GPA		N-GPA		TOT-GPA	
	Mean	(n)	Mean	(n)	Mean	(n)	Mean	(n)
2.00–2.20	1825.89	(9)	1847.64	(11)	1792.42	(12)		
2.21–2.40	1884.89	(28)	1812.94	(18)	1836.85	(13)	1824.14	(7)
2.41–2.60	1888.28	(25)	1768.68	(31)	1804.07	(30)	1824.38	(24)
2.61–2.80	1898.52	(21)	1890.07	(27)	1879.60	(42)	1873.08	(36)
2.81–3.00	1890.50	(28)	2025.05	(41)	1970.12	(26)	1912.05	(40)
3.01–3.20	2012.68	(19)	2021.03	(35)	2043.40	(40)	1940.56	(32)
3.21–3.40	2043.79	(24)	2080.28	(18)	2118.53	(15)	2064.60	(25)
3.41–3.60	2094.00	(19)	2144.00	(11)	2186.00	(14)	2146.87	(23)
3.61–3.80	2097.10	(20)	2194.33	(12)	2198.92	(13)	2185.59	(17)
3.81–4.00	2411.75	(4)	2413.83	(6)	2409.00	(5)	2285.33	(6)

RN examination. Although all of the mean scores obtained were well above the passing score (1600), the reader is cautioned that these are *mean* scores. Thus, the conclusion should not be drawn that a GPA of 2.00, for example, guarantees successful achievement on NCLEX-RN. It is interesting to note that the graphs in Figure 1 are in the same general direction. This illustrates the high positive correlations among PN-GPA, CLN-GPA, N-GPA, and TOT-GPA.
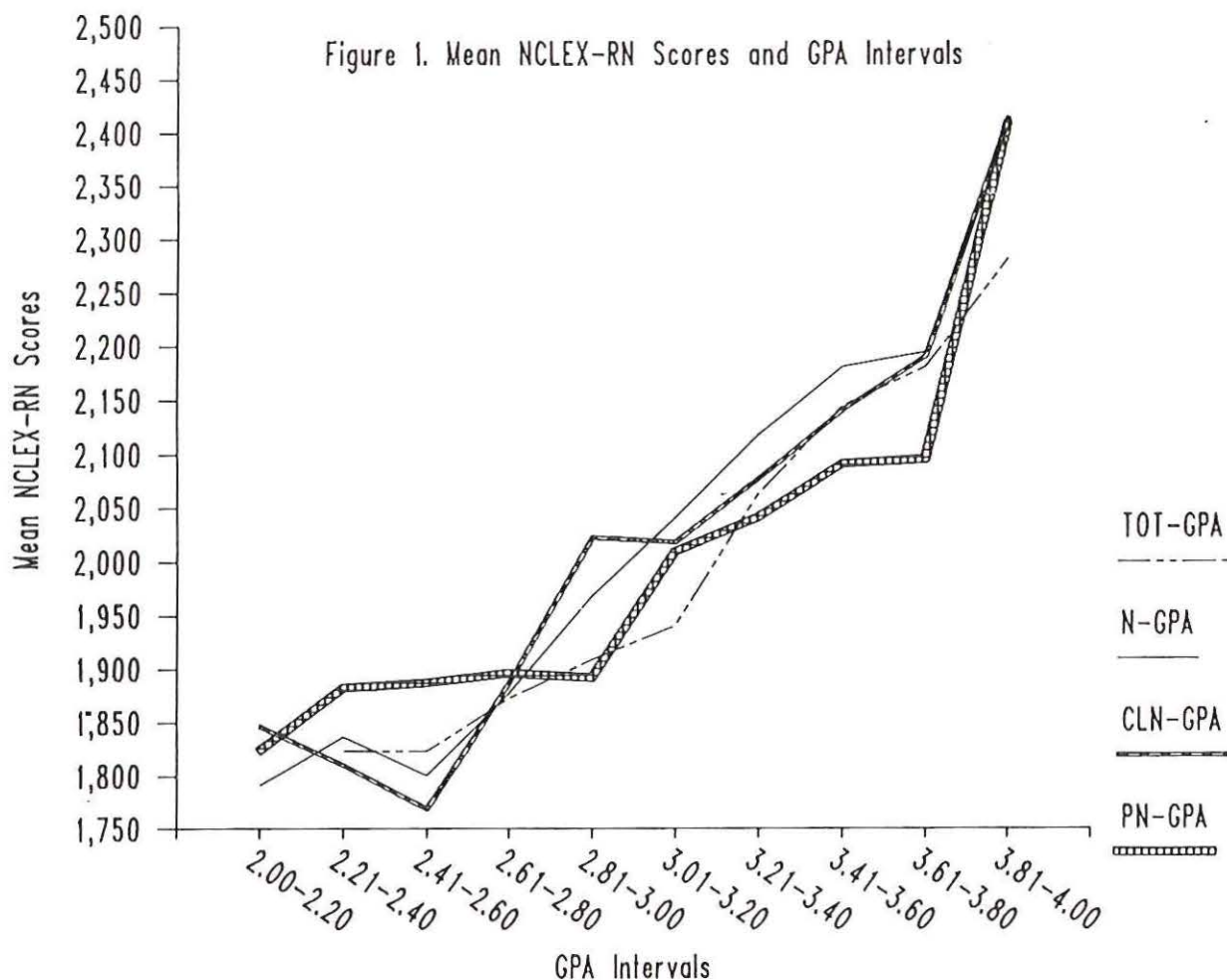

Figure 1. Mean NCLEX-RN Scores and GPA Intervals

Figure 1. Mean NCLEX-RN scores and GPA intervals.

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